Union Public Service Commission (UPSC)

NDA & NA

National Defence Academy & Naval Academy

GENERAL ABILITY TEST

PART A : ENGLISH

&

PART B : GENERAL KNOWLEDGE

Solved Papers

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UPSC NDA & NA Examination Syllabus 2023

NDA Exam Pattern 2023: NDA exam is conducted by the Union Public Service Commission (UPSC) twice a year for admission to Army, Navy & Air Force wings of National Defence Academy and Indian Naval Academy courses. NDA exam pattern comprises written exam and SSB interview. The written exam consists of two papers, Mathematics and General Ability Test (GAT). The Mathematics paper carries 300 marks while the GAT paper carries 600 marks. The total marks for the NDA written exam are 900. The Mathematics questions are asked from topics covered in Class 12 level. The GAT paper includes questions from English, General Knowledge, and General Science.

NDA SCHEME OF EXAMINATION

1. The subjects of the written examination, the time allowed and the maximum marks allotted to each subject will be as follows–

Subject	Code	Duration	Maximum Marks
Mathematics	01	2.5 Hours	300
General Ability Test	02	2.5 Hours	600
Total Marks For Written Exam			900
SSB Test/Interview :			900

2. The Papers in All the subjects will consist of Objective Type Question only. The question papers (Test Booklets) of Paper - I: Mathematics and Paper - II: General Ability Test will be set Bilingual in Hindi as well as English.
3. In the question papers, wherever necessary, questions involving the metric system of Weights and Measures only will be set.
4. Candidates must write the papers in their own hand. In no circumstances will they be allowed the help of a scribe to write answers for them.
5. The Commission have discretion to fix qualifying marks in any or all the subjects at the examination.
6. The candidates are not permitted to use calculator or Mathematical or logarithmic table for answering objective type papers (Test Booklets). They should not therefore, bring the same inside the Examination Hall.

PAPER - II

General Ability Test Syllabus

The general ability section comprises of **two Parts** which are mentioned below:

Part – A : English

The question paper in English will be designed to test the candidate's understanding of English and workman like use of words. The syllabus covers various aspects like : Grammar and usage, vocabulary, comprehension and cohesion in extended text to test the candidate's proficiency in English.

Part – B : General Knowledge

The question paper on General Knowledge will broadly cover the subjects : Physics, Chemistry, General Science, Social Studies, Geography and Current Events. The syllabus given below is designed to indicate the scope of these subjects included in this paper. The topics mentioned are not to be regarded as exhaustive and questions on topics of similar nature not specifically mentioned in the syllabus may also be asked. Candidate's answers are expected to show their knowledge and intelligent understanding of the subject.

Section A – Physics

Physical Properties and States of Matter, Mass, Weight, Volume, Density and Specific Gravity, Principle of Archimedes, Pressure Barometer.

Motion of objects, Velocity and Acceleration, Newton's Laws of Motion, Force and Momentum, Parallelogram of Forces, Stability and Equilibrium of bodies, Gravitation, elementary ideas of work, Power and Energy. Effects of Heat, Measurement of Temperature and Heat, change of State and Latent Heat, Modes of transference of Heat. Sound waves and their properties, Simple musical instruments. Rectilinear propagation of Light, Reflection and refraction. Spherical mirrors and Lenses, Human Eye.

Natural and Artificial Magnets, Properties of a Magnet, Earth as a Magnet.

Static and Current Electricity, conductors and Non- conductors, Ohm's Law, Simple Electrical Circuits, Heating, Lighting and Magnetic effects of Current, Measurement of Electrical Power, Primary and Secondary Cells, Use of X-Rays. General Principles in the working of the following:

Simple Pendulum, Simple Pulleys, Siphon, Levers, Balloon, Pumps, Hydrometer, Pressure Cooker, Thermos Flask, Gramophone, Telegraphs, Telephone, Periscope, Telescope, Microscope, Mariner's Compass; Lightening Conductors, Safety Fuses.

Section B – Chemistry

Physical and Chemical changes. Elements, Mixtures and Compounds, Symbols, Formulae and simple Chemical Equations, Law of Chemical Combination (excluding problems). Properties of Air and Water.

Preparation and Properties of Hydrogen, Oxygen, Nitrogen and Carbondioxide, Oxidation and Reduction. Acids, bases and salts. Carbon—different forms. Fertilizers—Natural and Artificial. Material used in the preparation of substances like Soap, Glass, Ink, Paper, Cement, Paints, Safety Matches and Gun- Powder. Elementary ideas about the structure of Atom, Atomic Equivalent and Molecular Weights, Valency.s

Section C – General Science

Difference between the living and non-living. Basis of Life—Cells, Protoplasms and Tissues. Growth and Reproduction in Plants and Animals.

Elementary knowledge of Human Body and its important organs. Common Epidemics, their causes and prevention.

Food—Source of Energy for man. Constituents of food, Balanced Diet. The Solar System—Meteors and Comets, Eclipses. Achievements of Eminent Scientists.

Section D – History, Freedom Movements etc.

A broad survey of Indian History, with emphasis on Culture and Civilisation.

Freedom Movement in India. Elementary study of Indian Constitution and Administration. Elementary knowledge of Five Year Plans of India. Panchayati Raj, Co-operatives and Community Development. Bhoodan, Sarvodaya, National Integration and Welfare State, Basic Teachings of Mahatma Gandhi.

Forces shaping the modern world; Renaissance, Exploration and Discovery; War of American Independence. French Revolution, Industrial Revolution and Russian Revolution. Impact of Science and Technology on Society. Concept of one World, United Nations, Panchsheel, Democracy, Socialism and Communism. Role of India in the present world.

Section E – Geography

The Earth, its shape and size. Lattitudes and Longitudes, Concept of time. International Date Line. Movements of Earth and their effects. Origin of Earth. Rocks and their classification; Weathering—Mechanical and Chemical, Earthquakes and Volcanoes. Ocean Currents and Tides Atmosphere and its composition; Temperature and Atmospheric Pressure, Planetary Winds, Cyclones and Anti-cyclones; Humidity; Condensation and Precipitation; Types of Climate, Major Natural regions of the World. Regional Geography of India—Climate, Natural vegetation. Mineral and Power resources; location and distribution of agricultural and Industrial activities. Important Sea ports and main sea, land and air routes of India. Main items of Imports and Exports of India.

Section F – Current Events

Knowledge of Important events that have happened in India in the recent years. Current important world events. Prominent personalities—both Indian and International including those connected with cultural activities and sports.

NOTE : Out of maximum marks assigned to part 'B' of this paper, questions on Sections 'A', 'B', 'C', 'D', 'E' and 'F' will carry approximately 25%, 15%, 10%, 20%, 20% and 10% weightages respectively.

UPSC NDA & NA General Ability Test (GAT)
EXAMINATION PAPER ANALYSIS CHART

S. No.	Examination Question Paper	Exam Date/Year	No. of Questions Part A & B
1.	UPSC NDA & NA General Ability Test 2008 (I)	20.04.2008	50+100 = 150
2.	UPSC NDA & NA General Ability Test 2008 (II)	17.08.2008	50+100 = 150
3.	UPSC NDA & NA General Ability Test 2009 (I)	19.04.2009	50+100 = 150
4.	UPSC NDA & NA General Ability Test 2009 (II)	30.08.2009	50+100 = 150
5.	UPSC NDA & NA General Ability Test 2010 (I)	18.04.2010	50+100 = 150
6.	UPSC NDA & NA General Ability Test 2010 (I & II)	10.08.2010	50+100 = 150
7.	UPSC NDA & NA General Ability Test 2011 (I)	17.04.2011	50+100 = 150
8.	UPSC NDA & NA General Ability Test 2011 (II)	21.08.2011	50+100 = 150
9.	UPSC NDA & NA General Ability Test 2012 (I)	15.04.2012	50+100 = 150
10.	UPSC NDA & NA General Ability Test 2012 (II)	19.08.2012	50+100 = 150
11.	UPSC NDA & NA General Ability Test 2013 (I)	14.04.2013	50+100 = 150
12.	UPSC NDA & NA General Ability Test 2013 (II)	11.08.2013	50+100 = 150
13.	UPSC NDA & NA General Ability Test 2014 (I)	20.04.2014	50+100 = 150
14.	UPSC NDA & NA General Ability Test 2014 (II)	28.09.2014	50+100 = 150
15.	UPSC NDA & NA General Ability Test 2015 (I)	19.04.2015	50+100 = 150
16.	UPSC NDA & NA General Ability Test 2015 (II)	27.09.2015	50+100 = 150
17.	UPSC NDA & NA General Ability Test 2016 (I)	17.04.2016	50+100 = 150
18.	UPSC NDA & NA General Ability Test 2016 (II)	18.09.2016	50+100 = 150
19.	UPSC NDA & NA General Ability Test 2017 (I)	23.04.2017	50+100 = 150
20.	UPSC NDA & NA General Ability Test 2017 (II)	10.09.2017	50+100 = 150
21.	UPSC NDA & NA General Ability Test 2018 (I)	22.04.2018	50+100 = 150
22.	UPSC NDA & NA General Ability Test 2018 (II)	09.09.2018	50+100 = 150
23.	UPSC NDA & NA General Ability Test 2019 (I)	21.04.2019	50+100 = 150
24.	UPSC NDA & NA General Ability Test 2019 (II)	17.11.2019	50+100 = 150
25.	UPSC NDA & NA General Ability Test 2020 (I & II)	19.04.2020	50+100 = 150
26.	UPSC NDA & NA General Ability Test 2021 (I)	18.04.2021	50+100 = 150
27.	UPSC NDA & NA General Ability Test 2021 (II)	05.09.2021	50+100 = 150
28.	UPSC NDA & NA General Ability Test 2022 (I)	10.04.2022	50+100 = 150
29.	UPSC NDA & NA General Ability Test 2022 (II)	04.09.2022	50+100 = 150
30.	UPSC NDA & NA General Ability Test 2023 (I)	16.04.2023	50+100 = 150
31.	UPSC NDA & NA General Ability Test 2023 (II)	04.09.2023	50+100 = 150
32.	UPSC NDA & NA General Ability Test 2024 (I)	22.04.2024	50+100 = 150
33.	UPSC NDA & NA General Ability Test 2024 (II)	02.09.2024	50+100 = 150
		Total No. of Questions	**4950**

Union Public Service Commission NDA & NA 2008 (I)
National Defence Academy & Naval Academy
General Ability Test (GAT)
Solved Paper with Detailed Explanation Exam Date: 20.04.2008

Section : English

Antonyms

Directions (For the next 8 items):
Each of the following eight items consists of a word or a group of words in capital letters, followed by four words or group of words. Select the word of words that is most nearly opposite in meaning to the word or the group of words in capital letters.

1. SINGULAR
(a) Nearby (b) Ordinary
(c) Wide (d) Modern

Ans. (b) : The word 'Singular' means unusual or talking about one person or thing only. So, from the given option, its antonym is 'ordinary' means normal, not unusal or different from others. Meaning of other options-
i) Nearby means not far away in distance.
ii) Modern means of the present or recent times.

2. RECLUSE
(a) Criminal (b) Wise
(c) Gregarious (d) Timid

Ans. (c) : The word 'Recluse' means a person who lives alone and who maintains very little contact with other people or society. So, from the given option, its antonym is 'Gregarious' means enjoying the company of other people or sociable.
Meaning of other options-
(i) Wise means having the knowledge or experience or intelligent.
(ii) Timid means easily frightened, shy, afraid.

3. BE NO SLOUCH
(a) Inefficient (b) Honest
(c) Saintly (d) Well-known

Ans. (a) : The word 'Be No Slouch' means someone very hardworking. From the given option, its antonym is 'Inefficient' which means not hard working or producing result in the best way.
Meaning of Other options-
(i) Saintly means very holy or virtuous.
(ii) Well known means known by a lot of people : famous.

4. OPPROBRIUM
(a) Very easy (b) Suspenseful
(c) Modern (d) Praise

Ans. (d) : The word 'Opprobrium' means severe criticism and blame. From the given option, its antonym is 'Praise' which means to say that somebody /something is good and should be admired.
Meaning of other option-
(i) Suspenseful means making excited expectation or uncertainty about what may happen.

5. SOLICITOUS
(a) Mild (b) Showing no concern for
(c) Grateful (d) Cheerful

Ans. (b) : The word 'Solicitous' means showing a lot of concern, showing care and helpful attention to someone. So, from the given option its antonym is 'showing no concern for'.
Meaning of other options-
(i) Mild means not strong, not very bad.
(ii) Grateful means feeling or showing thanks.
(iii) Cheerful means feeling happy.

6. UNDER DURESS
(a) Dry (b) Volition
(c) Affluence (d) Lack of commitment

Ans. (b) : The word 'Under Duress' means threats or force that are used to make somebody do something. From the given option its antonym is 'volition' which means, that power to make your own decisions.
Meaning of other option-
(i) Affluence means having lot of money.
(ii) Lack of commitment means a failure or refusal to commit something or someone

7. LACONIC
(a) Sullen (b) Handsome
(c) Verbose (d) Sharp memory

Ans. (c) : The word 'Laconic' means using a few words to say something. From the given option, its antonym is 'Verbose' which means that using or containing more words. Meaning of other words-
(i) Sullen means looking bad tempered and not wanting to speak to people.
(ii) Handsome means (used about a man) attractive.

8. SLOTHFUL
(a) Credulous (b) Highly skilled
(c) Without resources (d) Sprightly

Ans. (d) The word 'Slothful' means lazy. From the given option its antonym is "Sprightly which means that full of energy and spirit to be happy and to have a positive attitude.
Meaning of other options-
(i) Credulous means believing people and easily tricked or cheat.

Synonyms

Directions (For the next 8 items):
Each of the following eight items consists of a word in capital letters, followed by four words or group of words. Select the word of words that is most similar in meaning to the word in capital letters.

9. DELECTATION

(a) Enjoyment (b) Envy
(c) Inspiration (d) Astuteness

Ans. (a) : The word 'Enjoyment' is the correct synonym of 'delectation'. Both words mean pleasure and delight.
Meaning of other options-
(i) Envy means Jealousy.
(ii) Inspiration means the act of influencing or suggestion opinions, motivation.
(iii) Astuteness means someone who is able to accurately assess a situation.

10. FACTITIOUS

(a) Humorous (b) Truthful
(c) Artificial (d) Causing fatigue

Ans. (c) : The word 'Artifical' is the correct synonym of 'Factitious'. Both words mean artificially created or developed. Meaning of other options-
(i) Humorous means funny or making you laugh.]
(ii) Truthful means (Used about a person) who tells the truth; honest
(iii) Causing fatigue means reason of fatigue.

11. MODICUM

(a) Basic
(b) Pertaining to earlier times
(c) Small quantity
(d) Annoying weather

Ans. (c) : The word 'Small quantity' is the correct synonym of 'modicum'. Both words having same mean. Meaning of other options-
(i) Basic means forming an essential foundation or starting point, fundamental.
(ii) Pertaining to earlier times means related to ancient time.

12. EXACERBATE

(a) To make something more severe
(b) To cause artificial shortage
(c) To assume false importance
(d) To flatter

Ans. (a) : The words to make something more severe is the correct synonym of group of 'Exacerbate'. Both words having same mean. Meaning of other options-
(i) To flatter mean to give pleasure or honour to somebody or compliment.

13. HIATUS

(a) Uphill task (b) Distant place
(c) Fading memory (d) Gap

Ans. (d) : The word 'Gap' is the correct synonym of 'Hiatus'. Both words mean a short pause in which nothing happen. Meaning of other options-
(i) Uphill task means something that is very difficult to do and needs a lot of effort.
(ii) Fading memory means to lose freshness strength or vitality of memory.

14. CONTEMPORANEOUS

(a) Irritating
(b) Artificial
(c) A very complicated problem
(d) Happening at the same time

Ans. (d) : The group of words Happening at the sametime is the correct synonym of 'Contemporanepus. Both words having same mean.

15. STRAFE

(a) To punish (b) To strengthen
(c) To run away (d) To work very hard

Ans. (a) : The word 'to punish' is the correct synonym of 'Strafe'. Both words means to attack.

16. EXACTION

(a) Accuracy
(b) Left over portion
(c) Act of demanding strictly
(d) Ignorance

Ans. (c) : The group of words 'Act of demanding strictly is the correct synonym of 'exaction'. Both words mean the action of demanding and obtaining something from someone. Meaning of other options.
(i) Ignorance means a lack of knowledge or information.

Spotting Errors

Directions (for the next 7 items):

(i) In this section a number of sentences are given. The sentences are underlined in three separate parts and each one is labelled (a), (b) and (c). Read each sentence to findout whether there is an eror in any underlined part. No sentence has more than one error. When you find an error in any one of the underlined parts (a), (b) or (c), indicate your responsible on the separate answer sheet at the appropriate space. You may feel that there is no error in a sentence. In that case (d) will signify a 'No error' response.

(ii) You are to indicate only one response for each item in your answer sheet. (If you indicate more than one response, your answer will be considered wrong). Errors may be in grammar, word usage or idioms. There may be a word missing or there may be a word which should be removed.

(iii) You are not required to correct the error. You are required only to indicate your response on the Answer sheet.

Examples 'P' and 'Q' have been solved for you.

P. The young child/(a) signed/(b) a very sweet song/(c) No error/(d)

Q. We worked/(a) very hard/ (b) throughout the season/(c) No error/(d)

Explanation:

In item **P**, the word 'signed' is wrong. The letter under this part is (b); so (b) is the correct answer. Similarly, for item **Q**, (d) is the correct answer, as the sentence does not contain any error.

17.

(a) Some women admit that
(b) their principle goal in life
(c) is to marry a wealthy man
(d) No error

Ans. (b) There is an error in clause (b) of the given sentence. 'Principal' be used instead of 'Principle' because it describes the specialty of the noun 'goal' used in sentence. So, we used (Adjecive) principal.

18.

(a) Take two spoonfuls (b) of this medicine
(c) every three hours (d) No error

Ans. (a) : There is an error in clause (a) of the sentence. 'Spoonful' will be used in place of 'spoonfuls' because in this sentence subject will be in plural form.

19.

(a) The film was so disjointed
(b) that I could not tell you
(c) what the story was about
(d) No error

Ans. (b) There is an error in clause (b) of the sentence. Here 'Narrate' will be used in place of 'tell'. Because narrate is used to tell a story.

20.

(a) He had been
(b) saved of death as if
(c) by divine intervention
(d) No error

Ans. (b) : There is an error in clause of the sentence. Here 'of' need to be replaced with 'from'.

21.

(a) A cogent remark
(b) compels acceptance because
(c) of their sense and logic
(d) No error

Ans. (c) : There is an error in clause (c) of the sentence. Here 'its' will be used in place of 'there'. Because there is used as the possessive of the pronoun they, while possessive 'its' is used for a non living subject.

22.

(a) Credit cards have
(b) brought about a revolution
(c) in people's spending habits
(d) No error

Ans. (d) There is no error in the given sentence.

23.

(a) In financial matters
(b) It is important to
(c) get disinterested advice
(d) No error

Ans. (d) : There is no error in the given sentence.

Comprehension

Directions (For the next 10 items):

In this section you have three short passages. After each passage, you will find some questions based on the passage. First, read the passage and then answer the questions based on it. You are required to select your answers based on the contents of the passage and opinion of the author only.

Examples 'I' and 'J' are solved for you.

Passage (Example)

In our approach to life, be it pragmatic or otherwise, a basic fact that confronts us squarely and unmistakably is the desire for peace, security and happiness. Different forms of life at different levels of existence make up the teeming denizens of this earth of ours. And, no matter whether they belong to the higher groups such as human beings or to the lower groups such as animals, all being primarily seek peace, comfort and security. Life is as dear to a mute creature as it is to a man. Even the lowliest insect strives for protection against dangers that threaten its life. Just as each one of us wants to live and not to die, so do all other creatures.

I. The author's main point is that
(a) different forms of life are found on earth
(b) different levels of existence are possible in nature
(c) peace and security are the chief goals of all living beings
(d) even the weakest creature struggles to preserve its life

J. Which one of the following assumptions or steps is essential in developing the author's position?
(a) All forms of life have a single overriding goal
(b) The will to survive of a creature is identified with a desire for peace
(c) All beings are divided into higher and lower groups
(d) A parallel is drawn between happiness and life and pain and death

Explanation:

I. The idea which represents the author's main point is "peace and security are the chief goals of all living beings", which is response (c). So (c) is the correct answer.

J. The best assumption underlying the passage is "The will to survive of a creature is identified with a desire for peace", which is response (b). So (b) is the correct answer.

Passage-I

For more than 3 decades, I achieved great success as a lawyer, till a stroke left by right side totally paralysed. Despite the doctor's encouragement, I was consumed by rage and self-pity. I yearned to be active again. But what could be a middle-aged cripple like me do? One day, glancing at some paintings I owned, I thought suddenly, "What about painting"? In fact, I had always wanted to paint, but had never had the time. Now, I had plenty of time. In the last 25 years, I have completed 300 paintings - one of them appeared on the cover of the Reader's Digest. The stroke, I realize, has helped me develop a latent talent and enjoy life.

24. Which one of the following is the correct statement?
While in the hospital, the author was
(a) angry with himself for falling ill
(b) relieved at the successful treatment
(c) frustrated at his helpless situation
(d) resentful at being hospitalized

Ans. (c) : According to the passage option (c) 'Frustrated at his helpless situation' is correct.

25. Why did the author consider himself a cripple?
(a) He could not go back to work
(b) He could not longer use his right hand
(c) He could not use his time properly
(d) He could not lead an active life

Ans. (d) : According to the passage option (d) " He could not lead an active life" is correct.

26. Which one of the following is the correct statement?

The paralytic stroke helped the author

(a) to face challenges in life successfully
(b) to realize his latent talent
(c) to learn a new hobby
(d) to earn more money

Ans. (b) : According to the passage option (b) "to realize his latent talent " is correct statement.

Passage-II

"Westward Ho!" we shouted as the sail of our crudely constructed raft, the Kon-Tiki caught the wind. The sail quickly filled and the Kon-Tiki began to move. The six of us were off to our great adventure.

As night fell, the troughs of the sea grew gradually deeper and our first duel with the elements began. Each time we heard the sudden deafening hiss of a roller closely and saw a white crest come towards us out of the darkness, we held on tight and waited for the worst. But invariably the Kon-Tiki calmly swung up her stern and rose skyward unperturbed.

27. What does the word 'duel' in the passage mean?

(a) A battle (b) A fortification
(c) A two-side contest (d) Divided in two

Ans. (a) : According to the passage 'duel' means fighting between them. Hence option (a) "A battle" is correct.

28. When big waves struck the raft the six people in it-

(a) started crying
(b) showed courage and patience
(c) acted in a rash manner
(d) showed passiveness

Ans. (d) : According to the passage option (d) " showed passiveness" is correct answer.

29. How was the Kon-Tiki's performance on the high seas?

(a) Very shaky (b) Extremely poor
(c) Stable and resolute (d) Unpredictable

Ans. (c) : According to the passage option (c) "Stable and resolute" is correct answer.

Passage-III

It was Sunday. As usual, there was a great rush of merry makers who had come to the river to swim or to bathe. Those who knew how to swim were jumping into the water from the high bridge or the banks of the deep river. Mohan did not know how to swim so he was merely watching others who were enjoying the fun of swimming. However on the insistence of his friend Swarn, he sat on his shoulders and both jumped into the water. Unable to carry Mohan along, Swarn left him in the flowing water. Mohan shouted for help. There were so many swimmers but nobody came to his rescue since they were indifferent to the plight of a stranger. I had just reached there, so I was in my full dress. Without undressing I jumped into the river and swam up to the drowning boy. Holding his left arm, I brought him out of water in a way that he might not hinder me from swimming safely. The boy was saved which won me great applause from the people. I had jumped into the water without any fear or hesitation as I knew the art of saving drowning persons. I had already saved a few lives from drowning.

30. Why did Swarn jump into the water carrying Mohan on his shoulders?

(a) Mohan had insisted to swim
(b) He wanted to enjoy the fun of seeing a drowning man
(c) He simply wanted to drown him in the river
(d) Swarn felt that his friend should also enjoy the fun of swimming in the river

Ans. (d) : According to the passage option (d) is correct answer.

31. Why did Swarn leave his friend Mohan in the waters?

(a) Mohan wanted to learn how to swim
(b) He wanted Mohan to learn how to swim
(c) Because he was sure that Mohan would be able to swim across the river
(d) Because he found it difficult to swim in the river with his friend on his shoulders

Ans. (d) : According to the passage option (d) is correct answer.

32. Although there were many swimmers, why did nobody come forward to save the drowning boy?

(a) They wanted some financial reward
(b) They did not know the art of saving a drowning person
(c) They were not experts in the art of swimming
(d) The river was very deep and they did not want to take a risk for a stranger

Ans. (d) : According to the passage option (d) is correct answer.

33. Why did the writer jump into the river without any fear or hesitation?

(a) He was acquainted with Mohan
(b) He could not bear the sight of a drowning person
(c) He knew how to save a drowning person
(d) He was called by the people present there

Ans. (c) : According to the passage option (c) is correct answer.

Ordering of words in a sentence

Directions (for the next 8 items):

In the following items, some parts of the sentence have been jumbled up. You are required to re-arrange these parts which are labelled P, Q, R and S to produce the correct sentence. Choose the proper sequence and mark in your Answer Sheet accordingly.

Example 'Z' has been solved for you.

Z. It is well-known that the effect /(P) is very bad/ (Q) on children/(R) of cinema/(S)

Which one of the following is the correct sequence?

(a) P-S-R-Q (b) S-P-Q-R
(c) S-R-P-Q (d) Q-S-R-P

Explanation:
The proper way of writing the sentence is "It is well-known that the effect of cinema on children is very bad". This is indicated by the sequence P-S-R-Q and so (a) is the correct answer.

34. There have been
a day after high intensity violence left atleast 50 persons / (P) sporadic clashes between / (Q) dead in the northern city of Tripoli / (R) the Lebanese army and militants/(S)
Which one of the following is the correct sequence?
(a) Q-S-R-P (b) S-Q-R-P
(c) Q-S-P-R (d) S-Q-P-R

Ans. (c) : The correct sequence of above sentences is-(Q-S-P-R).

35. Although
of non-owner managers came to be widely appreciated / (P) political freedom from the British masters / (Q) came to us in 1947 it was not until / (R) well into the following decade that the role / (S)
Which one of the following is the correct sequence?
(a) S-P-Q-R (b) Q-R-S-P
(c) S-R-Q-P (d) Q-P-S-R

Ans. (b) : The correct sequence of above sentences is-(Q-R-S-P).

36. Conditions
for marketing in the US Canada/ (P) Mexico as a manufacturing base/ (Q) that Indian companies aspiring to tap/ (R) would have to fulfil include the complex rules of origin / (S)
(a) R-Q-P-S (b) S-P-Q-R
(c) R-P-Q-S (d) S-Q-P-R

Ans. (a) : The correct sequence of above sentences is-(R-Q-P-S).

37. Aside
of the same three-storey building in the military academy / (P) from eating in the same dining hall/ (Q) half to the north of the entrance half to the south / (R) the 206 troops live side by side on the ground floor / (S)
Which one of the following is the correct sequence?
(a) R-P-S-Q (b) Q-S-P-R
(c) R-S-P-Q (d) Q-P-S-R

Ans. (d) : The correct sequence of above sentences is-(Q-P-S-R).

38. For fear
that may or may not affect them perhaps at first / (P) of upsetting young people / (Q) only healthy people over 80 should be sequenced / (R) about their genetic propensities / (S)
Which one of the following is the correct sequence?
(a) S-Q-P-R (b) Q-S-R-P
(c) S-Q-R-P (d) Q-S-P-R

Ans. (d) : The correct sequence of above sentences is-(Q-S-P-R).

39. While traditional
under made-up Americans aliases pretending familiarity with a culture and climate / (P) India sleeps a dynamic young cohort of highly skilled articulate professionals / (Q) they've never actually experienced earning salaries that were undreamt of by their elders / (R) works through the night in the call centres functioning of US time / (S)
Which one of the following is the correct sequence?
(a) P-R-Q-S (b) Q-S-P-R
(c) P-S-Q-R (d) Q-R-P-S

Ans. (b) : The correct sequence of above sentences is-(Q-S-P-R).

40. IITs are
of great self-confidence and competitive advantage for India today / (P) in science and technology which has become a source / (Q) as they epitomize his creation of an infrastructure for excellence / (R) perhaps Jawaharlal Nehru most consequential legacy / (S)
Which one of the following is the correct sequence?
(a) Q-P-S-R (b) S-R-Q-P
(c) Q-R-S-P (d) S-P-Q-R

Ans. (b) : The correct sequence of above sentences is-(S-R-Q-P).

41. As India
from nearly 250 years of the British rule in India/ (P) first major struggle for independence from the British rule / (Q) celebrates the Diamond Jubilee of its independence / (R) it also observes simultaneously the 150th Anniversary of the Great Indian Mutiny/ (S)
Which one of the following is the correct sequence?
(a) R-S-P-Q (b) Q-P-S-R
(c) R-P-S-Q (d) Q-S-P-R

Ans. (c) : The correct sequence of above sentences is-(R-P-S-Q).

Ordering of Sentences

Directions (For the next 9 items):
In the following items, each passage consists of six sentences. The first sentence is (S_1) and the sixth sentence (S_6) are given in the beginning. The middle four sentences in each have been removed and jumbled up. These are labelled P, Q, R and S. You are required to find out the correct sequence of the four sentences and mark accordingly on the Answer sheet.

Example 'X' has been solved for you.
X.
S_1 : There was a boy named Jack.
S_6 : At last she turned him out of the house.
P: So the mother asked him to find work.
Q: They were very poor.
R: He lived with his mother

S: But Jack refused to work.
Which one of the following is the correct sequence?
(a) R-Q-P-S (b) S-P-Q-R
(c) R-P-Q-S (d) S-Q-P-R

Explanation: The correct sequence in this example is R-Q-P-S which is marked by (a). Therefore, (a) is the correct answer.

42.
S_1: Radio and television are the two most accessible media.
S_6: Many of them are led to buy and use cosmetics and edibles they do not need.
P: Their taste and choice have been affected by commercial advertisements that come with sponsored programmes.
Q: The most vulnerable to the influence of this wave are children.
R: This is mainly because of the advertisement wave it has created.
S: Of the two, television has greater impact.
Which one of the following is the correct sequence?
(a) S-P-Q-R (b) Q-R-S-P
(c) S-R-Q-P (d) Q-P-S-R

Ans. (c) : The correct sequence of above sentences is-(S-R-Q-P).

43.
S_1: Some experts believe that we must change our criminal codes to conform to new concepts of punishment.
S_6: The new scientific approach is that punishment should fit the man.
P: The record reveals that one is a drunkard who beats his wife while the other has a clean record.
Q: Assume that two persons are charged with the same offence : assault with a bat.
R: Should both of them receive equal punishment if their backgrounds differ?
S: The idea of making punishment fit the crime is the old eye-for-an-eye concept.
Which one of the following is the correct sequence?
(a) S-R-P-Q (b) Q-P-R-S
(c) S-P-R-Q (d) Q-R-P-S

Ans. (b) : The correct sequence of above sentences is-(Q-P-R-S).

44.
S_1: The main lasting impression of the factory is its size.
S_6: The noise is made by the fans that cool the piles themselves.
P: The pile buildings themselves stand on a concrete mat ten feet thick.
Q: It spreads over nearly 400 acres.
R: From the building comes a gentle hum.
S: The tower began at one of them.
Which one of the following is the correct sequence?
(a) Q-P-S-R (b) R-S-P-Q
(c) Q-S-P-R (d) R-P-S-Q

Ans. (a) : The correct sequence of above sentences is-(Q-P-S-R).

45.
S_1: Entertainment television into people's homes has special difficulties to overcome.
S_6: There is no mass excitement, no real tension for the curtain to rise.
P: There is no mass excitement, no real tension for the curtain to rise.
Q: The show must conquer the dispersed, the unkeyed attention of people at home.
R: There is no means of conditioning to make the audience receptive, as they are in a theatre or a cinema.
S: It is, of course, quite capable of doing this, but the techniques of writing and production must take account of their limitations.
Which one of the following is the correct sequence?
(a) S-Q-P-R (b) R-P-Q-S
(c) S-P-Q-R (d) R-Q-P-S

Ans. (a) : The correct sequence of above sentences is-(S-Q-P-R).

46.
S_1: Ancient India was a rich and prosperous country.
S_6: In fact, material wealth and social through grew side by side.
P: Education and culture were equally well-developed.
Q: The standard of living of the people was very high.
R: Development was not confined to economy alone.
S: Travellers from foreign lands reported of general comforts prevailing here.
Which one of the following is the correct sequence?
(a) R-P-Q-S (b) Q-S-R-P
(c) R-S-Q-P (d) Q-P-R-S

Ans. (b) : The correct sequence of above sentences is-(Q-S-R-P).

47.
S_1: The removal of corruption prevalent in our country is a difficult problem.
S_6: Corruption can be removed only when we improve our character.
P: None is ready and willing to perform this Herculean task.
Q: It is difficult to prove that Mr. X is corrupt.
R: The legal system of the country provides no solution to it.

S: The investigating officer is himself corrupt and allows the man to remain unpunished.

Which one of the following is the correct sequence?

(a) Q-R-P-S (b) P-S-Q-R
(c) Q-S-P-R (d) P-R-Q-S

Ans. (d) : The correct sequence of above sentences is-(P-R-Q-S).

48.

S_1: A boy used to play pranks with his mother by hiding himself in a wooden box.

S_6: Thus the box he used to hide in turned out to be his coffin.

P: The latch accidentally got locked and the boy, unable to open it, died of asphyxiation.

Q: One day the playful boy, studying in the fifth standard, refused to go to school.

R: In a bid to surprise his mother he got into the empry wooden box and pulled down the lid.

S: His mother was so upset by this that she locked him up in the house and went to work.

Which one of the following is the correct sequence?

(a) Q-S-R-P (b) S-Q-R-P
(c) Q-S-P-R (d) S-Q-P-R

Ans. (a) : The correct sequence of above sentences is-(Q-S-R-P).

49.

S_1: Abha, along with Gandhi and Patel, hesitated to interrupt.

S_6: He learned his forearms on their shoulders and moved forward.

P: Abha, the young wife of Kanu Gandhi, grandson of the Mahatma's cousin and Manu the granddaughter of another cousin, accompanied him.

Q: Finally, therefore, she picked up the Mahatma's nickel-plated watch and showed it to him.

R: "I must go away", Gandhi remarked, and so saying he rose, went to the adjoining both room and then started towards the prayer ground.

S: But she knew Gandhi's attachment to punctuality.

Which one of the following is the correct sequence?

(a) S-P-R-Q (b) R-Q-S-P
(c) S-Q-R-P (d) R-P-S-Q

Ans. (c) : The correct sequence of above sentences is-(S-Q-R-P).

50.

S_1: Soon after he returned to the civilian life, Kennedy wrote a short essay.

S_6: Such a recurrence would mean increased taxation which, in its turn, would hamper the functioning of free enterprise and affect the chances of full employment.

P: He had his own logic for it.

Q: He advanced an argument that after the war, efforts should be made to prevent the recurrence of an arms race.

R: In this essay Kennedy tried to draw the lessons from the ghastly experience of the war.

S: It was published in February, 1945, aptly titled:" Let's try an Experiment in Peace".

Which one of the following is the correct sequence?

(a) P-Q-R-S (b) S-R-Q-P
(c) P-R-Q-S (d) S-Q-R-P

Ans. (b) : The correct sequence of above sentences is-(S-R-Q-P).

Section : General Knowledge

51. A rubber ball dropped from 24 m height loses its kinetic energy by 25%. What is the height to which it rebounds?

रबड़ की गेंद को 24 मी की ऊँचाई से गिराने पर उसकी गतिज ऊर्जा में 25% कमी आती है। यह गेंद कितनी ऊँचाई तक प्रतिक्षिप्त होगी?

(a) 6m/6 मी (b) 12 m/12 मी
(c) 18 m/18 मी (d) 24 m/24 मी

Ans. : (c) Let **h** be the height up to which the ball rebound's after loosing 25% of its kinetic energy.

$$mgh' = \frac{75}{100}(mgh)$$

or $$h' = \frac{75}{100} \times h$$

$$= \frac{75}{100} \times 24$$

$$h' = 18 \text{ m}$$

52. A car accelerates from rest with acceleration 1.2 m/s^2. A bus moves with constant speed of 12 m/s in a parallel lane. How long does the car take from its start to meet the bus?

एक कार विरामावस्था से त्वरण 1.2 मी/से^{2} के साथ चलना प्रारम्भ करती हैं। समान्तर पथ में एक बस 12 मी/से की एकसमान चाल से चल रही है। कार को आरम्भ से बस तक पहुँचने में कितना समय लगेगा?

(a) 17 s/17 सेकण्ड (b) 8 s/8 सेकण्ड
(c) 20 s/20 सेकण्ड (d) 12 s/12 सेकण्ड

Ans. : (c) Let the car takes t seconds from its start to meet the bus.

Distance travelled by the bus in t seconds s = 12t

distance travelled by the car in t seconds,

$\because$ $$S = ut + \frac{1}{2}at^2$$

Initial velocity of car (u) = 0

$$S = \frac{1}{2} \times 1.2 \times t^2$$

$$12t = \frac{1}{2} \times 1.2 \times t^2$$

$$t = \frac{12 \times 2}{1.2}$$

t = 20 seconds.

53. If the current is flowing through a 10 ohm resistor, then in which one of the following cases maximum heat will be generated?
यदि 10Ω प्रतिरोधक से विद्युत धारा बह रही है, तो निम्नलिखित में से किस एक में अधिकतम ऊष्मा उत्पन्न होगी?

(a) 5 A in 2 min/2 मिनट में 5 A
(b) 4 A in 3 min/3 मिनट में 4 A
(c) 3 A in 6 min/6 मिनट में 3 A
(d) 2 A in 12 min/12 मिनट में 2 A

Ans. : (c) Heat dissipated in a resistance is given by

$H = i^2 \times R \times t$

Where, i = current
R = resistance
t = time
H = heat

For option (a), $H = 5^2 \times 10 \times 2 \times 60$
$H = 30000$ J

For option (b), $H = 4^2 \times 10 \times 3 \times 60$
$H = 28800$ J

For option (c), $H = 3^2 \times 10 \times 6 \times 60$
$H = 32400$ J

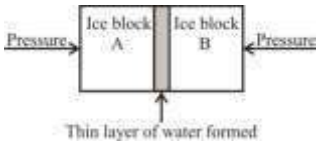
For option (d), $H = 2^2 \times 10 \times 12 \times 60$
$H = 28800$ J

From calculation we can see the heat which is maximum in case of 3 ampere current for 6 minutes.

54. Why do two ice blocks join to form one block when pressed together?
बर्फ के दो खण्डों को आपस में मिलाकर दबाने से वे एक खण्ड क्यों बन जाते है?

(a) Melting point of ice is lowered with increase in pressure
दाब बढ़ने के साथ बर्फ का गलनांक कम होता है
(b) Melting point of ice increases with increase in pressure
दाब बढ़ने के साथ बर्फ का गलनांक बढ़ता है
(c) Melting point of ice remains unchanged with increase in pressure/दाब बढ़ने के साथ बर्फ का गलनांक अपरिवर्तित बना रहता है
(d) Melting point of ice is 0° C
बर्फ का गलनांक 0° C है

Ans. : (a) When you press two ice cube together, due to excessive pressure, the ice at the ends melt and form a thin water layer between the contact surface of the two cubes.



• When this pressure is removed, the water layer freezes and causes the two block of ice to freeze.

55. The rating of an electric lamp is 110V. To use it on 220V, one will have to use which one of the following?
एक विद्युत बल्ब का निर्धारण 110 वोल्ट है । इसे 220 वोल्ट पर काम में लाने के लिए निम्नलिखित में से किसका उपयोग करना होगा?

(a) Transistor/ट्रान्जिस्टर
(b) Resistor/प्रतिरोधक
(c) Transformer/परिणामित्र
(d) Generator/जनित्र

Ans. : (b) To use the electric lamp (rating 110 V) on 220 V, we should combine resistors in series with the lamp. Because in an electrical circuit, resistors are connected in series order or parallel order to achieve the desired current voltage and different purposes.

56. Consider the following statements:
निम्नलिखित कथनों पर विचार कीजिए

1. The focal length of objective of a microscope is less than the focal length of the eyepiece.
किसी सूक्ष्मदर्शी के अभिदृश्यक की फोकस दूरी नेत्रिका की फोकस दूरी से कम होती है।

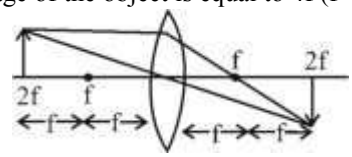
2. The minimum distance between an object and its real image formed by a convex lens of focal length f is equal to $4f$
किसी पिण्ड और f फोकस दूरी वाले लेन्स से बने उसके वास्तविक प्रतिबिम्ब के बीच न्यूनतम दूरी $4f$ होती है।

Which of the statements given above is/are correct?/उपयुक्त कथनों में से कौन-सा/से सही हैं?

(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2 दोनों
(d) Neither 1 nor 2/न तो 1 और न ही 2

Ans. : (c) The compound microscope consists of a metal cylindrical tube, at the end of which a convex lens with short focal length and small aperture is attached, which is called the objective lens. Another small tube is fitted on the other end of the tube, on whose outer end another convex lens is attached, it is called the objective lens, its focal length is greater than the objective lens and the aperture is also larger.

• In a convex lens, the image of an object placed at the centre of curvature is formed on the other hand at its centre of curvature, so the distance between the object and the image of the object is equal to 4f (f + f + f + f)



57. A man standing between two parallel hills fires a gun and hears two echoes, one 2.5 s and the other 3.5 s after the firing. If the velocity of sound is 330 ms^{-1} how long will it take him to hear the third echo?
दो समान्तर पहाड़ियों के बीच खड़ा कोई व्यक्ति बन्दूक से गोली दागता है और दो प्रतिध्वनियाँ, एक गोली दागने के 2.5 सेकण्ड बाद तथा दूसरी, गोली दागने के 3.5 सेकण्ड बाद, सुनता है। यदि ध्वनि का वेग 330 मी/से है, तो उसे तीसरी प्रतिध्वनि सुनने में कितना समय लगेगा?

(a) 4 s/4 सेकेण्ड (b) 5 s/5 सेकेण्ड
(c) 6 s/6 सेकेण्ड (d) 8 s/8 सेकेण्ड

Ans. : (c) Given that, velocity of sound (V) = 330 m/s
$t_1 = 2.5$ sec. and $t_2 = 3.5$ sec.
Let d_1 be the distance between the first hill and man and d_2 be the distance between the second hill and man.

we know that, $V = \frac{2d}{t}$

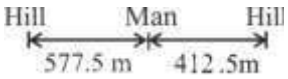
so, $d = \frac{Vt}{2}$

The distance of the first echo:

$$d_1 = \frac{V \times t_1}{2} = \frac{330 \times 2.5}{2} = 412.5 \text{ m}$$

The distance of the seconds echo:

$$d_2 = \frac{V \times t_2}{2} = \frac{330 \times 3.5}{2} = 577.5 \text{ m}$$



Therefore, total distance (d) between the hills = $d_1 + d_2$
$= 577.5 + 412.5$
$d = 990.0$ m

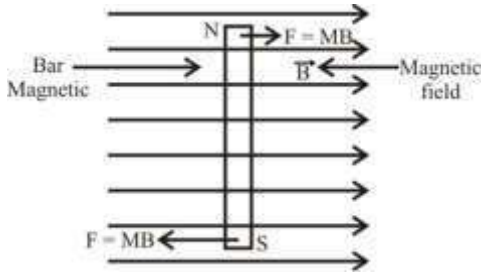
Then, time taken for the third echo (t) $= \frac{2d}{V}$

$= \frac{2 \times 990.0}{330} = 6$ sec.

58. A bar magnet is placed inside a uniform magnetic field. What does it experience?
एक दण्ड चुम्बक एकसमान चुम्बकीय क्षेत्र के अन्दर रखा है। निम्नलिखित में से कौन-सा/से इस पर प्रयुक्त होगा/होंगे?

(a) A force/बल
(b) A torque/बल-आघूर्ण
(c) Both a force and a torque
बल एवं बल-आघूर्ण दोनों
(d) Neither a force nor a torque
न तो बल और न ही बल-आघूर्ण

Ans. : (b) In a uniform magnetic field, the two poles of the bar magnet experience equal and opposite force.
• The force at one end nullifies the force at the other end.
Hence, the needle experience only the torque due to the magnetic field and thus the net force is zero.



M → Magnetic moment

59. A far-sighted person has a near point at 100 cm. What must be the power of the correcting lens?
किसी दूर-दृष्टि वाले व्यक्ति का निकट बिन्दु 100 सेमी पर है। सुधारक लेन्स की शक्ति निम्नलिखित में से कितनी होनी चाहिए?

(a) -0.8D (b) -3.0D
(c) +0.8D (d) +3.0D

Ans. : (d) Given that:
$v = -100$ cm
$u = -25$ cm
According to lens formula,

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$$

$$\frac{1}{f} = \frac{1}{-100} - \frac{1}{(-25)} = \frac{1}{-100} + \frac{1}{25}$$

$$\frac{1}{f} = \frac{-1+4}{100} = \frac{3}{100}$$

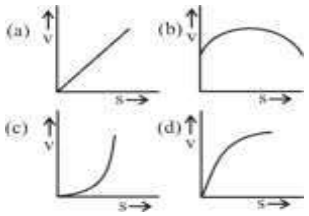
$$f = \frac{100}{3} \text{cm}$$

Then, power of lenses $(p) = \frac{1}{f(\text{in meter})}$

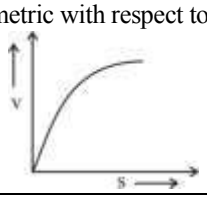
$$p = \frac{1}{f} \times 100 = \frac{1}{100} \times 3 \times 100$$

$p = +3.0$D
The unit of power of lens is dioptre (D).

60. A body starting from the rest moves along a straight line with constant acceleration. Which one of the following graphs represents the variation of speed (v) and distance (s)?
एक पिण्ड विरामावस्था से प्रारम्भ कर एकसमान त्वरण के साथ सरल रेखा पर चलता है। निम्नलिखित में से कौन-सा एक आलेख, चाल (v) और दूरी (s) के विचरण को निरूपित करता है?



Ans. : (d) According to Newton's third equation of motion,
$v^2 = u^2 + 2as$
When, initial velocity (u) = 0
$v^2 = 2as$
$v^2 \propto s$
(∵ Acceleration (a) is constant)
The graph between v and s will be of the form of parabola, which will be symmetric with respect to v-axis.



61. If the length of second's pendulum is increased by 2% how many seconds will lose per day?
यदि सेकण्ड के लोलक की लम्बाई 2% बढ़ा दी जाती है, तो यह प्रतिदिन कितने सेकण्ड धीमी हो जाएगा?

(a) 3600 s/3600 सेकेण्ड (b) 3456 s/3456 सेकेण्ड
(c) 1728 s/1728 सेकेण्ड (d) 864 s/864 सेकेण्ड

Ans. : (d) Time period of seconds pendulum = 2 sec
We know that, the time period of simple pendulum is,

$$T = 2\pi\sqrt{\frac{l}{g}}$$

We have $T \propto \sqrt{l}$

$$\therefore \quad \frac{T'}{T} = \sqrt{\frac{l'}{l}}$$

Given that $l' = 1.02\, l$

$$\therefore \quad \frac{l'}{l} = 1.02$$

$$\frac{T'}{T} = \sqrt{1.02} \approx 1.01$$

$$T' = 2.02s$$

i.e. it will complete one oscillation in 2.02s but shown as 2s.
Therefore, clock loses 0.02s for every 2s or otherwise, 0.01s for every second.

$\therefore$ in one day it will lose = $24 \times 60 \times 60 \times 0.01$ s
= 864 s.

62. Which one among the following radiations carries maximum energy?
निम्नलिखित में से कौन-सा एक सर्वाधिक ऊर्जस्वी विकिरण है?

(a) Ultraviolet rays/पराबैंगनी किरणें
(b) Gamma-rays/गामा-किरणें
(c) X-rays/X-किरणें
(d) Infra-red rays/अवरक्त किरणें

Ans. : (b) The energy of an electromagnetic wave is determined by the formula,

$$E = h\nu$$

Here h is Planck's constant and ν is the frequency of the wave.
• Hence, higher the frequency higher is the energy. Because gamma rays have the highest frequency, it has the highest energy.
Order of frequency/energy is:
Gamma rays > X-rays > Ultraviolet rays > infrared rays.

63. The neutron, proton, electron and alpha particle are moving with equal kinetic energies. How can the particles be arranged in the increasing order of their velocities?
न्यूट्रॉन, प्रोटॉन, इलेक्ट्रॉन और एल्फा कण समान गतिज ऊर्जाओं के साथ चल रहे हैं। कणों को, उनके वेगों के बढ़ते हुए क्रम में, किस प्रकार विन्यासित कर सकते हैं?

(a) Alpha particle-neutron-proton-electron
एल्फा कण-न्यूट्रॉन-प्रोटॉन-इलेक्ट्रॉन
(b) Proton - electron - neutron - alpha particle
प्रोटॉन-इलेक्ट्रॉन-न्यूटॉन-एल्फा कण
(c) Electron - proton - neutron - alpha particle
इलेक्ट्रॉन-प्रोटॉन-न्यूट्रॉन-एल्फा कण
(d) Neutron - Proton - electron - alpha particle
न्यूटॉन-प्रोटॉन-इलेक्ट्रॉन- एल्फा कण

Ans. : (a) According to question-
All particle have same kinetic energy

$$\because \quad E_k = \frac{1}{2}mv^2$$

Mass of α-particle = 6.642×10^{-24}g
Mass of neutron = 1.674×10^{-24}g
Mass of proton = 1.6726×10^{-24}g
Mass of electron = 9.10938×10^{-27}g
Therefore, we can write $Mass_{\alpha\text{-particle}} > Mass_{neutron} > Mass_{proton} > Mass_{electron}$
Hence, $V_\alpha < V_n < V_p < V_e$

64. Which one of the following is a good conductor of electricity?
निम्नलिखित में से कौन-सा एक, विद्युत का सुचालक है?

(a) Shellac/चपड़ा
(b) Human body/मानव शरीर
(c) Glass/काँच
(d) Ebonite/एबोनाइट

Ans. : (b) Conductors are substances which allow the passes of electricity through them, same thing happened with human body, so this makes our body a good conductor of electricity.
• Few common examples of conductors are silver, copper etc.

65. Which one of the following chemicals is used in foam fire extinguishers?
फोम अग्निशामकों में निम्नलिखित में से कौन-सा रसायन काम में लाया जाता है?

(a) Aluminium sulphate/एल्युमीनियम सल्फेट
(b) Copper sulphate/कॉपर सल्फेट
(c) Cobalt sulphate/कोबाल्ट सल्फेट
(d) Nickel sulphate/निकिल सल्फेट

Ans. : (a) Aluminium sulphate is used in 'foam' fire extinguishers, which contain sodium bicarbonate and aluminium sulphate is separate receptacles on being mixed they form the foam bubbles of CO_2.

$$\underset{\text{Alu minum sulphate}}{Al_2(SO_4)_3} + 6\,\underset{\text{Sodium bicarbonate}}{NaHCO_3} \rightarrow 2Al(OH)_3 + 6CO_2 + 2Na_2SO_4$$

66. Talc contains which of the following?
टैल्क में निम्नलिखित में से क्या होते हैं?

(a) Zinc, Calcium and Oxygen
जिंक कैल्शियम और ऑक्सीजन
(b) Calcium, Oxygen and Tin
कैल्शियम, ऑक्सीजन और टिन
(c) Magnesium, Silicon and Oxygen
मैग्नीशियम, सिलिकॉन और ऑक्सीजन
(d) Zinc, Tin and Sulphur/जिंक, टिन और गन्धक

Ans. : (c) Talcum powder is made up of talc. It is a mineral which is composed of hydrated magnesium silicate and the constituent elements are magnesium, silicon, and oxygen.

• The chemistry formula or representation of talc is $Mg_3Si_4O_{10}(OH)_2$.

• Talc is mostly deposited in the metamorphic rocks of convergent plate boundaries. It is obtained from two processes. It is found to deposited. When heated water carrying dissolved magnesium and silica react with dolomite marbles. In the second way the production of talc is obtained when heat and chemically active fluids alter rocks such as dunite and serpentinite.

67. Which one of the following mixtures is homogeneous?
निम्नलिखित में से कौन-सा एक, सामांगी मिश्रण है?

(a) Starch and sugar/स्टॉर्च और शर्करा
(b) Methanol and water/मेथेनॉल और जल
(c) Graphite and charcoal/ग्रेफाइट एवं चारकोल
(d) Calcium carbonate and calcium bicarbonate
कैल्सियम कार्बोनेट एवं कैल्सियम बाइकार्बोनेट

Ans. : (b) The term homo stands for uniform or same.

• A homogenous mixture in which the substances are evenly or uniformly distributed.

• Homogeneous mixtures are such mixtures whose particles cannot be separated, such as salt cannot be separated from an aqueous solution of salt, in the same way, and similarly water cannot be separated from an aqueous solution of methanol.

68. Which one of the following laws explains the formation of carbon monoxide and carbon dioxide from carbon and oxygen?
कार्बन और ऑक्सीजन से कार्बन मोनोऑक्साइड और कार्बन डाइऑक्साइड का बनना निम्नलिखित में से किस एक नियम से व्यक्त होता है?

(a) Law of conservation of mass
संहति के संरक्षण नियम
(b) Law of multiple proportions
गुणन अनुपात का नियम
(c) Law of reciprocal proportions
व्युत्क्रमानुपात का नियम
(d) Law of definite proportions
स्थिर अनुपात का नियम

Ans. : (b) Law of multiple proportions states that when two elements combine to generate more than one compound, the weights of one element that combine with a fixed weight of the other are in a ratio of small whole numbers. The English scientist John Dalton established the rule in 1803.

• Example: Let us assume two molecule of CO (Carbon monoxide) and CO_2 (Carbon dioxide)

CO = 12 grams of carbon + 16 grams of oxygen.

CO_2 = 12 grams of carbon + 32 grams of oxygen.

The ratio of the mass of oxygen in the given two compounds is:

16 : 32 = 1 : 2

69. Which one of the following is the most important characteristic of water to act as a good solvent?
निम्नलिखित में से कौन-सा एक, अच्छा विलायक बनने के लिए जल का सबसे महत्वपूर्ण गुण है?

(a) Purity of water/जल की शुद्धता
(b) Ionizing power of water
जल की आयनीकरण शक्ति
(c) Polar nature of water/जल की ध्रुवीय प्रकृति
(d) Dissolving power of water
जल की घोलने की शक्ति

Ans. : (c) The polar nature of water is the most important property of water to become a good solvent because all the compounds in water easily ionize to form positive is on one side and negative ions on the other side.

$$H_2O \rightarrow H^+ + (HO)^-$$

70. When iron is left exposed in open air, it gets rusted. Which constituent (s) of air is/are responsible for rusting iron?
मुक्त वायु में लोहे को खुला रखने पर इस पर जंग लग जाता है। वायु का कौन-सा/से घटक लोहे पर जंग लगने के लिए उत्तरदायी है/हैं?

1. Oxygen has present in air
वायु में विद्यमान ऑक्सीजन गैस
2. Moisture present in air/वायु में मौजूद नमी
3. Carbon dioxide gas present in air
वायु में विद्यमान कार्बन डाइऑक्साइड गैस

Select the correct answer using the code given below:
नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए

(a) 1 only/केवल 1 (b) 2 only/केवल 2
(c) 1 and 2/1 और 2 (d) 2 and 3/2 और 3

Ans. : (c) Iron gets rusted when it is exposed to moisture. This is due to the fact that iron which is a metal, react to oxygen molecules and form oxides when exposed to moisture. Due to the abundance of oxygen in our atmosphere the iron piece gets rusted very easily.

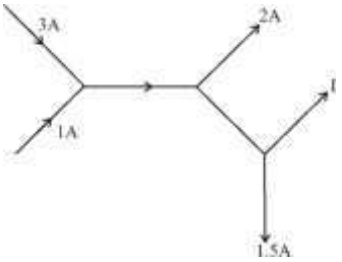
$$4Fe + 3O_3 + 3H_2O \rightarrow Fe_2O_3 + 2Fe(OH)_3$$

71. Evening Sun is not as hot as the mid day sun. What is the reason?
सायंकाल का सूर्य उतना तप्त नहीं होता जितना मध्याह्न का। इसका क्या कारण है?

(a) In the evening radiations travel slowly
सायंकाल में विकिरण धीमी गति से होता है
(b) In the evening the temperature of the sun decreases/सायंकाल में सूर्य का ताप कम हो जाता है
(c) Ozone in atmosphere absorbs more light in the evening/वायुमण्डल की ओजोन सायंकाल में अपेक्षाकृत अधिक प्रकाश अवशोषित कर लेती है
(d) In the evening radiations travel a long distance through atmosphere/सायंकाल में, विकिरण वायुमण्डल में अपेक्षाकृत अधिक दूरी तय करता है

Ans. : (d) During the morning or evening sun will be on the horizon and rays should travel long distances. So more heat is lost and during mid day sun is our heads and rays will travel very less distance, so, less heat is lost. Hence, we feel more heat during mid day than in the morning or evening.

72.



The figure shows current in a part of electrical network. What is the value of current I ?
उपयुक्त चित्र में विद्युत जाल के एक भाग में धारा दिखाई गई है। धारा I का मान कितना है?

(a) 0.2A (b) 0.1A
(c) 0.3A (d) 0.5A

Ans. : (d) According to Kirchhoff's current law. The total current entering a junction or a node is equal to the charge leaving the node as no charge is lost.

• The algebraic sum of every current entering and leaving the node has to be null.

From figure,

Input current (I) = 1A + 3A
= 4A

and output current (I) = 2A + 1.5 A + I
= 3.5A + I

Therefore, Input current = output current
4A = 3.5 A + I

or I = 4A - 3.5A
I = 0.5 A

73. Some common mediums in which speed of sound waves is measured are mentioned below:
नीचे कुछ ऐसे सामान्य माध्यम व्यक्त किए गए हैं जिनमें ध्वनि-तरंगों की चाल मापी जाती है

1. Air/वायु **3. Steel/इस्पात**
2. Copper/ताम्र **4. Water/जल**

What is the correct increasing order of the speed of sound?
ध्वनि की चाल के बढ़ते हुए क्रम में, सही अनुक्रम कौन-सा है?

(a) 1 < 4 < 2 < 3 (b) 4 < 1 < 2 < 3
(c) 1 < 4 < 3 < 2 (d) 4 < 1 < 3 < 2

Ans. : (a) Speed of sound is different in different medium. It is generally more in solids, less in liquids and least in gasses because of more elasticity in solids.

	Medium	Speed of sound (m/s)
1.	Steel	5960
2.	Copper	4600
3.	Water	1531
4.	Air	343

Therefore, according to option: 1 < 4 < 2 < 3

74. In a simple microscope, the lens is held at a distance d from the eye and the image is formed at the least distance (D) of the distinct vision from the eye. What is the magnifying power of the microscope?
सरल सूक्ष्मदर्शी में, लेन्स आँख से d दूरी पर है और प्रतिबिम्ब आँख से सुस्पष्ट दृष्टि की न्यूनतम दूरी (D) पर बनता है। सूक्ष्मदर्शी की आवर्धन शक्ति क्या है?

(a) D/f (b) $1 + (D/f)$
(c) $1 + \{(D - d)/f\}$ (d) $1 + \{(D + d)/f\}$

Where f is the focal length of the lens.
जहाँ f लेन्स की फोकस दूरी है।

Ans. : (b) In a simple microscope, the lens is at a distance d from the eye and the image is formed at the minimum distance (D) of the distinct vision, from the eye. Then the magnifying power (M) of the simple microscope will be-

$$M = 1 + \frac{D}{f}$$

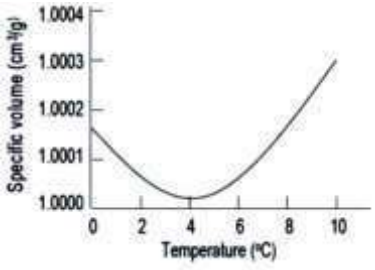
where 'D' is the minimum distance of distinct vision, which is 25 cm and f is the focal length of the lenses.

75. When water is heated from 0°C to 20° C, how does its volume change?
जब जल 0°C से 20°C तक गर्म किया जाता है, तो इसके आयतन में क्या परिवर्तन होगा?

(a) It shall increase/यह बढ़ेगा
(b) It shall decrease/यह घटेगा
(c) It shall first increase and then decrease
यह पहले बढ़ेगा और तब घटेगा
(d) It shall first decrease and then increase
यह पहले घटेगा और तब बढ़ेगा

Ans. : (d) As the temperature increases from 0°C to 4°C, we notice that the volume is decreasing. At 4°C, a given amount of water has the smallest volume that means it has highest density at this point. Therefore, density of ice is maximum at 4°C.

• If the temperature is bigger that 4°C, the volume of water will start increasing and as a result, the water will be less dense.



76. Consider the following statements:
निम्नलिखित कथनों पर विचार कीजिए

The fraction of a ball floating inside the liquid depends upon-
जल के अंदर तैरती गेंद का अंश निर्भर करता है–

1. density of the liquid
द्रव के घनत्व पर निर्भर करता है।

2. **mass of the ball.**
गेंद के द्रव्यमान पर निर्भर होता है।

3. **density of the ball.**
गेंद के घनत्व पर निर्भर होता है।

Which of the statements haven above are correct?
उपर्युक्त कथनों में से कौन-से सही है?

(a) 1 and 2 only/1 और 2
(b) 2 and 3 only/2 और 3
(c) 1 and 3 only/1 और 3
(d) 1, 2 and 3/1, 2 और 3

Ans. : (c) According to the Archimedes principle:- the upward buoyant force that is exerted on a body immersed in a fluid, whether partially or fully submerged is equal to the weight of the fluid that the body displaces and acts in the upward direction at the center of mass of the displaced fluid.

$F_b = \rho \times g \times v$

where, ρ = density

g = Acceleration due to gravity.

• Fraction of ball floating inside the liquid is equal to the specific gravity of the ball. So, it depends on the density of the liquid and the density of the ball.

• It does not depend on the mass of the object.

77. A wire has a resistance of 32 Ω. It melted and drawn into a wire of half of its original length. What is the resistance of the new wire?
एक तार का 32Ω प्रतिरोध हैं इसे गलाकर इसकी मूल लम्बाई से आधी लम्बाई का तार बनाया जाता है। नए तार का प्रतिरोध कितना है?

(a) 32Ω (b) 16Ω
(c) 8Ω (d) 4Ω

Ans. : (c) Given that:-

Resistance of the wire, R = 32 Ω

Wire is melted and it's length become half of its initial length (L). So, new length (L') = $\frac{L}{2}$

In both cases, volume of wire is same.

$V = A'L' = AL$

and $\frac{A'}{A} = \frac{L}{L'} = \frac{L}{\frac{L}{2}} = \frac{2}{1} \quad \left(\because L' = \frac{L}{2}\right)$

Where, A^1 = new cross-section area

A = initial cross-section area

Therefore, ratio of resistance is,

Resistivity of the same material is always same (ρ)

$\therefore \quad \frac{R'}{R} = \frac{\rho\frac{L'}{A'}}{\rho\frac{L}{A}} = \frac{L'}{L} \times \frac{A}{A'} = \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

New resistance,

$$\frac{R'}{R} = \frac{1}{4} \Rightarrow R' = \frac{1}{4}R = \frac{1}{4} \times 32 = 8\Omega$$

Hence, new resistance is 8Ω.

78. Consider the following statements:
An external pressure p_0 is applied to the surface of a liquid in a container. Then:
किसी पात्र में रखे द्रव के पृष्ठ पर एक बाह्य दाब p_0 लगाया जाता है। तो–

1. **The pressure on all side-walls increases by p_0/सभी पार्श्व-भित्तियों पर दाब p_0 बढ़ जाता है।**
2. **The pressure on the bottom wall increases by p_0/तल भित्ति पर दाब p_0 बढ़ जाता है।**
3. **The pressure at all points inside the liquid increases by p_0/द्रव के अन्दर सभी बिन्दुओं पर दाब p_0 बढ़ जाता है।**

Which of the statements given are correct?
उपर्युक्त कथनों में से कौन-से सही है?

(a) 1, 2 and 3/1, 2 और 3
(b) 1 and 2 only/केवल 1 और 2
(c) 1 and 3 only/ केवल 1 और 3
(d) 2 and 3 only/ केवल 2 और 3

Ans. : (a) According to Pascal's law:- "When external pressure is applied on any part of the liquid kept in the vessel, it is transmitted equally in all direction without any loss."

Therefore, when external pressure is applied on the surface of a liquid placed in a vessel, the pressure increase uniformly on all the sidewalls, on the bottom wall an at all points inside the liquid.

79. Let us assume that air density ($0.0013 g/cm^3$) remains constant as we go up in the atmosphere. In such a hypothetical case, what is the approximate height of atmosphere to have 1 atmospheric pressure?
मान लें कि जब हम वायुमण्डल में ऊपर की ओर जाते हैं, तो वायु का घनत्व (0.0013) ग्राम/सेमी^{3}) एकसमान बना रहता है। ऐसे परिकल्पनात्मक मामले में 1 वायुमण्डलीय दाब होने के लिए वायुमण्डल की लगभग ऊँचाई कितनी है?

(a) 4 km/4 किमी (b) 8 km/8 किमी
(c) 40 km/40 किमी (d) 80 km/80 किमी

Ans. (b) Given that,

Density (ρ) = 0.0013 gm/cm^3 = 0. 0013 × 10^9 kg/m^3

Since, $p = h \times \rho \times g$

Where, p = pressure, ρ = density and, g = gravity

$\because$ 1 Atmospheric pressure = 1.013×10^5 Pa.

$$1.013 \times 10^5 = h \times 0.0013 \times 9.8 \times 10^3$$

$$h = \frac{1.013 \times 10^5}{0.0013 \times 10^9 \times 9.8} = 7.951 \times 10^3 \text{ m}$$

$h \simeq 8$ km.

80. Which one of the following movements started from Dandi?/निम्नलिखित में से कौन-सा आन्दोलन दाण्डी से प्रारम्भ हुआ?

(a) Swadeshi Movement/स्वदेशी आन्दोलन
(b) Non-cooperation Movement
असहयोग आन्दोलन

(c) Civil Disobedience Movement
सविनय अवज्ञा आन्दोलन

(d) Quit India Movement/भारत छोड़ो आन्दोलन

Ans. : (c) On 12 march 1930, Mahatma Gandhi was started the Dandi March with 78 of his followers form the Sabarmati Ashram as a part of the civil disobedience movement. On 5th April, 1930, Gandhi broke the salt law by reaching Dandi.

- It was from here that the Civil disobedience movement started. In this movement, programs like resignation from government jobs, boycott of foreign goods and cloths, ban on payment of land revenue, rent and other taxes, boycott of government functions and schools were included.

Swadeshi Movement:- It arose from the anti-Partition movement, which was formed in response to lord Curzon's decision to divide the province of Bengal. The Swadeshi movement began in 1905 as a unified reaction to Bengal's partition and lasted until 1908.

- The non-cooperation movement was launched in 1920 by INC under the leadership of Mahatma Gandhi. It was introduced in congress session in Calcutta. Gandhiji Called off the movement in February 1992 in the wake of the Chauri Chaura incident.
- In 1942, Mahatma Gandhi Called to end British rule and launched the quit India movement at the session of the all India congress committee in Mumbai.

81. Which one of the following political theories advocates the withering away of the State?
निम्नलिखित में से कौन-सा एक राजनैतिक सिद्धान्त, राज्य के क्रमिक अवसान के पक्ष का समर्थन करता है?

(a) Capitalism/पूँजीवाद

(b) Fascism/फासीवाद

(c) Marxism/मार्क्सवाद

(d) Democratic socialism/लोकतान्त्रिक समाजवाद

Ans. : (b) Fascism first emerged in Italy. Its originator is considered to be Mussolini. Fascism refers to autocratic dictatorship. Under this, democratic institutions are devalued by defaming the opposition by spreading summers in a conspiration manner. That is, it is such a political theory, which supports the favor of gradual extinction of the state.

82. India is not a member of which one of the following?
भारत निम्नलिखित में से किस एक का सदस्य नहीं है?

(a) Commonwealth of Independent States
स्वतन्त्र राज्यों का राष्ट्रमण्डल (कॉमनवेल्थ ऑफ इण्डिपेंडेंट स्टेट्स)

(b) South Asian Association for Regional Cooperation
दक्षिण एशिया क्षेत्रीय सहयोग संगठन (सार्क)

(c) South Asian Free Trade Agreement
दक्षिण एशियायी मुक्त व्यापार समझौता

(d) World Trade Organization/विश्व व्यापार संगठन

Ans. : (a) The commonwealth in Independent states (CIS) was formed by the signing of an agreement by Russia, Belarus and Ukraine on 8th December, 1991 in Minsk (Belarus). Its members are Armenia, Azerbaijan, Belarus Kazakhstan, Kyrgyzstan, Moldova, Russia, Georgia, Turkmenistan, Tajikistan, Uzbekistan. Its headquarter are in Minsk (Belarus). India is not a member of this organization.

- In December 1991, the leaders of Belarus, Russia and Ukraine formally dissolved the Soviet union and formed the CIS.

SAARC:- It was established in Dhaka on 8 December 1985. After consultations, the foreign secretaries of the seven founding countries Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lank.

- They met for the 1st time in Colombo in 1981. Afghanistan became the newest member of SAARC at the 13th annual summit in 2005. Its headquarter are at Kathmandu, Nepal.
- The SAFTA is the free trade agreement between the members of SAARC in 2004. The agreement came into force in 2006, succeeding the 1993 SAARC Preferential Trading agreement.

WTO:- It is the only global international organization dealing with the rules of trade between nations. WTO was established on January 1995. Since, 1948, the General Agreement on Tariffs and trade (GATT) had provided the rules for the system. Its headquarter are Geneva, Switzerland.

- In 2021, Ngozi Okonjo Iweala was appointed as the WTO Director General. She is the first woman chief of the WTO. She is also the first African to hole the office of WTO as its director general.

83. Consider the following statements:
निम्नलिखित कथनों पर विचार कीजिए

1. Panchsheel was signed between People's Republic of China and India after the Sino-Indian War in 1962/1962 में चीन-भारत युद्ध के बाद पीपुल्स रिपब्लिक ऑफ चाइना और भारत के बीच पंचशील पर हस्ताक्षर किए गए।

2. India and China supporting each other in international forum is one of the principles of panchsheel./अन्तर्राष्ट्रीय मंचों पर भारत और चीन का एक-दूसरे को समर्थन देना पंचशील के सिद्धांतों में से एक है।

Which of the statements given above is/are correct?/उपर्युक्त कथनों में से कौन-सा/से सही है/हैं?

(a) 1 only/केवल 1

(b) 2 only/केवल 2

(c) Both 1 and 2/1 और 2 दोनों

(d) Neither 1 Nor 2/न तो 1 और न ही 2

Ans. : (d) The Panchsheel agreement, otherwise known as five principles of coexistence, are a set principles govern relation between states. They were first codified during an agreement between India and China in April, 1954.

- The five principles of the Panchsheel agreement are as follows:–

1. Mutual non-interference in each other's internal affairs.
2. Mutual respect for each other's territorial integrity and sovereignty.
3. Mutual non-aggression
4. Equality and mutual benefit.
5. Peaceful co-existence.

Hence, both the statements are not true.

84. In which of the following years was the Planning Commission set up in India?
निम्नलिखित में से किस एक वर्ष में भारत योजना आयोग स्थापित हुआ?

(a) 1947 (b) 1948
(c) 1949 (d) 1950

Ans. : (d) On 15th March, 1950 the planning commission was formed on the basis of an executive resolution of the Government of India (Union Cabinet).

- The planning Commission was an institution that formulated five year plans in India.
- On 1st January, 2015 by the proposal of the Union Cabinet, NITI Aayog has been formed in place of the planning Commission. It is also an 'nonconstitutional' body like the planning commission. It acts a "think tank" of the government. Its function is to make strategic drafts and prepare executive plans and the Chairman of this commission is the current prime minister of India.

85. Which one of the following Amendments of the Constitution of India deals with the issue of strengthening of the Panchayati Raj?
भारत के संविधान का निम्नलिखित में से कौन-सा एक संशोधन पंचायती राज्य के सशक्तीकरण के विषय के सम्बन्ध में है?

(a) 42nd/42वाँ (b) 44th/44वाँ
(c) 73rd/73 वाँ (d) 86th/86वाँ

Ans. : (c) The constitution (73 Amendment) act was passed in 1992 and it came into effect on 24th April 1993. This act added a new chapter into the constitution called 'Part IX: 'The Panchayats' and it contains provisions form Articles 243 to 243 'O'. The acts also added a new 11th schedule to the constitution. It has 29 executive subjects of Panchayats. This act gave a practical shape to the 40th Article of the constitution (organization of village Panchayats). 24th April is celebrated as panchayati Raj Diwas.

86. Where is the headquarters of the International Bank of Reconstruction and Development located?/अन्तर्राष्ट्रीय पुनर्संरचना एवं विकास बैंक (इण्टरनेशनल बैंक फॉर रीकंस्ट्रक्शन एण्ड डेवलपमेन्ट) का मुख्यालय कहा अवस्थित है?

(a) Geneva/जेनेवा
(b) Washington DC/वाशिंगटन डी.सी.
(c) London/लन्दन
(d) Paris/पेरिस

Ans. : (b) The International Bank for Reconstruction and Development (IBRD) is an international financial institution established in 1944 and its headquarter in Washington, D.C. United States, that is leading arm of World Bank Group. It offers loans to middle income developing countries.

- The IBRD is owned and governed by its 189 member states, with each country represented on the Board of governors. India is a founding member of IBRD. It started lending to India in 1949.

87. Consider the following statements:
निम्नलिखित कथनों पर विचार कीजिए–

1. **Salary and allowances of the Speaker of Lok Sabha are charged on the consolidated Fund of India.**
लोकसभा अध्यक्ष का वेतन और भत्ते भारत की संचित निधि से प्रभारित होते है?
2. **In the Warrant of Precedence, the Speaker of Lok Sabha ranks higher than All the Union Cabinet Ministers other than Prime Minister.**
पूर्वता अधिपत्र में, लोकसभा अध्यक्ष का दर्जा प्रधानमन्त्री को छोड़कर अन्य सभी केन्द्रीय कैबिनेट मन्त्रियों से ऊपर है।

Which one the statements given above is/are correct?/उपर्युक्त कथनों में से कौन-सा/से सही है/हैं?

(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2 दोनों
(d) Neither 1 nor 2/न तो 1 और न ही 2

Ans. : (c) In India's democratic system, the government cannot spend from the consolidated Funds unless the expenditure is voted in the lower house of Parliament or State Assemblies.

- According to Article 112(3) and Article 202(3) of the constitution of India, the following expenditure does not require a vote and is charged to the consolidation Fund. They include salary, allowances, and pension for the president as well as Governors of states, Speaker and Deputy Speaker of the House of people, the comptroller General of India and Judges of the supreme and High courts. They also include interest and other debt related charges of the Government and any sums required to satisfy any court judgment pertaining to the Government.
- In the order of Precedence, the speaker ranks on 6th position alongside the chief justice of India. The removal of the speaker requires passing a resolution with the majority in the house.
- Order of precedence in the Republic of India-

Rank	Post
1.	President
2.	Vice President
3.	Prime Minister
4.	Governors
5.	Former President
5A.	Deputy Prime Minister
6.	CJI and Speaker of Lok Sabha

88. Who among the following annulled the Partition of Bengal?
बंगाल विभाजन का निम्नलिखित में से किसने निराकरण किया?

(a) Lord Chelmsford/लॉर्ड चेम्सफोर्ड
(b) Lord Curzon/लॉर्ड कर्जन
(c) Lord Minto/लॉर्ड मिन्टो
(d) Lord Hardinge/लॉर्ड हार्डिंग

Ans. : (d) The partition of Bengal was annulled in 1911 by Lord Hardinge. It was done in response to the Swadeshi movement's riots in protest against the policy. Important points:

- The partition of Bengal was announced by the viceroy Lord Curzon on 19th July, 1905.
- Bengal was partitioned on 16th October, 1905.
- Swadeshi movement was launched to protest the partition of Bengal.
- In 1905, the "Bang Bhang" movement started in the whole country in protest against the partition of Bengal.
- After political opposition, Lord Hardinge reintegrated Bengal on 12th December, 1911.

89. With which one of the following is the 'Tennis court oath' associated?
निम्नलिखित में से किस एक के साथ 'टेनिस कोर्ट ओथ' सम्बद्ध है?

(a) English Revolution/इंग्लिश क्रान्ति
(b) American Revolution/अमेरिकी क्रान्ति
(c) French Revolution/फ्रांसीसी क्रान्ति
(d) Russian Revolution/रूसी क्रान्ति

Ans. : (c) The Tennis court oath was a commitment to a national constitution and representative government, taken by delegates at the Estates-General at Versailles.
• It has become one of the most iconic scenes of the French Revolution. The Tennis Court Oath of Versailles taken on 20th June 1789.

90. By virtue of which Act, diarchy was introduced in India?
भारत में किस एक्ट के आधार पर द्वैध शासन लागू किया गया?

(a) Government of India Act, 1909
गवर्नमेंट ऑफ इण्डिया एक्ट, 1909
(b) Government of India Act, 1919
गवर्नमेंट ऑफ इण्डिया एक्ट, 1919
(c) Government of India Act, 1935
गवर्नमेंट ऑफ इण्डिया एक्ट, 1935
(d) Government of India Act, 1947
गवर्नमेंट ऑफ इण्डिया एक्ट, 1947

Ans. : (b) The government of India Act, 1919 introduced diarchy, a system of dual government, in India. It divided the powers of the provincial government into two: the reserved and the transferred subjects. The reserved subjects were in the hands of the British, and the transferred subjects were left under the control of Indian ministers.

91. Which one of the following elements cannot displace hydrogen gas from a dilute acid?
निम्नलिखित में से कौन-सा तत्व, किसी तनु अम्ल से हाइड्रोजन गैस का विस्थापन नहीं कर सकता?

(a) Zinc/जस्ता
(b) Copper/ताम्र
(c) Magnesium/मैग्नीशियम
(d) Iron/लोहा

Ans. : (b) In the electrochemical series, the metals which are placed above the hydrogen are more reactive than hydrogen. So, they have the ability to displace hydrogen. For example, Na, Fe, Zn, etc.
• On the other hand, in the electrochemical series, the metals, which are placed below the hydrogen are less reactive than hydrogen. So, they cannot displace hydrogen. For example Cu, Hg, Ag, Au etc.
Reactivity series of metals:
K > Na > Ca > Mg > Al > Zn > Fe > Sn > Pb > H > Cu > Hg > Ag > Au
(Most reactive metal) → (Least reactive metal)

92. When an alkali-metal reacts with water, which one of the following gases is produced?
जब एक क्षार धातु जल से अभिक्रिया करती है, तो निम्नलिखित में से कौन-सी गैस उत्पन्न होती है?

(a) Hydrogen/हाइड्रोजन
(b) Oxygen/ऑक्सीजन
(c) Hydrogen peroxide/हाइड्रोजन परॉक्साइड
(d) Ozone/ओजोन

Ans. : (a) Alkali metals react with water and by the law of nature that dissolve thus making it soluble like water. They are highly reactive and affinity towards water increases down the group. Alkali metals in reaction with water produce energy, hydrogen gas and metal hydroxide.
Example $2 Na + 2 H_2O \rightarrow 2 NaOH + H_2$

93. Which of the following salts are insoluble in water?
निम्नलिखित में से कौन-से लवण जल में अघुलनशील हैं?

(a) Chlorides of Fe and Mn
Fe और Mn के क्लोराइड
(b) Nitrates of Ag and Pb/Ag और Pb के नाइट्रेट
(c) Carbonates of Pb and Cu
Pb और Cu के कार्बोनेट
(d) Phosphates of Na and NH_4
Na और NH_4 के फॉस्फेट

Ans. : (c) Insoluble salts are those ionic compounds that are not able to dissolve in water but form a suspension i.e. the salt continues to exist as solid rather than dissolving in liquid for e.g. All carbonates, hydroxides and oxides are insoluble with the exception of sodium, K, and ammonium salts.
• Carbonates of Pb and Cu are insoluble in water and are Heterogeneous mixture.

94. What is the composition of nitrolim-a chemical fertilizer?
रासायनिक उर्वरक नाइट्रोलिम में कौन-से घटक हैं?

(a) Nitrogen and limestone
नाइट्रोजन और चूना पत्थर

(b) Calcium carbide and nitrogen
कैल्सियम कार्बाइड और नाइट्रोजन

(c) Calcium carbide and carbon
कैल्सियम कार्बाइड और कार्बन

(d) None of the above/उपरोक्त में से कोई नहीं

Ans. : (b) When nitrogen is passed over calcium carbide at a suitable high temperature, we get a mixture called nitrolim which is a nitrogenous fertilizer, which is a mixture of calcium cyanamide and carbon.

$$CaC_2 + N_2 \xrightarrow{\Delta} \underbrace{\underset{\text{Calcium Cyanamide}}{CaCN_2} + \underset{\text{Carbon}}{C}}_{\text{Nitrolim}}$$

- Calcium cyanamide is a glossy powder used in agriculture as manure, herbicide, pesticide, and a defoliant for cotton plants.

95. Which one of the following glasses is used in bullet proof screens?
निम्नलिखित काँचों में से कौन-सा एक, गोली-रोक आवरण के लिए प्रयोग में लाया जाता है?

(a) Soda glass/सोडा काँच

(b) Pyrex glass/पाइरेक्स काँच

(c) Jena glass/जेना काँच

(d) Reinforced glass/प्रबलित काँच

Ans. : (d) Reinforced glass in used in bullet proof covers.
Bulletproof glass is a strong and optically transparent material that is particularly resistant to penetration by projectiles.

- Ordinary glass is a sodium solution (mixture) of silica, sodium silicate and calcium silicate. Sand, soda and quartz are used as raw materials in glass manufacturing.
- Soda glass is used for making tube light and bottles etc.
- Pyres glass is used for making laboratory equipment. Because it has a higher coefficient of thermal expansion and is heat resistant.
- Jena glass is used in chemical vessels and scientific experiments.

96. Which substance is used the setting action of cement?
सीमेन्ट के जमने की क्रिया को मन्द करने के लिए कौन-सा पदार्थ काम में लाया जाता है?

(a) CaO (b) Al_2O_3
(c) $CaSO_4.2H_2O$ (d) Na_2O+K_2O

Ans. : (c) The retarder is an admixture that slows down the chemical process of hydration so that concrete remains plastics and workable for a longer time than concrete without the retarder.

- Gypsum (Calcium Sulphate, its chemical formula $CaSO_4.2H_2O$) is used as grouting to retard the setting time.
- Cement as a binder material which is used for construction work.
- **Ingredient of cement:**

Lime = 60-65%
Silica = 17-25%
Alumina = 3-8%
Magnesia = 1-3%
Iron oxide = 0.5-6%
Calcium Sulphate = 0.1-0.5%
Sulphur Trioxide = 1-3%
Alkaline = 0-1%

97. What is a mixture of potassium nitrate, powdered charcoal and sulphur called?
पोटैशियम नाइट्रेट, चूर्णीकृत चारकोल और गन्धक के मिश्रण को क्या कहा जाता है?

(a) Glass/काँच

(b) Cement/सीमेन्ट

(c) Pant/पेन्ट

(d) Gun powder/गन पाउडर

Ans. : (d) Gun powder is a mixture that contains Sulphur, charcoal, and potassium nitrate (saltpeter) .Gun powder is also known as black powder. Sulphur and charcoal acts as fuel and the saltpeter in an oxidizer.
Reaction:
$2KNO_3(s) + S(s) + 3\,C(s) \rightarrow K_2S(s) + N_2(g) + 3CO_2(g)$
It's 75% by weight KNO_3, 15% charcoal and 10% sulphur.

98. In which one of the following is the valence electronic configuration, ns^2np^3 found?
निम्नलिखित में से किस एक में संयोजकता इलेक्ट्रॉनिक विन्यास ns^2np^3 मिलता है?

(a) Carbon/कार्बन (b) Oxygen/ऑक्सीजन
(c) Nitrogen/नाइट्रोजन (d) Argon/ऑर्गन

Ans. : (c) The general electronic configuration ns^2np^3 holds true for the nitrogen family which are the group 15 elements. These include N, P, As, Sb and Bi.
As all the given atoms have their atomic number and electronic configurations as follows.

- $_6C = 1S^2, 2S^2, 2P^2$
- $_8O = 1S^2, 2S^2, 2P^4$
- $_7N = 1S^2, 2S^2, 2P^3$
- $_{18}Ar = 1S^2, 2S^2, 2P^6, 3S^2, 3P^6$

Here, NS^2 nP^3 can only be seen in electronic configuration of Nitrogen

99. The molecular weight and equivalent weight of which one of the following is the same?
निम्नलिखित में से किस एक का आणविक भार और तुल्यांकी भार समान होता है?

(a) H_2SO_4 (b) $KMnO_4$
(c) $H_2C_2O_4$ (d) NaOH

Ans. : (d) The molecular weight and equivalent weight in sodium hydroxide (NaOH) are the same.

Equivalent weight $= \frac{\text{Molecular weight}}{\text{Number of replacable } OH^- \text{ (Acidity)}}$

Equivalent weight of NaOH $= \frac{23+16+1}{1} = \frac{40}{1} = 40$

and equivalent mass of NaOH = 40

Hence, equivalent weight of NaOH = equivalent mass of NaOH = 40.

100. Who of the following is a contemporary of Gautama Buddha?
निम्नलिखित में से कौन एक, गौतम बुद्ध का समकालीन है?

(a) Ashvaghosa/अश्वघोष
(b) Nagarjuna/नागार्जुन
(c) Parsvanath/पार्श्वनाथ
(d) Vardhmana Mahavira/वर्द्धमान महावीर

Ans. : (d) Gautama Buddha, the founder of Buddhism, and Vardhamana Mahavira, the founder of Jainism, were, contemporaries. Buddha was believed to be born around 563 B.C. in Lumbini. Mahavira was believed to be born around 540 B.C. in Vaishali.

- Vardhamana Mahavira, the 24th Tirthankara was born in village called Kundagrama near Vaishali (Bihar) while Gautam Buddha was born at a place called Lumbini, which is situated near the Indo-Nepal border.
- Gautuma Buddha attained Enlightenment (Nirvana) under the pipal tree on the day of Vaisakha Purnima. Today it is called bodhi tree which is located in Gaya, Bihar. Mahavira Swami attained Kaivalya knowledge under the sal tree located on the banks of the Rijupalika River near Jrambhika village in Bihar on Vaisakha Shukla 10.

101. Which one of the following dynasties built the Khajuraho temples?
निम्नलिखित में से किस एक राजवंश ने खजुराहो के मन्दिर बनवाए?

(a) Chandela/चन्देल (b) Chauhans/चौहान
(c) Paramaras/परमार (d) Tomars/तोमर

Ans. : (a) The famous Khajuraho temples were built by Chandela dynasty.

- They were made between 950 - 1050 AD.
- It is dedicated to two religions Hinduism and Jainism.
- It is placed in Chhatarpur district, M.P. This temples are famous for their symbolism of Nagar style architecture and erotic Sculptures.
- It is one of the UNESCO's world heritage site in India.
- Chola built the famous Brihadesvara Temple.

102. Between whom was the Battle of Khanwa (1527) fought?
खानवा का युद्ध (1527) किनके बीच लड़ा गया था?

(a) Ibrahim Lodi and Rana Sanga
इब्राहीम लोदी और राणा सांगा
(b) Babur and Rana Sanga/बाबर और राणा सांगा
(c) Humayun and Sher Khan/ हुमायूँ और शेरखान
(d) Humayun and Nusrat Shah
हुमायूँ और नुसरत शाह

Ans. : (b) The Battle of Khanwa took place near the village of Khanwa, about 60 km west of Agra, on 1527. The battle was fought between the first Mughal Emperor Babar and the Rajput king Rana Sanga of Mewar, after the first battle of Panipat. Babar's victory in the battle of Khanwa consolidation Mughal dynasty in India.

103. Which Sultan declared himself as Sikandar-i-Sani, the Second Alexander?
किस सुल्तान ने स्वयं को सिकन्दर-ए-सानी, दूसरा सिकन्दर, घोषित किया?

(a) Balban/बलबन
(b) Kaiqubad/कैकूबाद
(c) Iltutmish/इल्तुतमिश
(d) Alauddin Khalji/अलाउद्दीन खिलजी

Ans. : (d) Alauddin Khalji called himself as the "second Alexander". He was one of the most powerful emperors of the Khalji dynasty. He is known for the reforms in revenue and price policies.

• He was responsible for many administrative changes during his reign, also noted for repulsing the Mongol invasion in India. He had a dream of conquering the world, so in his coins, he started to depict himself as "Sikandar-i-Sani."

104. Other than Annie Besant, who among the following also launched a Home Rule Movement in india?
एनी बेसेन्ट के अतिरिक्त, निम्नलिखित में से किस एक ने भी भारत में होमरूल आन्दोलन चलाया?

(a) Aurobindo Ghosh/अरविन्द घोष
(b) Bal Gangadhar Tilak/बाल गंगाधर तिलक
(c) Gopal Krishna Gokhale/गोपाल कृष्ण गोखले
(d) Moti Lal Nehru/मोतीलाल नेहरू

Ans. : (b) The Home Rule Movement was launched under the leadership of Annie Besant and Bal Gangadhar Tilak.

• Bal Gangadhar Tilak constituted the first home rule league at Belgaun (Puna) in April, 1916.

• Annie Besant founded the second Home Rule league at Adyar Madras in September, 1916. In 1917, Annie Besant was arrested. She was the first woman president of the Kolkata session of INC in 1917.

• The Home rule movement spreads as the Indian independence movement form 1916-1918 with the goal of achieving dominion status for India and freedom from British rule.

105. Who prescribed the separate electorates for India on the basis of the Communal Award in August, 1932 ?
अगस्त, 1932में, साम्प्रदायिक अधिनिर्णय के आधार पर भारत के लिए अलग-अलग निर्वाचन क्षेत्र किसने निर्धारित किए?

(a) Lord Irwin/लॉर्ड इर्विन
(b) Ramsay MacDonald/रैमसे मैक्डोनल्ड
(c) Lord Linlithgo/लॉर्ड लिनलिथगो
(d) Winston Churchill/विन्सटन चर्चिल

Ans. : (b) On 16th August, 1932, it was announced by the British Prime Minister, Ramsay MacDonald to grant separate electorates in British India for the Forward caste, Lower caste, Muslims, Buddhists, Sikhs, Indian Christians, Anglo-Indians, Europeans, and untouchables Dalits), etc.

- In 1926, lord Irwin was appointed as a viceroy and Governor- general of India. During this period the important events were : Simon commission (1928), Nehru report (1928), Jinnah's 14 Points, Chittagong armoury Raid (1930), Civil disobedience movement, Dandi March (1930), first Round table conference, and Gandhi Irwin Pact, Demand for Poorna swaraja in Lahore session etc.
- Lord Linlithgo was viceroy of India from 1936 to 1944 and these eight years were the longest reign as viceroy of India. During this period, parts of the Government of India Act 1935 came into force in 1937.

106. Consider the following statements:
निम्नलिखित कथनों पर विचार कीजिए

1. Coal is a sedimentary rock.
कोयला अवसादी शैल है।

2. Basalt is an igneous rock.
बेसाल्ट आग्नेय शैल है।

Which of the statements given above is/are correct?
उपर्युक्त कथनों में से कौन-सा/स सही है/हैं?

(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2 दोनों
(d) Neither 1 nor 2/न तो 1 और न हीं 2

Ans. : (c) The sedimentary rocks often develop through layer and finally form on Earth's surface or close to the same. Sedimentary rocks are the result of deposition of fragment of rocks by exogenous process. This is also known as the secondary rocks. Example, Sandstone, shale,coal etc.

•Basalt is a dark colored, fine grained, igneous rock composed mainly of plagioclase and pyroxene mineral. It is most commonly forms as an extrusive rock, such as a lava flow, but can also form in small intrusive bodies, such as an igneous dike or a thin sill.

107. The National Highway No. 7 connects which of the following?
राष्ट्रीय राजमार्ग संख्या 7 निम्नलिखित में से किनको जोड़ती है?

(a) Mumbai with Varanasi/मुम्बई को वाराणसी से
(b) Delhi with Bhubaneshwar/दिल्ली को भुवनेश्वर से
(c) Delhi with Kanyakumari
दिल्ली को कन्याकुमारी से
(d) Varanasi with Kanyakumari
वाराणसी को कन्याकुमारी से

Ans. : (d) The NH in India are a network of trunk roads that are owned by the Ministry of Road Transport and Highways. It was constructed and managed by the NHAI, NHIDCL (National Highway and infrastructure Development corporation) and PWD of state government.

- The longest NH is India is NH-7 which is now called NH 44. It starts from Srinagar in north and terminated in Kanyakumari in south. Therefore, from the given option, the NH7 connects Varanasi to kanyakumari.
- It runs through the states of Uttar Pradesh, Madhya Pradesh, Maharashtra, Andhra Pradesh, Karnataka, and Tamil Nadu.

108. Port Blair-the capital of Andaman and Nicobar Islands, is located in which one of the following islands?
अण्डमान एवं निकोबार द्वीपसमूह की राजधानी पोर्ट ब्लेयर निम्नलिखित में से किस एक द्वीप में अवस्थित है?

(a) North Andaman/उत्तर अण्डमान
(b) Little Andaman/छोटा अण्डमान
(c) Middle Andaman/मध्य अण्डमान
(d) South Andaman/दक्षिण अण्डमान

Ans. : (d) Port Blair is the capital of Andaman and Nicobar Island, is located in South Andaman. They belongs to South Andaman administrative district, part of the Indian union territory of Andaman and Nicobar Islands.

• The southernmost point of India, Pygmalion Point (Indira Point) is located in Great Nicobar. The 10° channel separates the Andaman from Nicobar Islands.

109. In which one of the following regions are the Andes mountains located?
एण्डीज पर्वतमाला निम्नलिखित में से किस एक क्षेत्र में अवस्थित है?

(a) East Europe/पूर्व यूरोप
(b) West Europe/पश्चिम यूरोप
(c) South Africa/दक्षिण अफ्रीका
(d) South America/दक्षिण अमेरिका

Ans. : (d) The Andes is the largest continental range of mountains in the world. This mountain is located on South America's western side.

• The length of Andes Mountains is 7600 km or 4700 miles. This mountain is located along with seven countries. The width of the mountain is around 200 to 300 km. Mount Aconcagua is the highest peak of this mountain.

110. Which one of the following soils is most suitable for cotton cultivation?
कपास की खेती के लिए निम्नलिखित में से कौन-सी एक मृदा सर्वाधिक उपयुक्त है?

(a) Red soil/लाल मृदा
(b) Black soil/काली मृदा
(c) Loamy soil/दुमटी मृदा
(d) Laterite soil/लेटराइट मृदा

Ans. : (b) Black soil holds moisture for longer periods and possess rich quantities of humus. Block soil having clay character. Therefore, Black soils are most suitable for the cotton crop. Hence, it is also known as black cotton soil. Besides cotton, the soil is suitable for the cultivation of crops like-Wheat, groundnut, chilies, tobacco and Jwar.

- India is the second-largest producer of cotton in the world, which is a Kharif fiber crop that requires high temperate and rainfall of about 50-120 cm and can be grown in the region of Deccan plateau as well as up to some extent in alluvial soils of the Satluj-Ganga plain and red and laterite soils of the peninsular region.
- China leads the world in cotton production.

111. Among the following which State has highest level of literacy?/निम्नलिखित में से किस एक राज्य में साक्षरता का स्तर सर्वोच्च है?

(a) Mizoram/मिजोरम
(b) West Bengal/पश्चिम बंगाल
(c) Gujarat/गुजरात
(d) Punjab/पंजाब

Ans. : (a) Mizoram has the highest literacy rate among the given options.

• According to the Census 2011 top five literacy rate of state in India are

(1) Kerala	94.0%
(2) Lakshadweep	91.8%
(3) Mizoram	91.3%
(4) Goa	88.7%
(5) Himachal Pradesh	82.8%

• Bihar is the least literate state in India, with a literacy of 63.82%.

112. What are the Westerlies?
पछुवा हवाएँ (वेस्टरलीज) क्या है?

(a) Permanent winds/स्थायी पवन
(b) Seasonal winds/मौसमी पवन
(c) Local winds/स्थानीय पवन
(d) Variable winds/परिवर्तनशील पवन

Ans. : (a) Permanent winds are those which blow continuously in the same belt all through the year. They blow from high pressure belt to low pressure belts. There are three main types of planetary winds-

(i) Trade winds
(ii) Westerlies
(iii) Easterlies

- The Westerlies that blow in the mid latitudes between 30°-60° in both hemispheres (most commonly referred to as roaring forties, furious fifties and shrieking sixties)

Seasonal winds:- Seasonal winds and the winds that last for a particular season and are caused by the changes in temperature. It's are classified into three types monsoon, trade and prevailing westerlies.

Local winds:- Its are caused by the uneven heating of land and water. They are classified into four types sea breeze, land breeze, valley breeze and mountain breeze.

Variable winds:- Variation in the prevailing winds are caused by disturbances and changes in the local weather. Normally cyclones, anticyclones and storms form as a result of variable winds.

113. El Nino current appears along the coast of which one of the following?
एल नीनो धारा निम्नलिखित में से किस एक के तट पर आती है?

(a) Brazil/ब्राजील
(b) Peru/पेरू
(c) Alaska/अलास्का
(d) Western Australia/पश्चिमी ऑस्ट्रेलिया

Ans. : (b) El Nino, meaning "Child Christ" is a warm ocean current appearing along the Peru coast, generally in December. It normally happens once every 4-5 years though it is not fixed.

• It replaces the cold Peru Ocean current flowing along the Peru coast in normal years.

• EI Nino is a climate pattern that describes the unusual warming of surface waters in the eastern tropical pacific ocean.

114. Which among the following is the major item of export from Paradeep Port?
निम्नलिखित में से कौन-सी एक, पारादीप पत्तन से होने वाले निर्यात की प्रमुख मद है?

(a) Rice/चावल (b) Tea/चाय
(c) Fish/मछली (d) Iron ore/लौह-अयस्क

Ans. : (d) The Pradeep Port in Odisha will be developed into a world-class modern port.

- Pradeep Port Authority was established in 1966 as a single commodity port for iron ore exports. After the port is transformed, it can handle all kinds of import and export goods, including iron ore, chrome ore, aluminum ingot, coal, fertilizer raw materials, limestone, clinker, finished steel, and containers etc.
- This port has been developed to export iron and manganese from the Kiriburu region to Japan.

115. Indian Standard Time refers to the local time of which one of the following places in India?
भारतीय मानक समय, भारत के निम्नलिखित में से किस एक नगर के स्थानीय समय को निर्दिष्ट करता है?

(a) Allahabad/इलाहाबाद (b) Bhopal/भोपाल
(c) Delhi/दिल्ली (d) Lucknow/लखनऊ

Ans. : (a) The time along the standard Meridian of India (82°30'E), which passes through Mirzapur, near Allahabad is the standard time for the entire country.

- Indian standard Time is 5 hours 30 minutes ahead of Greenwich Mean Time (GMT + 5.5).
- ` The prime Meridian helps to define universal time and is the meridian from which all other time zones are calculated.

116. Which one of the following regions on the surface of Earth has Horse Latitudes?
भूपृष्ठ पर निम्नलिखित में से किस एक क्षेत्र में शान्त अक्षांश (हॉर्स अक्षांश) है?

(a) Equatorial low pressure belt
विषुवतीय निम्न दाब कटिबन्ध

(b) Sub-tropical high pressure belt
उपोष्णीय उच्च दाब कटिबन्ध

(c) Sub-polar low pressure belt
उप-ध्रुवीय निम्न दाब कटिबन्ध

(d) Polar high pressure belt
ध्रुवीय उच्च दाब कटिबन्ध

Ans. : (b) The extension of sub-tropical high pressure belt is found between 30° to 35° latitudes in both the hemispheres. Boat carrying horse in the Middle Ages found it extremely difficult to sail due to the calm atmospheric conditions here, so the horses had to be thrown out to sea to lighten the vessel. For this reason this belt was named Ashwa Latitude.

117. consider the following rivers:
निम्नलिखित नदियों पर विचार कीजिए

1. Betwa/बेतवा

2. Kosi/कोसी

3. Gandak/गण्डक

Which of the above joins Yamuna river?
उपर्युक्त नदियों में से कौन-सी, यमुना से जुड़ती है/हैं?

(a) 1 only/केवल 1 (b) 1 and 2/1 और 2
(c) 1 and 3/1 और 3 (d) 2 and 3/2 और 3

Ans. : (a) The Betwa is a river in central and Northern India, and a tributary of the Yamuna. It rises in the Vindhya Range (Raisen) just north of Narmadapuram in Madhya Pradesh and flows northeast through Madhya Pradesh and Orchha to Uttar Pradesh.

- The Kosi is a trans boundary river which flows through China, Nepal and India. It drains the northern slopes of the Himalayas in Tibet and the southern slopes in Nepal.
- Gandak River, also called Narayani River. This river in central Nepal and northern India. It is formed by the union of the Kali and Trisuli rivers, which rise in the Great Himalaya Range in Nepal.
- Kosi and Gandak river is the tributaries of the Ganges.

118. Which one of the following cell organelles is responsible for cellular respiration?
निम्नलिखित में से कौन-सा एक कोशिकांग, कोशिकीय श्वसन के लिए उत्तरदायी है?

(a) Endoplasmic reticulum/अन्तप्रर्द्रव्यी जालिका
(b) Golgi body/गॉल्जी काय
(c) Lysosome/लयनकाय (लाइसोसोम)
(d) Mitochondrium/माइटोकांड्रिया

Ans. : (d) Cellular Respiration is the process of extracting energy in the form of ATP from the glucose in the food cellular respiration is a three step
Process:- 1. Glucose is broken down in the cytoplasm of the cell.
2. The Pyruvate molecules are transported into the mitochondria.
3. The energy in the energy carries enters an electron transport chain During this step this energy is used to produce ATP.
• Mitochondria is a double membrane structure present in all aerobic eukaryotic cells. The outer membrane is permeable to small molecules. It allows the uptake of substrates and release of ATP. The inner membrane is semi permeable and is very rich in enzymes.

119. In which one of the following animal skin is a respiratory organ?
निम्नलिखित में से कौन-सा एक कोशिकांग, कोशिकीय श्वसन के लिए उत्तरदायी है?

(a) Cockroach/कॉकरोच (b) Frog/मेंढक
(c) Shark/शार्क (d) Whale/व्हेल

Ans. : (b) Skin works as a respiratory organ in frog. The frog has three respiratory surface on its body which it uses to exchange gas with its surroundings: the skin, in the lungs and on the lining of the mouth.

- In the cockroach, breathing happens through the spiracles a narrow opening on the side of the body. When oxygen-rich air enters the body of the cockroach through spiracles into the tracheal tubes, it spreads to various tissues and cells of the body.
- Gills are respiratory organs found in most aquatic organisms. It can be found in shark, Clownfish, Squid etc.
- Lungs are the breathing organ of whales.

120. Consider the following statements:
निम्नलिखित कथनों पर विचार कीजिए

In fern plants,/फर्न पौधो में,

1. vascular system is absent.
संवहन तन्त्र नहीं होता है।

2. reproductive organs are multi-cellular.
जननांग बहुकोशी होते हैं।

Which of the statements given above is/are correct?
उपर्युक्त कथनों में से कौन-सा/से सही है/हैं?

(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2 दोनों
(d) Neither 1 nor 2/न तो 1 और न ही 2

Ans. : (b) In ferns, vascular system is present and reproductive organs are multicellular. Most ferns are leafy plants that grow in moist areas under forest canopy. They are "Vascualr Plants" with well-developed internal vein structures that promote the flow of water and nutrients.

• Unlike the other vascular plants, the flowering plants and conifers, where the adult plants grows immediately from the speed, ferns reproduce from spores and an intermediate plant stage called a gametophytes.

121. Who was the First Foreign Minister of free India?
स्वतन्त्र भारत का प्रथम विदेशमन्त्री कौन था?

(a) Jawaharlal Nehru/जवाहरलाल नेहरू
(b) Guljari Lal Nanda/गुलजारी लाल नन्दा
(c) Lal Bahadur Shastri/लाल बहादुर शास्त्री
(d) Jan Mathai/जॉन मथाई

Ans. (a) The first Prime Minister of Independent India Jawaharlal Nehru also held the post of Foreign Minister. He is the longest serving Foreign Minister of India with approximately 17 years of tenure.

• The constitution of India was enacted in 1950, He started on an ambitious program of economic, social and political reforms. He also took an important and leading role in the Non-Aligned Movement in foreign policy. Jawaharlal Nehru was the first prime minister of independent India who is longest serving foreign minister of India.

122. Who among the following established Ferguson College at Pune in the year 1885?
पुणे में वर्ष 1885 में फर्ग्यूसन कॉलेज की स्थापना निम्नलिखित में से किसने की?

(a) Deccan Education Society
डेक्कन एजुकेशन सोसायटी
(b) Bhartiya Sewak Samaj/भारतीय सेवक समाज
(c) Samaj Sewa Sangh/समाज सेवा संघ
(d) Theosophical Society/थियोसोफिकल सोसायटी

Ans. : (a) Fergusson college was founded by the Deccan Education Society in 1885 at Pune. It was named after Sir James Fergusson, the Governor of Bombay. This city is known as Queen of Deccan.

• The Theosophical Society was founded by Madame Helena Blavastsky and Colonel Olcott in 1875 in New York. It was only 1879, that this ideology gained its roots in the Indian culture and society. It was crystallized in the Madras Presidency with its headquarters in Adayar. The movement was popularized by Annie Besant in India.

123. Who is the ex-officio Chairman of the Planning Commission of India?
भारत के योजना आयोग का पदेन अध्यक्ष कौन है?

(a) Vice-President of India/भारत का उपराष्ट्रपति
(b) The Prime Minister of India
भारत का प्रधानमंत्री
(c) The Finance Minister of India/भारत का वित्तमंत्री
(d) The Law Minister of India/भारत का विधिमन्त्री

Ans. : (b) After India achieved Independence, a formal model of planning was adopted, and accordingly, the planning commission, reporting directly to Prime Minister of India, was established on 15th March, 1950 with Prime Minister Jawaharlal Nehru as the chairman. Authority for the creation of the planning commission was not derived from the constitution of India. It is an arm of the central Government of India.

124. Consider the following statements:
निम्नलिखित कथनों पर विचार कीजिए–

1. Hariyali is a watershed devolopment project sponsored by the Central Government./हरियाली, केन्द्र सरकार द्वारा प्रायोजित एक जलसंभर विकास परियोजना है।
2. Hariyali also aims at enabling the urban population to conserve rain water.
शहरी जनता को वर्षा जल संरक्षण के लिए समर्थ बनाना भी हरियाली का एक लक्ष्य है।

Which of the statement given above is/are correct?
उपर्युक्त कथनों में से कौन-सा/से सही है/हैं?

(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2 दोनों
(d) Neither 1 nor 2/न तो 1 और न ही 2

Ans. : (a) Hariyali Yojana was started by the central Government in January, 2003. It is a watershed development project. Its main objective is implementation of water harvesting schemes, rain water harvesting, prevention of drinking water problem, tree plantation and promotion of fisheries.

• Watersheds where people's support is guaranteed through the contribution of labour, money ,material and forth for its improvement just as for the activity and upkeep of the resources made . When a watershed covers two or more villages it should be partitioned into village-wise sub watershed bound to the assigned villages.

125. The Nuclear Power Station Rawatbhata is in which State?
नाभिकीय शक्ति स्टेशन रावतभाटा, किस राज्य में है?

(a) Maharashtra/महाराष्ट्र
(b) Uttar Pradesh/उत्तर प्रदेश
(c) Rajasthan/राजस्थान
(d) Tamil Nadu/तमिलनाडु

Ans. : (c) The eight nuclear power station is located at Rawatbhata in Rajasthan. Rawatbhat also has one of the biggest dams in Rajasthan, called Rana Pratap Sagar Dam, which is on the Chambal river. This Nuclear Power station established in 1975.

• It was established in collaboration with the Government of Canada.
• Rawatbhata nuclear power plant is a 1240 MW capacity nuclear power plant.
• It is the second nuclear power plant in India.
• India's first major nuclear power plant is at Tarapur Maharashtra (established 1969).
• Tarapur nuclear power plant was established with the help of the USA.

126. What is the name given to an almost circular coral reef inside which there is a lagoon?
लगभग वृत्ताकार, बीच में अनूप (लगून) से युक्त, प्रवाल भित्ति को क्या नाम दिया गया है?

(a) Fringing reef/सीमान्त (फ्रिंजिंग) प्रवाल भित्ति
(b) Barrier reef/रोधिका (बैरियर) प्रवाल भित्ति
(c) Atoll/अडल (अटोल)
(d) Isthmus/इस्थमस

Ans. : (c) An Atoll is a ring-shaped coral reef, island, or series of islets. An Atoll surrounds a body of water called a lagoon. Sometimes, Atolls and Lagoons protect a central island. Channels between islets connect a lagoon to the open ocean or sea. Atolls develop with underwater volcanoes, called seamounts.

- Fringing reefs are reefs that grow directly from a shore. They are located very close to land and often form a shallow lagoon between the beach and the main body of the reef.
- Barrier reefs are extensive linear reef complexes that parallel a shore, and are separated from it by lagoon. This is the largest (in size, not distribution) of the three reefs (fringing, Barrier and Atoll).

127. Mahatma Gandhi Hydroelectric Project is on which river?
महात्मा गाँधी जल-विद्युत परियोजना किस नदी पर है?

(a) Godavari/गोदावरी (b) Sharavati/शरावती
(c) Cauvery/कावेरी (d) Krishna/कृष्णा

Ans. : (b) Jog falls is created by the Sharavati River dropping 253 m (830 ft), making it is the second-highest plunge waterfall in India..

- This power station was previously named Krishna Rajendra Hydroelelectric Project, after the King the Mysore at the time. The name was later changed to Mahatma Gandhi Hydroelectric Project.
- Mahatma Gandhi Hydroelectric Project is associated with the famous jog fall that is created by Sharavati River.

128. For which one of the following is Lamba in Gujarat, famous?
गुजरात में लांबा निम्नलिखित में से किस एक के लिए प्रसिद्ध है?

(a) Cultivation of oil yielding plants
तिलहन की खेती
(b) Wind power plant/पवन शक्ति संयन्त्र
(c) Oil refinery/तेलशोधक संयन्त्र
(d) Uranium enrichment plant
यूरेनियम संवर्धन संयन्त्र

Ans. : (b) Gujarat is famous for 'Lamba' wind power plant. India ranks fourth in wind power generation after China, America and Germany. India's wind power potential is about 33 GW. The government has set a target of generation 60 GW of wind power by 2022.

129. Consider the following statement:
निम्नलिखित कथनों पर विचार कीजिए–

1. Kandla Port is situated at the head of Gulf of Khambhat./काण्डला पत्तन, खम्भात की खड़ी के शीर्ष पर अवस्थित है।
2. Paradeep Port is situated in the Mahanadi Delta.
पारादीप पत्तन, महानदी डेल्टा में अवस्थित है।

Which of the statements given above is/are correct?
उपर्युक्त कथनों में से कौन-सा/से सही है/हैं?

(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2 दोनों
(d) Neither 1 nor 2/न तो 1 और न ही 2

Ans. : (b) Paradeep port is located on the delta of Mahanadi in Bay of Bengal in Odisha.

- The port is administered by the Paradeep Port Trust (PPT) which is an autonomous corporation wholly owned by the Government of India.
- Kandla, new officially Deendayal Port Authority, is a seaport and town in Kutch district of Gujarat state in Western India, near the city of Gandhidham.

130. Match List-I with List-II and select the correct answer using the codes given below the lists:
सूची I को सूची II के साथ सुमेलित कीजिए और सूचियों के नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए

	List-I/सूची I (coal fields of India)/ (भारत के कोयला क्षेत्र)		**List-II/सूची II (State)/ (राज्य)**
A	Jharia/झरिया	1.	Tamil Nadu तमिलनाडु
B	Raniganj/रानीगंज	2.	Odisha/ओडिशा
C	Talcher/तालचेर	3.	Jharkhand/झारखण्ड
D	Korba कोरबा	4.	West Bengal पश्चिम बंगाल
		5.	Chhattisgarh छत्तीसगढ़

Code/कूट:

	A	**B**	**C**	**D**
(a)	3	4	2	5
(b)	2	5	1	4
(c)	3	5	2	4
(d)	2	4	1	5

Ans. : (a) Coal field of India – State

(1) Jharia – Jharkhand
(2) Raniganj – West Bengal
(3) Talcher – Odisha
(4) Korba – Chhattisgarh

131. Which one of the following has recently made it to the Guinness Book of World records for being the world's largest Hindu temple complex?
निम्नलिखित में से कौन-सा एक, विश्व के वृहत्तम हिन्दू मन्दिर परिसर के रूप में गिनीज बुक वर्ल्ड रिकॉर्ड में हाल ही में शामिल किया गया है?

(a) Sri Venkateshvara Temple Complex, Tirupati
श्री वेंकटेश्वर मन्दिर परिसर, तिरूपति
(b) The ISKCON Temple complex, New Delhi
दि ISKCON मन्दिर परिसर, नई दिल्ली
(c) Swaminarayan Akshardham Temple Complex, New Delhi
स्वामीनारायण अक्षरधाम मन्दिर परिसर, नई दिल्ली
(d) Lingaraja Temple Complex, Bhubaneshwar
लिंगराज मन्दिर परिसर, भुवनेश्वर

Ans. : (c) The Swaminarayan Akshardham Temple in New Delhi has been included in Guinness Book of world Records in December 2007 as the world's largest Hindu Temple complex. This Temple was officially opened on 6th November 2005. It is spread over about 100 acres of land.

132. Where is the Counter insurgency and Jungle Warfare School (CIJWS), a training of the Indian Army specializing in unconventional warfare, specially guerilla warfare, located?
काउण्टर-इन्सर्जेन्सी एण्ड जंगल वारफेयर स्कूल (CIJWS) जो कि भारतीय सेना का अपारम्परिक युद्ध, विशेषत: गुरिल्ला युद्ध में विशेषज्ञता प्रदान करने वाला प्रशिक्षण संस्थान है, कहाँ अवस्थित है?

(a) Vairengte, Mizoram/वारेंग्ते, मिजोरम
(b) Kirkee, Pune/किरकी, पुणे
(c) Raiwala, Dehradun/रायवाला, देहरादून
(d) Dighi Hills, Pune/दिघी हिल्स, पुणे

Ans. : (a) The counter Insurgency and Jungle warfare School (CIJWS) in variegte, Mizoram. It is a training and research establishment of the Indian Army specializing in unconventional warfare, especially counter insurgency and guerrilla warfare.
- The idea to set up the Jungle warfare school was conceived by former Indian Army Chief Field Marshal S.H.F.J. Sam Manekshaw.

133. How is Ban-ki-Moon known as?
बान-की-मून को किस रूप में जाना जाता है?

(a) President of South Korea
दक्षिण कोरिया का राष्ट्रपति
(b) Head of World Bank/विश्व बैंक का अध्यक्ष
(c) A famous scientist of Genetic Engineering
आनुवंशिकी इन्जीनियरी का प्रसिद्ध वैज्ञानिक
(d) Secretory General of UN
संयुक्त राष्ट्र का महासचिव

Ans. : (d) 'Ban-ki-Moon' was eighth secretary General of the united Nations, serving two consecutive terms, from 1st January, 2007 to 31st December, 2016. As secretary-General, he focused on mobilizing world leaders around a set of new global challenges, from climate change and economic upheaval to pandemics and increasing pressures involving food, energy and water.
- Antonio Guterres is the current secretary General of the united Nations (UN). He is the ninth secretary-General, his term began 1st January, 2017. He was also started second terms from 1st January 2022 and ending on 2026.
- In UN the secretary general is appointed by General Assembly upon the recommendation of the security council. The current term of the secretary General is 5 years and held office for more than two terms.

134. Who among the following has been decleared as best footballer for the year 2007 by FIFA?
FIFA द्वारा निम्नलिखित में से किसे 2007 का सर्वोत्कृष्ट फुटबॉल खिलाड़ी घोषित किया गया है?

(a) Ronaldo/रोनाल्डो
(b) Kaka/काका
(c) Ronaldinho/रोनाल्डिन्हो
(d) Roberto Carlos/रोबर्टो कार्लोस

Ans. : (b) Brazilian midfielder Kaka won the 2007 FIFA world player of the year award, while another Brazilian. 'Marta' took home the women's award. Robert Lewandowaski won the best footballer for the year 2021.

135. In the year 2007, in which one of the following places was the "UN Framework Convention on Climate Change" held?
वर्ष 2007 में निम्नलिखित में से किस स्थान पर ''जलवायु परिवर्तन पर संयुक्त राष्ट्र का ढाँचा सम्मेलन'' (UN फ्रेमवर्क कन्वेन्शन ऑन क्लाइमेट चेंज) आयोजित हुआ था?

(a) Bali/बाली (b) Guam/गुआम
(c) Hawaii/हवाई (d) Seychelles/सेशेल्स

Ans. : (a) In the year 2007, United Nations Framework Convention on climate change (UNFCCC) was organized in Bali island of Indonesia. The UNFCCC is an international agreement, whose purpose is to control the emission of greenhouse gases in the atmosphere. This agreement was signed in June 1992 at the united Nations conference on Environment and development also known as the Earth summit, or the Rio summit or the Rio conference.
- The 27th session of the conference of the Parties (COP) was held in November , 2022 in Sharm E1 sheikh, Egypt.

136. Recently, the Inter-Governmental Panel on Climate Change shared the Nobel Prize with who of the following?
हाल ही में, जलवायु परिवर्तन पर अंतर-सरकारी पैनल (इन्टर-गवर्नमेंटल पैनल ऑन क्लाइमेंट चेंज) ने निम्नलिखित में से किसके साथ नोबेल पुरस्कार प्राप्त किया?

(a) Al Gore/अल गोर
(b) Ban-ki-Moon/बान-की-मून
(c) Bill Clinton/बिल क्लिंटन
(d) John Howard/जॉन हॉवर्ड

Ans. : (a) The Nobel Peace Prize 2007 was awarded jointly to Inter governmental Panel on climate change (IPCC) and Albert Arnold Gore.
• Noble peace Prize 2022 Winners List:

Nobel Prize Category	Nobel Prize Laureates	Awarded for
Peace Prize	1. Ales Bialiatski 2. Memorial Human Right Organization (Russia) 3. Center for civil Liberties Human Right organisation (Ukrainian)	For encouraging the right to criticize power and protect the citizen's fundamental rights.

137. Recently, in which one of the following countries did a large number of monks made protest marches against the government?
हाल ही में, निम्नलिखित में से किस एक देश में बड़ी संख्या में मठवासियों (मॉन्क) ने सरकार के विरूद्ध विरोध प्रदर्शित किया?

(a) Cambodia/कम्बोडिया (b) Japan/जापान
(c) Myanmar/म्यांमार (d) Vietnam/वियतनाम

Ans. : (c) Recently in Mayanmar, a large number of monks made protest marches against the government in favour of Aung Sang Su ki. The protests were triggered by the decision of the national military government to remove subsidies on the sales prices of fuel.

138. In which city is the Flushing Meadow. Corona Park-the venue of US open Tennis Tournament located?
यूएस ओपन टेनिस टूर्नामेंट का स्थल फ्लशिंग मेडोस-कोरोना पार्क कौन-से नगर में अवस्थित है?

(a) Chicago/शिकागो
(b) New York/न्यूर्याक
(c) Washington DC/वाशिंगटन डीसी
(d) Los Angeles/लॉस एंजिल्स

Ans. : (b) Since 1978, the tournament has been played on acrylic hard courts at the USTA Billie Jean King National Tennis centre in Flushing Meadows Corona Park, Queens, New York City.
Four Major Grand Slam:
(1) Australian open
(2) French open
(3) Wimbledon
(4) US open

139. Which country won the 2006 FIFA Cup (World Football Cup)?
2006 FIFA कप (विश्व फुटबॉल कप) कौन-से देश ने जीता था?

(a) France/फ्रांस (b) Brazil/ब्राजील
(c) Italy/इटली (d) Germany/जर्मनी

Ans. : (c) Italy won the tournament, claiming their fourth world cup title, defeating France 5-3 in a penalty shoot-out in the final after extra time had finished in a 1-1 draw.
• Argentina has won the FIFA World cup 2022 by defeating France in the Penalty shootout by 4-2.

140. Consider the following plants:
निम्नलिखित पादपों पर विचार कीजिए

1. Jasmine/चमेली
2. Sugarcane/गन्ना
3. Turmeric/हल्दी

Which of the above is/are propagated by vegetative method?
उपर्युक्त पादपों में से कौन-सा/से वानस्पतिक विधियों से प्रवर्धित किया जाता है/ किए जाते हैं?

(a) 1 only/केवल 1
(b) Both 1 and 2/1 और 2 दोनों
(c) Both 2 and 3/2 और 3 दोनों
(d) 1, 2 and 3/1, 2 और 3

Ans. : (d) Jasmine, Sugarcane and Turmeric Plants are produced by the use of piece of the stem called sets or cutting of the plant that contain at least one node. These cuttings contain a node because when placed and covered in the ground these hides will give rise to the Primary roots.
• Vegetative propagation is known to be the formation and growth of a new plant by asexual means or by a fragment of a plant.
• The propagation takes place without gamete formation and fertilization.
• Examples of vegetative propagation are the rhizome of ginger, the tuber of the potato, guava tree, etc.

141. In human body which one among the following is the largest in size?
मानव शरीर में निम्नलिखित में से कौन-सा एक, वृहत्तम आमाप का है?

(a) Thyroid/अवटुग्रन्थि (थाइरॉइड)
(b) Liver/यकृत
(c) Pancreas/अग्न्याशय
(d) Spleen/प्लीहा

Ans. : (b) Liver is the largest internal organ of the human body whereas the skin is the largest organ of the body.

- Liver is specified as the metabolically complicated organ in the human body since it performs functions. It is found below the ribs and the lungs in the upper right corner of the abdomen. Liver is the solid organ that weights approximately 1.6 kg which is greater than the weight of all the other internal organs of the human body.
- Liver secretes bile juice and proteins.

142. Which one of the following glands in human body enlarges due to goiter?
मानव शरीर में गलगण्ड (ग्वाइटर) के कारण निम्नलिखित में से कौन-सी ग्रन्थि बढ़ जाती है?

(a) Adrenal cortex
अधिवृक्क बल्कुट (एड्रीनल कॉर्टेक्स)
(b) Adrenal medulla
अधिवृक्क मध्यांश (एड्रीनल मेड्यूला)
(c) Pituitary/पीयूष
(d) Thyroid/अवटुग्रन्थि (थाइरॉइड)

Ans. : (d) Thyroid glands in human body enlarged due to Goiter. Goiter is caused due to deficiency of iodine. Thyroid disease is of two types namely:
(i) Hyperthyroidism
(ii) Hypothyroidism

- Pituitary gland (also known as hypothesis) is a small pea-sized gland located at the base of the brain below hypothalamus. It sits in its own little chamber under brain known as the sella turcica. It's a part of endocrine system and is in charge of making several essential hormones.

143. From the evolutionary point of view, which one among the following is the most primitive animal?
विकासवादी दृष्टिकोण से, निम्नलिखित में से कौन-सा एक, सर्वाधिक आदिम जन्तु है?

(a) Dolphin/डॉल्फिन
(b) Otter/ऊदबिलाव
(c) Turtle/कूर्म (कछुआ)
(d) Walrus/वालरस

Ans. : (c) According to the evolutionary point of view there is no new creation of any of the various types of organism currently exists in nature. They all originated at one time or another from relatively simple ancestors, as a result of the accumulation of slight changes over generations. Tortoise (Kurma) is the most primitive animal among the above options.
Its origin is believed to the 15.7 (Middle Jurassic period) million years ago, which is earlier than snakes and crocodiles.

144. Which one of the following insects spreads Kala-azar?
निम्नलिखित में से कौन-सा एक कीट कालाअजार फैलाता है?

(a) Fruit fly/फल मक्खी
(b) Tsetse fly/सी-सी मक्खी
(c) Sand fly/सिलका मक्खी
(d) Mosquito/मच्छर

Ans. : (c) Kala-azar which is also known as Leishmaniasis is an infection by a parasite (protozoan) Leishmania donovani. The vector for this parasite is sand fly, which transmits disease by biting. This disease lasts for a longer period and can be a lethal parasitic disease that influences important organs such as the liver, spleen, bone morrow and secondary circulation system.

145. Which one of the following diseases is caused by bacteria?
निम्नलिखित में से कौन-सा एक रोग जीवाणु के कारण होता है?

(a) Chicken Pox/छोटी माता
(b) Poliomyelitis/पोलियो
(c) Influenza/इन्फ्ल्युएन्जा
(d) Tuberculosis/तपेदिक

Ans. : (d) Tuberculosis is an air borne disease cause by the bacterial species Mycobacterium tuberculosis that most often affects out lungs.

- Polio is an infectious disease caused by a virus that can spread from person to person and cause paralysis
- Influenza is commonly known as flu. It is a contagious respiratory illness caused by influenza virus. It is an infection of the nose, throat, and lungs.
- Chickenpox is an infection caused by the varicella-zoster virus. It causes an itchy rash with small, fluid filled blisters.

146. Which one among the following is blind?
निम्नलिखित में से कौन-सा एक, अन्धा होता हैं?

(a) Bat/चमगादड़
(b) Echidna/एकिड्ना
(c) Flying squirrel/उड्डयन गिलहरी
(d) Slow Loris/स्लो लोरिस

Ans. : (a) Generally bats are not blind, but still their ears are more important than their eyes, because bats are nocturnal creatures, which hung with the help of sound wave in the dark of night. Bats can hear sound wave ranging from 2 Hz to 20,000 Hz. Bats create a special type of sound in the environment, which produces sound wave in the air, these waves collide with an obstacle and reach back to the bat. Through this, the bat gets to know the exact position of an obstacle. Bat is only mammal that can fly.

147. With which one of the following countries is "Orange Revolution" associated?
'ऑरेंज क्रान्ति' (रिवोल्यूशन) निम्नलिखित में से किस एक देश से सम्बद्ध है?

(a) Brazil/ब्राजील (b) Sudan/सूडान
(c) Turkey/तुर्की (d) Ukraine/यूक्रेन

Ans. : (d) Orange Revolution was a series of protests and political events that took place in Ukrain from late November 2004 to January 2005.

Directions: Each of the next THREE items consists of two statements, one labelled as the 'Assertion (A)' and the other as 'Reason (R)'. You are to examine these two statements carefully and select the answer to these items using the code given below:

निर्देश (प्रं. सं. 148-150)–आगामी तीन प्रश्नांशों में दो वक्तव्य हैं। एक को 'कथन (A)' तथा दूसरे को 'कारण (R)' कहा गया है। इन दोनों वक्तव्यों का सावधानीपूर्वक परीक्षण कर इन प्रश्नांशों का उत्तर नीचे दिए हुए कूट की सहायता से चुनिए:

Codes/कूट:

(a) Both A and R are individually true and R is the correct explanation of A/A और R दोनों सही हैं, और R, A का सही स्पष्टीकरण है
(b) Both A and R are individually true but R is not the correct explanation of A
A और R दोनों सही हैं, और R, A का सही स्पष्टीकरण नहीं है
(c) A is true, but R is false
A सही है, परन्तु R गलत है
(d) A is false, but R is true
A गलत है, परन्तु R सही है

148. Assertion (A): When water flows in a uniform horizontal pipe, there is a fall in pressure of water along the pipe.
कथन (A): जब जल एक समान क्षैतिज नली में बहता है, तो नली में जल के दाब में कमी आती है।
Reason (R): Force is required to maintain the motion of the liquid against friction.
कारण (R): घर्षण के विरुद्ध द्रव की गति को बनाए रखने के लिए बल आवश्यक होता है।

Ans. : (a) Bernoulli's Principle provides the relationship between the pressure (p) of fluid flowing at a height (h) of the container having kinetic and gravitational potential energy.

• It says that when a fluid is flowing horizontally, the points where the speed is higher exhibit low pressure, while the points where the speed is lower exhibit high pressure.

$$P + \frac{1}{2}\rho v^2 + \rho gh = \text{Constant.}$$

Where, ρ = Density of the fluid
v = Velocity of the fluid
h = Height of the container.
g = Acceleration due to gravity.

• Due to frictional force in the pipe, the speed as well as pressure inside the horizontal pipe reduces. To external force using pump/motor is needed to maintain the flow of water.

149. Assertion (A): If the filament of a light bulb is not uniform, its life is shortened.
कथन (A) : यदि प्रकाश बल्ब का फिलामेंट एकसमान न हो, तो इसकी आयु कम हो जाती है।
Reason (R): Resistance of glowing light bulb is less than that of bulb at room temperature.
कारण (R): दीप्त प्रकाश बल्ब का प्रतिरोध, कक्ष तापमान वाले बल्ब के प्रतिरोध से कम होता है।

Ans. : (c) If the filament is not uniform at a particular point due to the manufacturing defect, then the cross-sectional area A is less at that point. Lesser the area, more the resistance

$$\because \quad R = \frac{\rho \ell}{A}$$

More the resistance, more the heat dissipated (given by joule) law of heating $H = I^2 Rt$. So, more heat means there are higher changes of filament melting.

• Reason (R) The resistance of incandescent light bulb is less than that of room temperature bulb is not correct.

150. Assertion (A): The cotton industry in India suffered a major recession soon after the independence.
कथन (A) : स्वतन्त्रता प्राप्ति के बाद ही भारत में वस्त्र उद्योग में बड़ी मन्दी आ गई।
Reason (R) : Most of the cotton mills had gone to West Pakistan, India retaining the cotton growing areas.
कारण (R) : अधिकांश वस्त्र मिलें पश्चिमी पाकिस्तान में जा चुकी थीं, भारत में केवल कपास उगाने वाले क्षेत्र रह गए थे।

Ans. : (a) Partition of India in 1947 affected Indian cotton industry badly. Most of the weavers who were Muslims migrated to Pakistan.

• There were 394 cotton mills in India before partition, out of this 14 mills went to Pakistan. Remaining 380 mills which were left in India.
• However 40% cotton producing area became area of Pakistan. Thus India was forced to import raw cotton to keep the mills alive.

Union Public Service Commission NDA & NA 2008 (II)
National Defence Academy & Naval Academy
General Ability Test (GAT)
Solved Paper with Detailed Explanation [Exam Date: 17.08.2008

Section : English

- **Synonyms**

Directions (For the 9 items which) : Each of the following nine items of a word in capital letters, followed by four words. Select the word that is most similar in meaning to the word in capital letters.

1. PERPLEX

(a) Distract (b) Intrigue
(c) Perspective (d) Baffle

Ans. (d) : The word 'Baffle' is the correct synonym of 'Perplex'. Both words means- to make unable to grasp something clearly or to confuse very much.
Meaning of other words-
i) Distract means to divert or to draw away.
ii) Intrigue means make secret plan to harm, make someone very interested to known more.
iii) Perspective means a way of thinking about and understanding something.

2. HOSPITABLE

(a) Convivial (b) Liberal
(c) Congenial (d) Welcoming

Ans. (d) : The word 'Welcoming' is the correct synonym of 'Hospitable'. Both words have same meaning i.e. kind to visitors.
Meaning of other options-
i) Convivial means happy and friendly in a atmosphere or character.
ii) Liberal means kinds of behaviour, tolerant.
iii) Congenial means friendly and enjoying the company of others.

3. GAIETY

(a) Dexterity (b) Wonder
(c) Colourfulness (d) Jollity

Ans. (d) : The word 'Jollity' is the correct of 'Gaiety' . Both words means feeling of happiness.
Meaning of other options-
i) Dexterity means skill at doing things.
ii) Wonder means to want to know something ; a feeling of surprise.

4. SCARCELY

(a) Hardly (b) Always
(c) Sometimes (d) Frequently

Ans. (a) : The word 'Hardly' is the correct synonym of 'Scarcely. Both words means only just; almost not.

5. COUNTERFEIT

(a) Imitated (b) Duplicate
(c) False (d) Foreign

Ans. (c) : The word 'False' is the correct synonym of 'Counterfeit'. Both words means not genuine but copied so that it looks like the real things.
Meaning of other options-
i) Imitated means to copy i.e. behaviour of somebody/something etc.
ii) Duplicate means to copy.

6. DAZED

(a) Shocked (b) Dreamy
(c) Happy (d) Tired

Ans. (a) : The word 'Shocked' is the correct synonym of 'Dazed'. Both words means same i.e. unable to think or react normally or confused.
Meaning of other options-
i) Dreamy means seeming to be in a dream.

7. DISDAIN

(a) Disown (b) Condemn
(c) Hate (d) Criticize

Ans. (c) : The word 'Hate' is the correct synonym of 'Disdain'. Both words means the feeling that somebody/something is not good enough to be respected.
Meaning of other options-
i) Disown means reject.
ii) Condemn means to criticize something or someone strongly.

8. BEWITCHING

(a) Enchanting (b) Magical
(c) Affected (d) Ensnaring

Ans. (a) : The word 'Enchanting' is the correct synonym of 'Bewitching'. Both words means to attract and interest somebody very much.
Meaning of others option-
i) Affect means to have an influence on someone of something.
ii) Ensnaring means catch in or as in a trap.

9. RAPACITY

(a) Anger (b) Cruelly
(c) Pride (d) Greed

Ans. (d) : The word 'Greed' is the correct synonym of 'Rapacity'. Both words means a desire for more than you really need.
Meaning of other options-
(i) Cruelly means in an extremely unkind and unpleasant.
(ii) Pride means pleasure
(iii) Anger means a strong feeling that makes you want to hurt someone.

ORDERING OF WORDS IN A SENTENCE

Directions (For the 8 items which follow) : In the following items, some parts of the sentence have been jumbled up. You are required to rearrange these parts which are labeled (P), (Q), (R) and (S) to produce the correct sentence. Choose the proper sequence and mark in your Answer Sheet accordingly.

Example 'Z' has been solved for you.

The effect (P)/ is very bad(Q)/ on children of (R)/ of cinema(S)

Which one of the following is the correct sequence?

(a) P – S – R – Q (b) S – P – Q – R

(c) S – R – P – Q (d) Q – S – R – P

Explanation :

The proper way of writing the sentence is "It is well-known that the effect of cinema on children is very bad." This is indicated by the sequence P – S – R – Q and so (a) is the correct answer.

10. It is a privilege

to pay tax(P)/of every citizen(Q)/as well as the duty(R)/who is well-placed(S)

Which one of the following is the correct sequence ?

(a) R – P – S – Q (b) S – P – R – Q

(c) R – Q – S – P (d) S – Q – R – P

Ans. (c) : The correct sequence of these jumbled parts are RQSP.

11. It is not good

the wicked persons(P)/ to overthrow(Q)/ to accept (R)/ the righteous persons(S)

Which one of the following is the correct sequence ?

(a) R – S – Q – P (b) Q – S – R – P

(c) R – P – Q – S (d) Q – P – R – S

Ans. (c) : The correct sequence of these jumbled parts are RPQS.

12. Life is judged

and not by(P) /of work done(Q) /the longevity of years(R) / by the quality(S)

Which one of the following is the correct sequence ?

(a) Q – S – P – R (b) S – Q – R – P

(c) Q – S – R – P (d) S – Q – P – R

Ans. (d) : The correct sequence of these jumbled parts are SQPR.

13. When he learns that(P) /you have passed the examination(Q) /in the first division(R) /your father will be delighted(S)

Which one of the following is the correct sequence?

(a) Q – P – S – R (b) S – P – Q – R

(c) Q – R – S – P (d) S – R – Q – P

Ans. (b) The correct sequence of these jumbled parts are SPQR.

14. The journalist (P) /saw(Q) /countless number of the dead(R) /driving across the field of battle(S)

Which one of the following is the correct sequence?

(a) P – Q – S – R (b) P – Q – R – S

(c) P – S – Q – R (d) S – R – Q – P

Ans. (c) The correct sequence of these jumbled parts are PSQR.

15. Jane planned (P)/some stamps (Q) /to buy(R) /this afternoon(S)

Which one of the following is the correct sequence?

(a) P – R – Q – S (b) P – S – Q – R

(c) Q – R – P – S (d) Q – S – P – R

Ans. (a) : The correct sequence of these jumbled parts are PRQS.

16. Her mother

when she was(P) /hardly four years old(Q) /began to teach Neha(R) /English(S)

Which one of the following is the correct sequence?

(a) R – S – Q – P (b) S – R – P – Q

(c) R – S – P – Q (d) S – R – Q – P

Ans. (c) : The correct sequence of these jumbled parts are RSPQ.

17. Bill had(P) /a friend(Q) /an appointment(R) /to meet(S)

Which one of the following is the correct sequence?

(a) P – S – R – Q (b) P – R – S – Q

(c) Q – S – R – P (d) Q – R – S – P

Ans. (b) : The correct sequence of these jumbled parts are PRSQ.

- **ANTONYMS**

Directions (For the 9 items which follow) : Each of the following nine items consists of a word in capital letters, followed by four words. Select the word that is further in meaning to the word in capital letters.

18. EPHEMERAL

(a) Temporal (b) Stable

(c) Permanent (d) Earthfully

Ans. (c) : The word 'Ephemeral' means lasting or used for only a short period of time. So, from the given options its antonym is 'Permanent' which means lasting for a long time or forever.

Meaning of other words-

(i) Temporal means not spiritual life; relating to ordinary practical life.

(ii) Stable means steady; unlikely to change.

19. OBLIGATORY

(a) Doubtful (b) Voluntary

(c) Sincerely (d) Faithfully

Ans. (b) : The word 'Obligatory' means that you must do. From the given options its antonym is 'Voluntary' which means that done, made or given with one's own free will.

Meaning of other words–
(i) Doubtful means unlikely uncertain; not sure.
(ii) Sincerely means honestly or in a truthful wag.
(iii) Faithfully means in a loyal way or way that can be trusted.

20. CIRCUMSPECT
(a) Careless (b) Pusillanimous
(c) Reticent (d) Hostile

Ans. (a) : The word 'Circumspect' means very carefully. From the given options, its antonym is 'careless' means free from care.
Meaning of other options-
i) Pusillanimous means not brave or fearful or afraid.
ii) Reticent means quite or not speaking too much.
(iii) Hostile means relating to an enemy, unfriendly, not like something.

21. REPULSIVE
(a) Attractive (b) Colourful
(c) Unattractive (d) Striking

Ans. (a) : The word 'Repulsive' means not attractive or strong feeling of disgust. From the given options its antonym is 'Attractive' which, means pleases or interests you.
Meaning of other options-
(i) Striking means very noticeable, making a strong impression.

22. KINDLED
(a) Extinguished (b) Reduced
(c) Weakened (d) Ignited

Ans. (a) : The word 'Kindled' means to start a fire. From the given options its antonym is 'Extinguished' means to cause something to stop burning.
Meaning of other options-
(i) Reduced means to make something less or smaller.
(ii) Weakened means less strong.
(iii) Ignited means to start burning.

23. OBSCURE
(a) Suitable (b) Apt
(c) Thalamus (d) Clear

Ans. (d) : The word 'Obscure' means not easy to see or understand; not well known. So, from the given options its antonym is 'Clear'.
Meaning of other options-
(i) Suitable means right or appropriate.
(ii) Apt means suitable in a particular situation.
(iii) Thalamus is a part of a brain.

24. VITAL
(a) Trivial (b) Peripheral
(c) Optional (d) Superficial

Ans. (a) : The word 'Vital' means very important or necessary. From the given options its antonym is 'Trivial' which means a little important or unimportant.
Meaning of other options-
(i) Peripheral means marginal of secondary or minor importance.
(ii) Superficial means only on the surface not deep.

25. PENURY
(a) Education (b) Laziness
(c) Wealth (d) Ignorance

Ans. (c) : The word 'Penury' means lack of something (money etc). From the given options, its antonym is 'Wealth' which means a lot of money, property etc.

26. INHIBIT
(a) Pamper (b) Breed
(c) Accept (d) Promote

Ans. (c) : The word 'Inhibit' means forbid. From the given options its antonym is ' Accept'.
Means of other options-
(i) Pamper means to take care or make him/her feel comfortable.
(ii) Breed means reproduce.
(iii) Promote means to encourage something or to raise to a higher position or rank.

.....whether they belong to the higher groups such as human beings or to the lower groups such as animals, all beings primarily seek peace, comfort and security. Life is as dear to a mute creature as it is to a man. Even the lowliest insect strives for protection against dangers that threaten its life. Just as each one of us wants to live and not to die, so do all other creatures.

I. The author's main point is that
(a) different forms of life are found on earth
(b) different levels of existence are possible in nature
(c) peace and security are the chief goals of all living beings
(d) even the weakest creature struggles to preserve its life

J. Which one of the following assumptions or step is essential in developing the author's position ?
(a) All forms of life have a single overriding goal
(b) The will to survive of a creature is identified with a desire for peace
(c) All beings are divided into higher and lower groups
(d) A parallel is drawn between happiness and life, and pain and death

Explanation :
I. The idea which represents the author's main point is "peace and security are the chief goals of all living beings", which is response (c). So (c) is the correct answer.
J. The best assumption underlying the passage is "The will to survive of a creature is identified with a desire for peace," which is response (b). So (b) is the correct answer.

PASSAGE I

We have built up an energy intensive society such that hundreds of daily acts are dependent on having energy at our ready command. Most of that energy comes from fossil fuels, Yet, within two centuries we will have used up nearly all of the fossil fuel that has been built up over millions of years of earth time. Furthermore, the extraction and consumption of fossil fuels is a major polluter of our

environment. Our appetite for energy is seemingly insatiable. We are now searching for it in different places and using methods that inevitably upset and pollute the environment. Since fossil energy will soon be gone we are searching for alternative sources.

27. Today we are dependent on energy for everything. What is the most likely factor that contributes to this situation?

(a) Sufficient quantity of energy is available at present
(b) We have developed a society which makes intensive use of energy
(c) Energy is most convenient and easy to use
(d) We have no alternatives

Ans. (b) : This is clear from the first sentence of the given passage that option (b) "we have developed a society which makes intensive use of energy" is the correct answer.

28. The author seems to disapprove further extraction and consumption of fossil fuels. Which of the following is the most likely reason for that ?

(a) Further extraction of fossil fuel is a costly affair
(b) Further extraction and consumption of fossil fuel may lead to conflict between countries.
(c) We do not have the technical known - how for further extraction of fossil fuels
(d) Further extraction and consumption of fossil fuels will lead to world-wide environmental pollution

Ans. (d) : From the given passage, it is clear that option (d) is the correct answer.

29. According to the author, we are searching for alternative sources of energy. What is the most likely reason for this ?

(a) Alternative sources of energy are cheaper
(b) It is feared that fossil energy will soon be exhausted
(c) A number of alternative energy sources are easily available
(d) Alternative sources of energy will not cause any environmental problems.

Ans. (b) : This is clear from the last lines of the given passage that it is feared that fossil energy will soon be exhausted.

PASSAGE II

Books are, by far, the most lasting product of human effort. Temples crumble into ruins. Pictures and statues decay, but books survive. Time does not destroy the great thoughts which are as fresh today as when they first passed through their author's minds ages ago. The only effect of time has been to throw out of currency the bad products for nothing in literature can long survive but what is really good and of lasting value. Books introduce us into the best society; they bring us into the presence of the greatest minds that have ever lived, we hear what they said and did; we see them as if they were really alive, we sympathies with them, enjoy with them and grieve with them.

30. According to the passage, books live for ever because

(a) They have productive value
(b) Time does not destroy great thoughts
(c) They are in printed form
(d) They have the power to influence people

Ans. (b) : From the given passage it is clear that option (b) is the appropriate answer.

31. According to the passage, temples, pictures and statues belong to the same category because

(a) All of them are beautiful
(b) All of them are substantial
(c) All of them are likely to decay
(d) All of them are fashioned by men

Ans. (c) : From the given passage, option (c) is appropriate answer.

32. "Lasting value" in the passage means

(a) Something which has survival the passage of time
(b) Something which has been lose with the passage of time
(c) Something which has relevance for the present
(d) Something which had relevance for the past

Ans. (a) : From the given passage option (a) is the correct answer.

PASSAGE III

The pre-historic man perferred this area as three of his primary needs - water raw material for tool making and game in the thick jungles, were available here in plenty. Mr. Sharma found sites on top of hills where huge boulders have been cut flat. These flat rocks were found in a found formation. Probably they sat on these and there was a fire in the middle. It was also a site where the tools were made. It was like a national pastime. They made tools to throw at animals. There was little chance of killing them with one tool. Mr. Sharma says there are strong chances of finding fossils in the area.

33. Mr. Sharma is most probably working as

(a) A Civil Engineer (b) A Geographer
(c) An Archaeologist (d) A Tourist officer

Ans. (c) : From the given passage option (c) is the correct answer.

34. "There was little chance of killing them with one tool" implies that

(a) The animals were too clever
(b) The men did not known how to hunt
(c) The tools were not sophisticated enough
(d) The hunters wanted to use more than one tool

Ans. (c) : From the given passage Option (c) is the correct answer.

35. Which of the following does not describe the activities of the man as mentioned in the passage?

(a) Hunting animals (b) Lighting fires
(c) Cutting stones (d) Cultivating land

Ans. (d) : From the given passage, cultivated land is not discussed. So, option (d) is correct answer.

PASSAGE IV

A whole generation of Indians gave up everything and spent their lives in fighting the British in Gandhi's way without hurting, without violence, without hatred. The hope that India would one day be free kept them going through very difficult times and gave them courage. When millions of people want the same thing very much, it is a great force which even the most powerful army cannot oppose.

36. The demand for freedom became a 'great force'. What is the most likely reason for it?

(a) Great leaders gave the call for freedom
(b) Millions of people wanted to get freedom
(c) The British rule did not permit any freedom
(d) Freedom is a noble ideal

Ans. (b) : From the given passage option (b) is correct answer.

37. Which is the 'most powerful army' referred to in the passage?

(a) The powerful army of the Government of India
(b) The powerful army of the British
(c) Any powerful army fighting against the wishes of millions of people
(d) The army formed by the freedom fighters

Ans. (b) : From the given passage, option (b) is correct answer.

- **SPOTTING ERRRORS**

Directions (For the 5 items which follow) :

(i) In this section a number of sentences are given. The sentences are underlined in three separate parts and each one is labeled (a), (b) and (c). Read each sentence to find out whether there is an error in any underlined part. No sentence has more than one error. When you find an error in any one of the underlined parts (a), (b) or (c) indicate your response on the separate Answer Sheet at the appropriate space. You may feel that there is no error in a sentence. In that case letter (b) will signify a 'No error' response.

(ii) You are to indicate only one response for each item in your Answer Sheet. (If you indicate more than one response, your answer will be considered wrong.) Errors may be in grammar word usage or idioms. There may be a word missing or there may be a word which should be removed.

(iii) You are not required to correct the error. You are required only to indicate your response on the Answer Sheet.

Examples 'P' and 'Q' have been solved for you.

P. The young child(a) /singed(b) /a very sweet song(c) /No error(d)

Q. The young child(a) /very hard(b) /throughout the season(c) /No error(d)

Explanation :

In item P, the word 'singed' is wrong. The letter under this part is (b); so (b) is the correct answer. Similarly, for item Q, (d) is the correct answer, as the sentence does not contain any error.

38. I informed the principal(a) /that i was running temperature(b) /and therefore could not attend the meeting(c) /no error(d).

Ans. (b) There is an error in clause (b) of the given sentence 'running temperature' because it is an idiomatic use which means to have a fever. So the correct sentence is- 'I informed the principal that I was running a temperature and therefore could not attend the meeting'.

39. The lady was broken with grief (a) /when she heard the sad news of the train disaster(b) /in which her brother was killed(c) /No error.(d)

Ans. (a) : There is an error in clause (a) of the given sentence. 'Has broken' will be used in place of 'was broken'. The verb should be in the past perfect tense because the action 'killed' had taken place before she heard the news. So, the correct sentence is- "The lady has broken with grief when she heard the sad news of the train disaster in which her brother was killed".

40. The farmer is irrigating(a) /his fields(b) /since morning(c) / No error.(d)

Ans. (a) : There is an error in clause (a) of the given sentence. 'Has been' will be used in place of 'is' because this sentence use 'since' which shows that the sentence is in present perfect continuous tense. In present perfect continuous tense has/have been used as a auxiliary verb. So, the correct sentence is- 'The farmer has been irrigating his fields since morning'.

41. I could not(a) /answer to(b) /the question(c) /No error.(d)

Ans. (b) There is an error in clause (b) of the given sentence, 'To' is not used after the verb.
Rule: Infinitive 'to' is not used after the verb.
So, the correct sentence is - 'I could not answer the question'.

42. Two years passed (a) /since(b) /my cousin died(c) /No error(d)

Ans. (a) : There is an error in clause (a) of the given sentence. 'Two years have passed' will used instead of 'two years'.
So, the correct sentence is- 'Two years have passed since my cousin died'.

ORDERING OF SENTENCES

Directions (For the 8 items which follow) : In the following items, each passage consists of six sentences. The first sentence (S_1) and the final sentence (S_6) are given in the beginning. The middle four sentences in each have been removed and jumbled up. These are labeled P; Q, R and S. You are required to find out the proper sequence of the four sentences and mark accordingly on the Answer Sheet.

Example : 'X' has been solved for you.

X. S_1 : There was a boy named Jack.
S_6 : At last she turned him out of the house.
P : So the mother asked him to find work.
Q : They were very poor.
R : He lived with his mother.
S : But Jack refused to work.

Which one of the following is the correct sequence?

(a) R – Q – P – S (b) P – Q – R – S
(c) Q – P – R – S (d) R – P – S – Q

Explanation : The correct sequence in this example is R – Q – P – S which is marked by (a). Therefore, (a) is the correct answer.

43. **S_1: When you have to study for examination, you have many things to do.**
S_6: The final aim, of course, is to pass the examinatin that is two months away.
P : Suppose you have only two months to do it.
Q : The time - table tells you what you have to do everyday and for how many hours.
R : You have to read a number of books, learn tables and formulas.
S : Then the best way is to make a time table for yourself.
Which one of the following is the correct sequence ?

(a) R – P – S – Q (b) S – R – Q – P
(c) Q – R – S – P (d) P – S – Q – R

Ans. (a) : RPSQ is the correct sequence of the given sentence to form a meaningful passage.

44. **S_1 : The umpire has to do a lot of hard work before qualifying to supervise a match.**
S_6 : So an umpire must keep abreast of time and apply the rules as occasion demands.
P : However, umpires are human and are sometimes prone to make mistakes.
Q : The rules of the game are being constantly changed.
R : The players should gracefully and sportingly accept these mistakes.
S : He is aware of the responsibilities that go with the job.
Which one of the following is the correct sequence ?

(a) Q – P – R – S (b) S – P – R – Q
(c) S – R – P – Q (d) Q – R – P – S

Ans. (b) : SPRQ is the correct sequence of the given sentence to form a meaningful passage.

45. **S_1: Mohan came to the city to meet a friend.**
S_6: He should not have behaved so rudely.
P : Mohan asked her to join them for tea.
Q : Mohan's friend who had some grudge against Sheila quickly got up and left the restaurant without saying a word.
R : While they were having tea at a restaurant Sheila, a former fellow student of theirs, came in.
S : Though Sheila knew Mohan's friend was a bad fellow, she accepted the invitation.
Which one of the following is the correct sequence ?

(a) P – R – S – Q (b) R – P – S – Q
(c) P – R – Q – S (d) R – P – Q – S

Ans. (b) : RPSQ is the correct sequence of the given sentence to form a meaningful passage.

46. **S_1 : When the Romans invaded Britain about 2,000 years ago, their calendar was calculated on the phases of the moon.**
S_6 : The astronomer's name was Sosigenes and his calendar had a year of 365 days.
P : This calendar had gradually become so out of line with the seasons that it was two or three months behind.
Q : The Emperor Julius Caesar was determined to correct it.
R : Caesar had been to Egypt and seen the advantages of a calendar which used only the sun.
S : So he sought help from a Greek astronomer who lived in the Egyptian city of Alexandria.
Which one of the following is the correct sequence ?

(a) R – Q – P – S (b) P – Q – R – S
(c) P – S – R – Q (d) R – S – P – Q

Ans. (b) : PQRS is the correct sequence of the given sentence to form a meaningful passage.

47. **S_1 : Education is in great demand today in India.**
S_6 : Things have changed considerably now.
P : These people were accustomed to applying their intelligence to the profession of their fathers.
Q : Since independence it has spread to backward classes.
R :They had no idea that they could train themselves to do something else.
S : Besides this training they little book learning.
Which one of the following is the correct sequence ?

(a) P – Q – R – S (b) Q – P – R – S
(c) P – Q – S – R (d) Q – P – S – R

Ans. (d) : QPSR is the correct sequence of the given sentence to form a meaningful passage.

48. **S_1: There was once a king in India.**
S_6: The three sons did not know what to do and where to go.
P : The captain of the king's army wanted the kingdom for himself.
Q : He died leaving three sons.
R : The eldest of the three sons would have become the king.
S : So he drove the three sons away and took everything in the kingdom in his possession.
Which one of the following is the correct sequence ?

(a) P – R – Q – S (b) P – S – Q – R
(c) Q – S – P – R (d) Q – R – P – S

Ans. (d) QRPS is the correct sequence of the given sentence to form a meaningful passage.

49. **S_1 : An old man died and left his son a lot of money.**
S_6 : He became sad and lonely.
P : Soon he had nothing left.
Q : The son was a foolish young man
R : All his friends left him.
S : He quickly spent all his money
Which one of the following is the correct sequence ?
(a) S – Q – R – P (b) Q – S – P – R
(c) S – Q – P – R (d) Q – S – R – P

Ans. (b) : QSPR is the correct sequence of the given sentence to form a meaningful passage.

50. **S_1 : Siberian crane is a migratory bird.**
S_6 : They return to Siberia at the onset of summer in India.
P : They remain here for four-five months.
Q : Migrating birds are those which travel to other places for a period of time and then return.
R : They can't sustain in the severe winter of Siberia.
S : So during winters they travel thousands of miles to reach the bird sanctuary in Rajasthan in India.
Which one of the following is the correct sequence ?
(a) Q – R – S – P (b) Q – P – S – R
(c) S – R – Q – P (d) S – P – Q – R

Ans. (c) : SRQP is the correct sequence of the given sentence to form a meaningful passage.

Section : General Knowledge

51. **Who among the following was awarded to Ramon Magsaysay award in category of Journalism Literature and Creative Communication in 2007?**
निम्नलिखित में से किसे पत्रकारिता, साहित्य एवं सृजनात्मक संचार की कोटि में रेमन मैग्सेसे पुरस्कार 2007 दिया गया है?
(a) A Kejriwal/ए. केजरीवाल
(b) P. Sainath/पी. साईनाथ
(c) L. Ramdas/एल. रामदास
(d) V. Shanta/वी. शान्ता

Ans : (b) Palagummi Sainath was awarded to Ramon Magsaysay award in category of journalism literature and creative communication in 2007.
Ramon Magsaysay Award – it was established in 1957. It is named after the third president of the Republic of the Philippines – Ramon del fierro Magsaysay. It is considered Asia's premier prize and highest honour. It is regarded as Asia's Nobel Prize.
- Till 2009, Award were traditionally given five categories: Government service, public service, community leadership, journalism, literature and creative communication arts, and peace and international understanding. Since 2009, it is also given for Emergent leadership.
- The 2022, (64th) Ramon Magsaysay Awardees are (four people) Psychiatrist sothiara chhim (cambodia), ophthalmologist Tadashi Hattori (Japan), Pediatrician Bernadetter Madrid (Philippines) and activist and film producer-Gary Bencheghib (Indonesia).
- Former kerala health minister kk shailaja claimed that she has declined this year's (2022) Ramon Magsaysay Award.

52. **According to the International Food Policy Research institute Report 2007. India ranks which one of the following positions on the global hunger index?**
अन्तर्राष्ट्रीय खाद्य नीति अनुसन्धान संस्थान रिपोर्ट, 2007 के अनुसार वैश्विक भूख सूचकांक में भारत निम्नलिखित स्थानों में से किस एक पर है?
(a) 94 (b) 95
(c) 96 (d) 97

Ans : (a) According to the International food policy Research institute Report 2007. India ranks 94 positions on the global hunger index. In 2022, India ranked 107 out of 121 countries in global Hunger Index.
- GHI is a tool for comprehensively measuring and tracking hunger at global, regional and national levels. GHI scores are based on the values of four components indicators : undernourishment, child stunting, child wasting, child mortality.
- GHI is an annual report and each set of GHI scores uses data from a 5-year period.

53. **Match List-I with List-II and select the correct answer using the code given below the lists:**
सूची-I को सूची-II के साथ सुमेलित कीजिए और सूचियों के नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए

	List-I (Date) सूची I (तिथि)		List-I (Event) सूची II (घटना)
A	24th October 24 अक्टूबर	1.	Human Rights day मानवाधिकार दिवस
B	10th December 10 दिसम्बर	2.	Commonwealth day/राष्ट्र मण्डल दिवस
C	24th May 24 मई	3.	United Nations day/संयुक्त राष्ट्र दिवस
D	21st September 21 सितम्बर	4.	International day of peace/अन्तराष्ट्रीय शान्ति दिवस

Codes: कूट:

	A	B	C	D
(a)	4	1	2	3
(b)	3	1	2	4
(c)	3	2	1	4
(d)	4	2	1	3

Ans : (b)

	Date		Event
(A)	24thOctober	–	**3.** United Nations
(B)	10thDecember	–	**1.** Human Rights day
(C)	24thMay	–	**2.**Commonwealth day
(D)	21thSeptember	–	**4.** International day of peace.

54. Who among the following Indian origin immigrants has become the Governor of Louisiana province of the USA in 2007?
निम्नलिखित भारतीय मूल के प्रवासियों में से कौन वर्ष 2007 में यू एस ए के लुइसियाना प्रान्त का गवर्नर बना?

(a) Swaraj Paul/स्वराज पाल
(b) Laxmi Mittal/लक्ष्मी मित्तल
(c) Vikram Pandit/विक्रम पण्डित
(d) Bobby Jindal/बॉबी जिन्दल

Ans : (d) Bobby Jindal Indian immigrants has become the governor of Louisiana province of the USA in 2007. He served as the 55th Governor of Louisiana from 2008 to 2016.
Bobby Jindal is the first Indian American who served as the 55th Governor of Louisiana.
He previously served as a member of the U.S House of Representatives and chairman of the republican Governors Association.

55. Which of the following pairs are correctly matched?
निम्नलिखित में से कौन-से युग्म सही सुमेलित है?

1. Arundhati Roy : The God of Small Things
   अरून्धती राय : द गॉड ऑफ स्माल थिंग्स
2. Kiran Desai : The Inheritance of Loss
   किरण देसाई : द इन्हेरिटेन्स ऑफ लॉस
3. Jhumpa Lahiri : The Namesake
   झुम्पा लाहिड़ी : द नेमसेक

Select the correct answer using the codes given below/नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए

(a) 1, 2 and 3 (b) 2 and 3
(c) 1 and 3 (d) 1 and 2

Ans : (a) Arundhati Roy is an Indian author which won the Broker prize for fiction for the book 'The God of small things' in 1997.
- Kiran desai won the 2006 man Booker prize for her novel 'The Inheritance of Loss'
- Jhumpa Lahiri by name of Nilonjana sudeshna is an American author. she won the 2000, Pulitzer prize for fiction for her book 'Interpreter of Maladies'. The Namesake is a novel by jhumpa Lahiri that was first published in 2003.

56. Match List-I with List-II and select the correct answer using the code given below the list
सूची-I को सूची-II से सुमेलित कीजिए और सूचियों के नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए

	List-I/सूची I (Jnanpith Laureate) (ज्ञानपीठ पुरस्कार)		**List-II/सूची II (Language) (भाषा)**
A	Birendra Kumar Bhattacharya वीरेन्द्र कुमार भट्टाचार्य	1.	Bengali/बंगाली
B	Rahman Rahi रहमान राही	2.	Marathi/मराठी
C	Vinda Karandikar विन्दा करंदीकर	3.	Kashmiri/कश्मीरी
D	Mahasweta Devi महाश्वेता देवी	4.	Assamese/असमिया

Codes: कूट:

	A	B	C	D
(a)	4	3	2	1
(b)	1	2	3	4
(c)	1	3	2	4
(d)	4	2	3	1

Ans : (a)

Janapith Laureate		**Language**
(A) Birenra kumar Bhattacharya (15^{th})	**4.**	Assamese
(B) Rahman Rahi (40^{th})	**3.**	Kashmiri
(C) Vinda karandikar (39^{th})	**2.**	Marathi
(D) Mahasweta Devi (32^{th})	**1.**	Bengali

57. Who among the following is not a Dada Saheb Phalke award?
निम्नलिखित में से किसे दादा साहब फालके पुरस्कार नहीं मिला है?

(a) Shyam Benegal/श्याम बेनेगल
(b) Adoor Gopalakrisan/अदूर गोपालकृष्णन
(c) Mrinal Sen/मृणाल सेन
(d) J.P. Dutta/जे.पी. दत्ता

Ans : (d) The Dadasaheb phalke Award is India's highest award in the field of cinema. It is presented annually at the National film Award Ceremony by the Directorate of film festivals, an organization set up by the Ministry of Information and Broad casting.
- The Award was instituted by the government in 1969, and consists a 'Swarna Kaml' a cash priz of 10 lakh rupees, a certificate, a silk roll and a shawl.
- The award is presented by the president of India.
- The recipient is honoured for their "outstanding contribution to the growth and development of Indian cinema"
- In 2005, this award was given to Shyam Benegal, in 2004 given to Adoor Gopalakrisan and in 2003 given to Mrinal sen. But this award is not given to J.P Dutta.
- 52 recipient have received award as of 2022. The 68th dada Saheb phalke award for 2020 has been given to veteran actress Asha parekh. making her the 52nd recipient of the honour.

58. Who among the following was the Director of the film Kaal Purush, which was adjudged as the best feature film in the 53 National Film Awards (2007)?/निम्नलिखित में से कौन, कालपुरूष चलचित्र, जो 53वें राष्ट्रीय फिल्म पुरस्कार (2007) में सर्वश्रेष्ठ कथाचित्र के रूप में न्यायनिर्णीत की गयी, का निर्देशक था?

(a) Ritwik Ghatak/रित्विक घटक
(b) Buddhadev Dasgupta/बुद्धदेव दासगुप्ता
(c) J. P. Dutta/जे.पी. दत्ता
(d) Asit Sen/असित सेन

Ans : (b)
- The National film Award was established in 1954. In 53rd National film Award (2007), Kaal Purush was won the Best feature film award, which was directed by Buddhadev Dasgupta.
- Soorarai pottru (Tamil) won the best feature film award during 68th National film Award (2022).

59. Which one of the following is the highest mountain peak?/निम्नलिखित में से कौन-सी एक, सर्वोच्च पर्वत चोटी है?

(a) Nanga Parbat/नंगा पर्वत
(b) Nanda Devi/नन्दा देवी
(c) Kanchanjunga/कंचनजंघा
(d) K2/के 2

Ans : (d) The Himalayas are new and folded mountain ranges. Most of the world's highest mountain peak are located in this ranger including the Mount Everest (8,848m), the world's highest peak.

- The peaks given in the above options are also related to the Himalayan mountain range, whose heights are k-2 (8,611 m), kanchanjunga (8,598 m), Naga parbat (8, 126 m) and Nanda devi (7, 817 m) respectively.
- Therefore K_2 is the highest mountain peak from the given option.

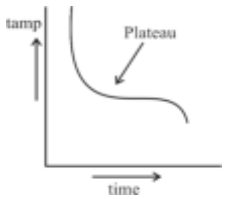
60. Who among the following sports personalities is known as the payyoli Express?
निम्नलिखित में से किस एक खेलकूद व्यक्तित्व को पायली एक्सप्रेस के नाम से जाना जाता है?

(a) Shiny Abraham/शाइनी अब्राहम
(b) P.T. Usha/पी.टी. ऊषा
(c) Jyotirmoyee Sikdar/ज्योतिर्मयी सिकन्दर
(d) K.M. Beenamol/के.एम. बीनामोल

Ans : (b) P.T Usha has been associated with Indian athletics. She is nicknamed the 'Payyoli Exprss', and 'Golden Girl. she was from calicut, kerla.

- She took six medals at the Asian championships held in Jakarta in 1985 (five gold and one bronze).
- She was won 4 Asian gold medals and 7 silver medals. she is often called "Queen of Indian track and field".
- Currently she is set to become the first woman president of IOA (Indian Olympic Association). she is also a member of Rajya sabha. P.t usha was retired in 2000 from the games.

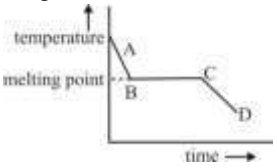
61.



A solid is melted (above the melting point) and allowed to cool down at normal condition. Its variation of temperature as a function of time is as shown in the figure given above. What is the reason for the plateau (flat position) in the central region of the cooling curve as shown in the figure?
एक ठोस को गलित किया जाता है (गलनांक के ऊपर) तथा सामान्य अवस्था पर ठण्डा किया जाता है। समय फलन के रूप में इसका ताप-विचरण ऊपर दिए गए चित्र में दर्शाए गए की तरह है। चित्र में दर्शाए गए की तरह शीतलन वक्र के मध्य क्षेत्र में प्लेटों (सपाट स्थिति) का कारण क्या है?

(a) Latent heat of fusion of the solid
ठोस के संगलन की गुप्त ऊष्मा
(b) Specific heat of the solid
ठोस की विशिष्ट ऊष्मा
(c) Thermal conductivity of the solid
ठोस की ऊष्मा चालकता
(d) Thermal capacity of the solid
ठोस की ऊष्मा धारिता

Ans : (a) Cooling curve – when a solid substance is heated until it is completely melted and then heated and allowed to cool slowly, the curve obtained between temperature and time is known as the cooling curve.



cooling were of a curve substance

- Between A and B, there is no change of state.
- Between B and C, there is a change of state going on from liquid to solid due to latent heat of fusion.
- Between C and D, the substance is totally in the solid state.
- Therefore a solid is melted (above the melting point) and allowed to cool down at normal condition Latent heat of fusion was the reason for the plateau (flat position) in the central region of the cooling curve.
- Latent Heat of fusion is the heat consumed or discharged when matter melts. changing stage from solid to fluid structure at a consistent temperature.

62. If a body travels half the distance with velocity v_1 and next half with velocity v_2, then which one of the following will be the average velocity of the body?
यदि एक पिण्ड आधी दूरी वेग v_1 के साथ चलता है तथा अगली आधी दूरी वेग v_2 के साथ चलता है, तो निम्नलिखित में से कौन-सा एक, पिण्ड का औसत वेग होगा?

(a) $\sqrt{v_1 v_2}$ (b) $\frac{v_1 + v_2}{2}$
(c) $\frac{v_2}{v_1}$ (d) $\frac{2v_1 v_2}{v_1 + v_2}$

Ans : (d) Let us consider, the total distance covered by the body is 'D'.
If the body travels half the distance with velocity 'v'
Then time $(t_1) = \frac{\text{Distance}}{\text{speed}}$

$$t_1 = \frac{D/2}{V_1}$$

$$t_1 = \frac{D}{2v_1} \text{ -----(i)}$$

Next half travel with velocity 'V_2'. then time-

$$\frac{D}{t_1 + t_2}$$

$$t_2 = \frac{D}{2v_2} \quad \text{----(ii)}$$

we know that,

$$\text{Average velocity} = \frac{\text{total distance}}{\text{total time}} = \frac{D}{t_1 + t_2}$$

put the value of t_1 and t_2

$$\text{Average velocity} = \frac{D}{\frac{D}{2v_1} + \frac{D}{2v_2}} = \frac{D}{\frac{Dv_2 + Dv_1}{2v_1 v_2}}$$

$$\text{Hence, Average velocity of Body} = \boxed{\frac{2v_1 v_2}{v_1 + v_2}}$$

63. What is the correct sequence in which the lengths of the following units increase?
निम्नलिखित इकाइयों का, उनकी बढ़ती हुई इकाई के क्रम में सही अनुक्रम क्या है?

1. Angstrom/ऐंग्स्ट्राम 2. Micron/माइक्रोन
3. Nanometer/नैनोमीटर

Select the correct answer using the codes given below:
नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए

(a) 1–2–3 (b) 3–1–2
(c) 1–3–2 (d) 2–3–1

Ans : (c) 1Angstrom (A°) = 10^{-10}m.
1Nanometer (nm) = 10^{-9}m
1Micron (μ) = 10^{-6}m
Angstrom < nanometer < micron. All the above three units are the units of length. their correct sequence in increasing order is

64. Which one of the following is the unit of activity of a radioactive source?
एक रेडियो सक्रिय स्रोत की सक्रियता की इकाई निम्नलिखित में से कौन-सी एक है?

(a) Lux/लक्स (b) Becquerel/बेकेरेल
(c) Tesla/टेस्ला (d) Siemens/सीमेंज

Ans : (b) The unstable nucleus tries to attain a stable state by emitting alpha, beta or gamma particles. Also energy is released during this process. This process is known as radioactivity or radioactive decay.

- The SI unit of radioactivity is Becquerel (Bq) and this term is named after Henri Becquerel.
  1 Becquerel = 1 radioactive decay per second = 2.703×10^{-11}Ci.
- Illuminance is defined as the total luminous flux of light incident per unit area. The S.I unit of the Illuminance is the Lux (lx).
- The magnetic flux density is the number of lines of force Passing, through a unit of material's. The S.I unit of the magnetic flux density is Tesla (T)

$$1 \text{ Tesla} = \frac{\text{weber}}{m^2}$$

- The Siemens is the SI unit of electrical conductance.

65. Flow velocities in an incompressible flute can be measured with which one of the following?
एक असंपीड्य तरल में प्रवाह-वेग का मापन निम्नलिखित में से कौन-सी एक है?

(a) Barometer/वायुदाबमापी
(b) Venturi tube/वैन्चुरी नली
(c) Strain gauge/विकृतिमापी
(d) Manometer/मैनोमीटर

Ans : (b) Flow velocities in an incompressible fluid can be measured by venturi meter. The venturi tube or venturimeter is an instrument for measuring with accuracy the flow rate of fluids in pipes.

- **Venturi meter –** Venturimeter is a type of flowmeter to measure the flow rates of fluid inside a pipe. It works on the principle of Bemoulli's Equation.
- **Barometer –** A barometer is an instrument used for measuring atmospheric pressure.
- **Strain gauge –** It is an electrical sensor, they are used to measure and monitor strain.
- **Manometer –** It is defined as an instrument used for measuring the pressure of a liquid.

66. The simple harmonic motion of a particle is given by y = 3 sin ωt + 4 cos ωt. What one of the following is the amplitude of such motion?
किसी कण की सरल आवर्ती गति y=3 sin ωt+4 cos.ωt. के द्वारा दी गई है। इस गति का आयाम निम्नलिखित में से कौन-सा है?

(a) 1 (b) 5
(c) 7 (d) 12

Ans : (b) Given that,

$$y = 3 \sin \omega t + 4 \cos \omega t \quad \ldots. (1)$$

Equation of general form of SHM is given by-

$$y = a \sin(\omega t + \theta)$$

$$y = a \cos\theta . \sin \omega t + a \sin\theta . \cos \omega t \quad \ldots.(2)$$

Compare equation (1) and (2) where, A Amplitude

$$A \cos\theta = 3$$

$$A \sin\theta = 4$$

Both side squaring then adding we get,

$$a^2 \sin^2\theta + a^2 \cos^2\theta = (4)^2 + (3)^2$$

$$a^2 (\sin^2\theta + \cos^2\theta) = 25$$

$$(\because \sin^2\theta + \cos^2\theta = 1)$$

$$a^2 = 25$$

amplitude(a) = 5

67. A pendulum clock is set to give correct time at the sea level. The clock is moved to a hill station at an altitude 'h' above sea level. In order to keep correct time on the hill station which one of the following adjustments is required?
एक लोलक घड़ी को समुद्र-तल पर सही समय देने के लिए निर्धारित (set) किया जाता है। घड़ी को एक पहाड़ी स्थल पर ले जाया जाता है, जिसकी समुद्र-तल के सापेक्ष तुंगता h है। पहाड़ी स्थल पर सही समय रखने के लिए निम्नलिखित समायोजनों में से किस एक की आवश्यकता है?

(a) The length of the pendulum has to be reduced/लोलक की लम्बाई को कम करना पड़ता है
(b) The length of the pendulum has to be increased/लोलक की लम्बाई को बढ़ाना पड़ता है
(c) The mass of the pendulum has to be increased/लोलक के द्रव्यमान को बढ़ाना पड़ता है
(d) The mass of the pendulum has to be reduced लोलक के द्रव्यमान को कम करना पड़ता है

Ans : (a) The time period of a pendulum is given by,

$$T = 2\pi\sqrt{\frac{L}{g}}$$

where, L = length of the pendulum
g = acceleration due to gravity
we can say that,

$$T \propto \sqrt{\frac{L}{g}}$$

.At high altitudes, the value of 'g' decreases. Since the time period of the pendulum will increase at high altitude. In order to keep correct time on the hill station (high altitude), that is length of the pendulum has to be reduced. This type of adjustment is required.

68. In which of the following cases ohm's law is not valid?
निम्नलिखित में से किस एक में ओम नियम वैध नहीं है?
(a) Wire bound resistor/तार आबद्ध
(b) Potentiometer/विभवमापी
(c) Junction diode/सन्धि-डायोड
(d) Electric bulb/विद्युत बल्ब

Ans : (c) Ohm's law – It states that the electric current is directly proportional to the voltage.

$$V \propto I$$
$$V = IR$$

where, R = Resistance.

Ohm's limitation - The law is not applicable to unilateral network. Unilateral network allow the current to flow in one direction for e.g diode, transistor etc.

- It is also not applicable to non-linear elements. For e.g. Thyristor.
- Therefore Ohm's law is not valid for junction diode.

69. Which one of the following is produced by rain water action?
निम्नलिखित में से कौन-सा एक वर्षा जल की क्रिया से बनता है?
(a) Gorge/महाखड्ड (b) Cliff/भृगु
(c) Gully/अवनलिका (d) Dome/गुम्बद

Ans : (c) Gully Erosion – It is the removal of soil by running water with the formation of channels that cannot smoothed out completely by normal cultivation.
• It may occurs as a result in continuous and heavy rain fall. It also caused by mining activities and by farming and uncontrolled grazing practices, it breaks up soil and softens the overall structure.

Water erosion – it is the detachment, transportation and deposition of soil particles by the force of water from one place to another. There are four forms of water erosion-
• Rain splash Erosion
• Sheet Erosion
• Rill Erosion
• Gully Erosion

70. Which of the following statements is/are correct with regard to lines of latitude?
निम्नलिखित में से कौन-सा/से कथन आक्षांश रेखाओं के सन्दर्भ में सही है/हैं?
1. They are concentric circles numbered from 0° to 90°
वे 0° से 90° तक संख्याकित संकेन्द्री वृत है।
2. They are circles on a globe which are parallel to the Equator and which are to the North and South of the Equator
वे भूमण्डल पर वृत्त हैं, जो विषुवत वृत्त के समान्तर है ओर जो विषुवत वृत के उत्तर और दक्षिण में हैं।
Select the correct answer using the code given below:
नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए
(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2 दोनों
(d) Neither 1 nor 2/न तो 1 और न ही 2

Ans : (c) Line of latitude–It is also called parallels of latitude. Because all of these lines are parallel to each other.
• Latitude is the angular distance of a print north or south of the equator as measured in degrees.
- All latitudes are parallel to each other.
- The distance between two latitude is approximately 111 km.
- The 0° latitude is referred to as the equator and 90° as the poles.
- On a globe, parallels of latitude appear as circles.

Both the statement regarling to lines of latitude is correct therefore option 'c' is correct

71. Which of the following statements is are correct with regard to Milky Way?
निम्नलिखित में से कौन-सा/से कथन आकाश गंगा के सन्दर्भ में सही है/हैं?
1. It is a spiral galaxy/यह कुण्डलिति मंदाकिनी है।
2. The solar system resides in one of its spiral arms/सौर प्रणाली इसकी कुण्डलित भुजाओं में से एक में स्थित है।
Select the correct answer using the codes given below:
नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए
(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2 दोनों
(d) Neither 1 nor 2/न तो 1 और न ही 2

Ans : (c) Our solar system is a part of milky way galaxy. In ancient India, it was imagined to be a river of light flowing in the sky.
Thus it was named 'akash Ganga'

- The milky way is a huge collection of stars, dust and gas. It is a barred spiral galaxy.
- The solar system is located on one of these spirals, called the Orion Arm.

72. Which one of the following pairs is not correctly matched?
निम्नलिखित में से कौन-सा एक युग्म सही सुमेलित नहीं है?

	Month/ महीना	Position of Sun/ सूर्य की स्थिति
(a)	June/जून	Midday Sun overhead at Tropic of Cancer/दिन के मध्य में सूर्य कर्क रेखा पर सिर के ऊपर होता है।
(b)	December दिसम्बर	Midday Sun overhead at Tropic of Capricorn/दिन के मध्य में सूर्य मकर रेखा पर सिर के ऊपर होता है।
(c)	March/मार्च	Midday Sun overhead on Equator/दिन के मध्य में सूर्य विषुवत रेखा पर सिर के ऊपर होता है।
(d)	September सितम्बर	Midday Sun overhead on Arctic Circle/दिन के मध्य में सूर्य उत्तरी ध्रुवीय वृत्त पर सिर के ऊपर होता है।

Ans : (d) The equator is an imaginary line dividing .Earth into northern Hemisphere and southern Hemisphere Another imaginary line down straight through Earth connecting North Pole to South Pole is axis of rotation of Earth. These are called longitudes & lines parallel to equator are called latitudes. One of the latitude in Northern Hemisphere is called tropic of cancer at 23.5º latitude and one in Southern Hemisphere is called Tropic of Capricorn at – 23.5 º latitude.

- On June 21 (Summer solstice), the sun is directly overhead at noon in Northern Hemisphere on the Tropic of Cancer.
- On December 21 (Winter solstice), the sun is directly overhead at noon in Southern Hemisphere on the Tropic of Capricorn.
- The sun is directly overhead at high - noon on the equator twice a year at the two equinoxes. Spring or Vernal equinox is usually at 20-21 March and fall or Autumnal equinox is usually 21-22 September.

73. Foucault experiment is proof of which one of the following?/निम्नलिखित में से किस एक को फौकॉल्ट प्रयोग प्रभावित करता है?

(a) Revolution of Earth/पृथ्वी का परिक्रमण
(b) Rotation of Earth/पृथ्वी का घूर्णन
(c) Rotation of Moon/चन्द्रमा का घूर्णन
(d) Revolution of Moon/चन्द्रमा का परिक्रमण

Ans : (b) The Foucault pendulum is named for the French physicist jean Foucault, who first used it in 1851 to demonstrate the rotation of earth. This experiment is Foucault experiment.

- In this experiment a long and heavy pendulum suspended from the high roof above a circular area was monitored over an extended time period showing that the plane of oscillation rotated.
- Therefore, Foucault experiment is proof of Rotation of earth.

74. Which one of the following is the time required for the Earth to return to a given point in its orbit with reference to fixed star, called?
स्थिर तारों के सन्दर्भ में पृथ्वी द्वारा अपनी कक्षा में किसी दिए गए बिन्दु पर वापस आने के लिए लिया गया समय निम्नलिखित में से कौन-सा एक है?

(a) Lunar year/चन्द्र वर्ष
(b) Solar year/सौर वर्ष
(c) Tropical year/सायन वर्ष
(d) Sidereal year/नक्षत्र वर्ष

Ans : (d) Sidereal years – The time in which the earth completes one revolution in its orbit around the sow measured with respect to the fixed stars. The mean time of sidereal year is 365 days, 6 hours, 9 minutes and 10 seconds.
Lunar year – The moon completes one revolution on its axis in 29 day, 12 hours and 44 minutes. This period is called (lunation). since the period of 12 such lanations is called lunar year.
Tropical year – It is time it takes the earth to complete a full orbit around the sun. It is also called solar year.

75. Which one of the following remains constant while throwing a ball upward?
जब एक गेंद को ऊपर की तरफ फेंका जाता है, तो निम्नलिखित में से कौन-सा एक स्थिर रहता है?

(a) Displacement/विस्थापन
(b) Kinetic energy/गतिज ऊर्जा
(c) Acceleration/त्वरण
(d) Velocity/वेग

Ans : (c) Acceleration due to gravity remains constant while throwing a ball upward. The value of acceleration due to gravity (g) is 9.8 m/sec^2. It is apply in opposite direction of motion.

- When a ball is thrown vertically upwards. the kinetic energy of the ball. But the total energy of the ball remains constant.
- From the given option. acceleration remain constant while throwing a ball upward.

76. A proton and an electron having equal velocity are allowed to pass through a uniform magnetic field. Which one of the following statements is correct in this connection?
समान वेग वाले एक प्रोट्रान और एक इलेक्ट्रान को एक समान चुंबकीय क्षेत्र से गुजरने दिया जाता है। इस संबंध में निम्नलिखित में से कौन कथन सही है?

(a) The proton and the electron experience equal and opposite force/प्रोटॉन तथा इलेक्ट्रॉन पर समान और विपरीत बल होते हैं

(b) The proton experiences greater force than does the electron
इलेक्ट्रॉन की अपेक्षा प्रोटॉन पर अधिक बल होता है

(c) The electron experiences more than does the proton
प्रोटॉन की अपेक्षा इलेक्ट्रॉन पर अधिक बल होता है

(d) No moving charge particle experiences a force in a magnetic field/एक चुम्बकीय क्षेत्र में किसी भी गतिमान आवेशित कण पर कोई बल नहीं होता

Ans : (a) When an electric charge moves in a uniform magnetic field. a force starts acting on it. It is explained by Lorentz.

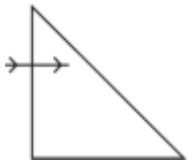
According to Lorentz formula,

$F = qvB \sin\theta$

where, q = charge
V = velocity
B = magnetic field.

If a proton and an electron having equal velocity, with uniform magnetic field. Therefore, force will be equal for Both proton and an electron. But proton having positive charge and electron having negative charge. Therefore, opposite forces act on them.

77.



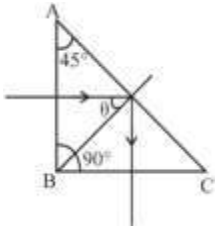
A ray of light is incident normally on one of the faces of right angled isosceles prism as shown above. It undergoes total internal reflection from hypotenuse. Which one of the following is the minimum refractive index of the material of the prism?

प्रकाश की एक किरण ऊपर दर्शाए गए की तरह एक समकोणीय समद्विबाहु प्रिज्म के एक फलक पर अभिलम्बवत आपतित होती है। इसका कर्ण से सम्पूर्ण आन्तरिक परावर्तन हो जाता है। प्रिज्म के पदार्थ का निम्नतम अपवर्तनांक निम्नलिखित में से कौन-सा है?

(a) 1.0 (b) 1.33
(c) 1.414 (d) 1.6

Ans : (c) Given that,

Critical angle (θ) = 45°



There is total internal reflection of the light ray.

Hence the refractive $\mu = \frac{1}{\sin c} = \frac{1}{\sin 45^\circ}$

$= \frac{1}{\frac{1}{\sqrt{2}}} = \sqrt{2} = 1.414$

Minimum refractive index of the material of prism (μ) = 1.414

78. Due to accumulation of which one of the following, joggers experience pain in their leg muscles after running?
निम्नलिखित में से किस एक के संचयन से, धावकों को दौड़ने के बाद, पैरों की मांसपेशियों में दर्द का अनुभव होता है?

(a) Lactic acid/लैक्टिक अम्ल
(b) Acetic acid/एसीटिक अम्ल
(c) Malic acid/मैलिक अम्ल
(d) Citric acid/सीट्रिक अम्ल

Ans : (a) After running, the runners experience pain or fatigue in the muscles of the legs because the muscles have to contract continuously while running, due to which lactic acid starts accumulating.

• Later when rested, lactic acid is slowly oxidized to pyruvic acid. As a result joggers experience no pain in their leg muscles.

79. Stem Cell Therapy (SCT) is not useful for the treatment of which one of the following ailments?
निम्नलिखित बीमारियों में से किस एक के उपचार के लिए स्टेम कोशिका चिकित्सा (SCT) का उपयोग नहीं होता है?

(a) Kidney failure/वृक्क पात
(b) Cancer/कैंसर
(c) Brain injury/मस्तिष्क क्षति
(d) Vision impairment/दृष्टि-दोष

Ans : (d) Stem cell therapy is a form of regenerative medicine designed to repair damaged cells within the body by reducing inflammation and modulating the immune system.

• This therapy is used for Tissue Regeneration (this can be helpful for kidney and liver transplants), Treatment of cardiovascular disease, treatment of Brain disease such as Alzheimer and Parkinson disease and Blood disease treatment etc.

Vision impairment – It means that a person's eyesight cannot be corrected to a normal level.

Eyeglass, contact lenses and other medicines are used for treatment of vision impairment. So, sct is not useful for the this treatment.

80. Which one of the following is the correct order of oxidation number of Iodine (I) in I_2, HI, HIO_4 and ICl?
निम्नलिखित में से कौन-सा एक I_2, HI, HIO_4 तथा ICI में आयोडीन (I) की ऑक्सीकरण संख्या का सही क्रम है?

(a) $HIO_4 < HI < ICI < I_2$
(b) $HI < I_2 < ICI < HIO_4$
(c) $I_2 < ICI < HIO_4 < HI$
(d) $ICI < HIO_4 < HI < I_2$

Ans : (b) Oxidation number is defined as the number assigned to a compound or element to show how many electrons were lost or gained. A negative number shows that electrons were gained, while a positive number shows that electrons were lost.

- Oxidation number of the iodine atoms in the iodine molecule is zero.
- Oxidation number of the iodine atom in the HI is –1
- Oxidation number of the iodine atom in the HIO_4 is 7
- Oxidation number of the iodine atom in the ICl is 1

The correct order of number of Iodine (I) is

$HI < I_2 < ICl < HIO_4$.

81. In which one of the following countries is the infant mortality rate (per 1000 live births) highest?
निम्नलिखित में से किस एक देश में शिशु मृत्युदर (प्रति 1000 जीवित जन्म) सबसे अधिक है?

(a) Sri Lanka/श्रीलंका (b) China/चीन
(c) India/भारत (d) Vietnam/वियतनाम

Ans : (c) The rate of children who die before their first birthday is called the rate of in font mortality. It is rate which show the number of deaths of the children at one year per 1,000 live births.

- The SRS (sample registration system) is a demographic survey for providing reliable annual estimates of infant mortality rate, birth rate, death rate and other fertility-
- It was initialed on a pilot basis by the Register general of India. it become fully operation during 1969-70.
- In 2007, the infant mortality rate was 55 in india, which was higher than the srilanka, china and vietnam. In India, IMR decline to 28 per 1000 live births in 2020 from 30 per 1000 live births in 2019

82. In which one of the following five year plans the actual growth performance in India in respect of GDP (at factor cost) was less than the target set?
निम्नलिखित में से किस एक पंचवर्षीय योजना में भारत में वास्तविक संवृद्धि निष्पादन, सकल घरेलू उत्पाद (उत्पादन लागत पर) के सन्दर्भ में लक्ष्य से कम था?

(a) Sixth five year plan/छठी पंचवर्षीय योजना
(b) Seventh five year plan/सातवीं पंचवर्षीय योजना
(c) Eighth five year plan/आठवीं पंचवर्षीय योजना
(d) Ninth five year plan/नौवीं पंचवर्षीय योजना

Ans : (d) Ninth fiver year plan (1997-2002) – It marked India's 50th year since independence and Atal Bihari Vajpayee lid the prime ministership.

- The main focus of this plan was "Growth with social justice and Equality".
- This plan failed to achieve the growth target of 6.5% and achieved a growth rate of 5.4%. Eighth five year plan could not take place due to the volatile political situation at the centre. Two annual programmers were formed for the year 1990-1991 and 1991-92 Its luration was from 1992 to 1997, under the leadership of V. Narasimha Rao.

83. Which among the following is not correct with regard to Sampoorna Grameen Rozgar Yojana?
निम्नलिखित में से कौन-सा एक, सम्पूर्ण ग्रामीण रोजगार योजना के सन्दर्भ में सही नहीं है?

1. **The case component of the programme is borne exclusively by the Central Government/कार्यक्रम का नकदी घटक अनन्य रूप से केन्द्रीय सरकार द्वारा वहन किया जाता है।**
2. **Foodgrains are provided free of cost to the States/Union Territories**
राज्यों/संघ राज्य क्षेत्रों को खाद्यान्न बिना किसी लागत के प्रदान किए जाते हैं।

Select the answer using the codes given below:
नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए

(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2
(d) Neither 1 nor 2/न तो 1 और न ही 2

Ans : (b) The Indian government has created the Sampoorna Grameen Rozgar Yojana (Universal Rural Employment Programme) in 2001 to offer rural poor people profitable jobs and food.

- The government distributes wages and food grains to individuals who fall below the poverty threshold with this programme.
- This scheme has a central share of 75% and a state share of 25%. for the cash component. The central government provides food grains aid and its are paid to FCI by the ministry of Rural development.

84. Which of the following bodies is responsible for the distribution of revenues between the Centre and the States?
निम्नलिखित में से कौन-सा निकाय केन्द्र और राज्यों के बीच राजस्व वितरण के लिए उत्तरदायी है?

(a) Planning Commission/योजना आयोग
(b) Finance Commission/वित्त आयोग
(c) Inter-State Council/अन्तर्राज्यीय परिषद्
(d) National Development Council
राष्ट्रीय विकास परिषद्

Ans : (b) Finance commission – It is a constitutionally mandated body that is at the centre of fiscal federalism. It set up under article 280 of the constitution.

- Finance commission has a chairman and four other member who shall be appointed by the president of India.
- Finance commission makes recommendation to president about-

(i) Distribution of net tare proceeds centre and states.
(ii) Principles for granting aid to the states by the centre.
(iii) Evaluates the rise in the constipated fund of a state to affix the resources of Panchayat/ municipalities.

85. Which among the following is not a feature of Part IX of the Constitution of India?
निम्नलिखित में से कौन-सा, भारत के संविधान की 9 वीं सूची की विशिष्टता नहीं है?

(a) Five year tenure for panchayats
पंचायतों के लिए पाँच वर्षीय कार्यकाल

(b) Reservation of seats for Schedule Castes and Schedule Tribes for panchayat membership
पंचायत की सदस्यता के लिए अनुसूचित जाति और अनुसूचित जनजाति के लिए स्थानों का आरक्षण

(c) Indirect election for all panchayat seats (village/intermediate level)/पंचायत (ग्राम/मध्यवर्ती स्तर) के सभी स्थानों के लिए अप्रत्यक्ष चुनाव

(d) Reservation for not less than one-third of the seats for women/महिलाओं के लिए कम-से कम एक-तिहाई स्थानों का आरक्षण

Ans : (c) Panchayati Raj Institution was constitutionalized through the 73rd constitutional Amendment Act 1992. This act has added a new part – IX to the Constitution of India. His part is entitled a 'the panchayats' and consists of provisions from Articles 243 to 243 O.

- The act also added a new Eleventh schedule to the constitution. This schedule contains 29 functional items of Panchayats. It deals with Article 243 – a.
- Features of Part IX of the constitution of India-

(i) Gram Sabha was the foundation of the panchayatiraj system.
(ii) the three-tier system of the Panchayat was provided in every state i.e Panchayat at the village, intermediate and district level.
(iii) The member of Panchayat at the village, intermediate and district level shall be elected directly by the people.
(iv) Provision for reservation of 1/3rd of the total number of seats – are also provided for women.
(v) Panchayats have been provided for a five year term of office at every level.

From the given, option (c) is incorrect features of part is of the constitution of India.

86. Which of the following statements is/are correct with regard to the Vice-President of India?
निम्नलिखित में से कौन-सा/से कथन भारत के उपराष्ट्रपति के सम्बन्ध में सही है/हैं?

1. He must be a Member of Parliament
उसका संसद सदस्य होना आवश्यक है।

2. He is elected by proportional representation/वह आनुपातिक प्रतिनिधित्व के द्वारा निर्वाचित होता है।

3. He is Ex-officio Chairman of the Rajya Sabha/वह राज्यसभा का पदेन सभापति होता है।

Select the correct answer using the codes given below:
नीचे दिए कूट का प्रयोग कर सही उत्तर चुनिए

(a) Only 1/केवल 1 (b) 1 and 3/1 और 3
(c) 2 and 3/2 और 3 (d) 1 and 2/1 और 2

Ans : (c) Part V of the constitution of India under chapter I about the office of the vice president of India. The Vice president of India is the second highest constitutional office in the country.

- The Vice president shall be ex-officio chairman of the council of states and shall not hold and other office of profit (Article 64)
- He is elected by proportional representation (Article 66). The via president is elected indirectly by members of an electoral consisting of the members of both House of parliament and not the members of state legislative assembly by the system of proportional representation using single transferable votes.
- He is qualified for election as a member of the council of state, is a citizen on India, has completed the age of 35 years.

87. Which among the following is/are the feature (s) of a Federal State?
निम्नलिखित में से कौन-सा/सी संघीय राज्य की विशिष्टता है/विशिष्टताएँ है?

1. The powers of the Central and the State (Constituent Unit) Governments are clearly laid down/केन्द्र और राज्य (संघटन इकाइयाँ) सरकारों की शक्तियाँ स्पष्ट रूप से निर्धारित होती है।

2. It has an unwritten constitution/ इसका अलिखित संविधान होता है।

Select the correct answer using the codes given below:
नीचे दिए कूट का प्रयोग कर सही उत्तर चुनिए

(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2 दोनों
(d) Neither 1 nor 2/न तो 1 और न ही 2

Ans : (a) Federation is a new state (Political system) formed by a treaty or agreement between the Various units. Federal state having many features-
(i) Division of powers – In a federal system, the power is divided between the centre and its constituent net parts such as states or provinces.
(ii) Written constitution – the federal system must be written. It seines the structures organization, Power and functions of the union and state government. As a result, misunderstanding and disagreement between the two are avoided.
(iii) Dual polity.
(iv) Rigid constitution
(v) Supremacy of the constitution
(vi) Independent Judiciary
(vii) Bicameralism – the constitution establishes a bicameral legislature with an upper house and a lower house.

88. Which of the following are the principles of the panchsheel?
निम्नलिखित में से कौन-से, पंचशील के सिद्धान्त है?

1. Peaceful co-existence/शान्तिपूर्ण सह-अस्तित्व।

2. Mutual protection of the environment/ पर्यावरण का परस्पर संरक्षण।

3. Mutual protection of indigenous population/ देशज जनों का परस्पर संरक्षण।

4. Mutual non-aggression/परस्पर अनाक्रमण।

Select the correct answer using the codes given below:
नीचे दिए कूट का प्रयोग कर सही उत्तर चुनिए

(a) 2 and 3/2 और 3
(b) 1 and 2/1 और 2
(c) 1, 2 and 4/1, 2 और 4
(d) 1 and 4/1 और 4

Ans : (d) The Panchsheel was first formally signed on 1954 between India and the Tibet region of china.

- The word Panchsheel is derived from historical Buddhist inscriptions. Panchseel is describe by five point such as –

(i) Peaceful co-existence
(ii) Mutual respect for each other's territorial integrity and Sovereignty.
(iii) Mutual non-interference
(iv) Mutual non-aggression
(v) Equality Mutual Benefit.

89. Which one of the following Articles of the Constitution of India makes a specific mention of village panchayats?
भारत के संविधान का निम्नलिखित में से कौन-सा एक अनुच्छेद ग्राम पंचायतों का विशेष उल्लेख करता है?

(a) Article 19/अनुच्छेद 19
(b) Article 21/अनुच्छेद 21
(c) Article 40/अनुच्छेद 40
(d) Article 246/अनुच्छेद 246

Ans : (c) Article 40 – It describe one of the DPSP (Directive Principles of State Policy) lay down that the state shall take steps to organise village panchayats and endow them with such power and authority as may be necessary to enable them to functions as units of self government.

- Panchayat were given constitutional status by 73rd constitutional amendment 1992.
- Article 19 provides "freedom of speech and Expression".
- Article 21 provides "protection of life and personal liverty"
- Article 246 of the Indian constitution states that the power between the state and union are categorized into 3 lists – state list, union list and concurrent list.

90. Who among the following first imparted a mass character to the Indian National Congress?
निम्नलिखित में से किसने सर्वप्रथम भारतीय राष्ट्रीय कांग्रेस को जन स्वरूप प्रदान किया?

(a) Jawaharlal Nehru/जवाहरलाल नेहरू
(b) Mahatma Gandhi/महात्मा गाँधी
(c) Subhash Chandra Bose/सुभाष चन्द्र बोस
(d) Lala Lajpat Rai/लाला लाजपत राय

Ans : (b) Mahatma Gandhi first imparted mass character to the Indian national congress.

- Gandhi ji returned to India from south Africa in January 1915. Gandhiji was famous after the champaran satyagraha (1917), Ahmedabad lobour movement (1918), Khilafat movement (1919-22) etc.
- Mahatma Gandhi: Non-cooperation movement included members of various social groups such as middle class, peasants, Tribal's, students etc. the congress party's popularity among the people was established as a result of this movement.

Directions: Each of the next three (3) items consist of two statements, one labelled as the 'Assertion (A)' and the other as 'Reason (R)'. You are to examine these two statements carefully and select the answers to these items using the codes given below:
निर्देश: (प्रं. सं. 91-93): आगामी प्रश्नांशों में दो वक्तव्य हैं: एक को 'कथन (A)' तथा दूसरे को 'कारण (R)' कहा गया है। इन दोनों वक्तव्यों का सावधानीपूर्वक परीक्षण कर इन प्रश्नांशों का उत्तर नीचे दिए हुए कूट की सहायता से चुनिए

Codes:/कूट:

(a) Both A and R are individually true and R is the correct explanation of A/A और R दोनों सही हैं, और R,A का सही स्पष्टीकरण है
(b) Both A and R are individually true but R is not the correct explanation of A/A और R दोनों सही हैं, और R,A का सही स्पष्टीकरण नहीं है
(c) A is true, but R is false
A सही है, परन्तु R गलत है
(d) A is false, but R is true
A गलत है, परन्तु R सही है

91. Assertion (A): Carbon dioxide is a compound.
Reason (R): Carbon and oxygen combine together in the ratio 3 : 8 by mass.
कथन (A): कार्बन डाईऑक्साइड यौगिक है।
कारण (R): कार्बन तथा ऑक्सीजन 3:8 द्रव्यमान के अनुपात में एक साथ मिले हैं?

Ans : (a) A compound is a substance made up of two or more different chemical elements combined in a fixed ratio. water, carbon dioxide etc are some example of compounds.

- Each molecule of CO_2 has carbon atom and 2 oxygen atoms, so the ratio of mass of carbon dioxide (CO_2)-

$$\frac{\text{Mass number of carbon}}{\text{Mass number of oxygen}} = \frac{12}{2\times16} = \frac{12}{32} = \frac{3}{8}$$

Therefore carbon and oxygen combine together in the ratio 3 : 8 by mass.

92. Assertion (A): Narmada and Tapti rivers do not form deltas.
Reason (R): These rivers form estuaries.
कथन (A): नर्मदा तथा ताप्ती नदियाँ डेल्टा नहीं बनाती है।
कारण (R): ये नदियाँ ज्वारनदमुख बनाती हैं।

Ans : (b) West flowing Rivers in India such as Narmada and Tapti do not form deltas. Because they flow through fault region created by the mountains. Thus they do not carry much sediments to form deltas.

• Estuary is an area of brackish water which is the tidal mouth of a large River. It refers to the meeting point of the tidal and the stream. the west flowing Rivers form estuaries instead of Delta. Therefore Narmada and Tapti form estuaries.
Hence A and R are individually true and R is not the correct explanation of A.

93. Assertion (A): Diamond is a good conductor of electricity
Reason (R): Diamond and graphite are two allotrope of carbon and graphite is good conductor of electricity.
कथन (A): हीरा विद्युत का सुचालक है।
कारण (R): हीरा तथा ग्रेफाइट कार्बन के दो समरूप हैं तथा ग्रेफाइट विद्युत का सुचालक है।

Ans : (d) Graphite and diamond are the two main allotropes of carbon. Graphite is soft in nature but diamond is hard in nature.
- Graphite having hexagonal closed structure. because each carbon atom is linked to only three carbon atoms by covalent bonds. So one valence electron of each carbon atom is free. So, the presence of free electrons conducts electricity in graphite crystals.
- Diamond having tetrahedral structure. Because each Carbon atom is connected to the other four carbon atoms by a single covalent bond. So no free electrons are present in the diamond molecules. Thus it is a non – conductor of electricity.

94. Match List-I with List-II and select the correct answer using the code given below the lists:
सूची-I को सूची-II के साथ सुमेलित कीजिए और सूचियों के नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए

	List-I/सूची I		List-II/सूची II
A	Explanation of the photoelectric effect प्रकाशवैद्युत प्रभाव की व्याख्या	1.	J.J. Thomson जे.जे. थॉमसन
B	Discovery of a comet/पुच्छल तारे की खोज	2.	Robert Millikan रॉबर्ट मिलिकन
C	Measurement of the electronic charge/विद्युत आवेश का मापन	3.	Einstein आइन्सटाइन
D	Thermoelectricity/ ताप-विद्युत	4.	Edmund Halley एडमण्ड हेली
		5..	Seebeck/सीबेक

Code:/कूट:

	A	B	C	D
(a)	3	2	4	5
(b)	5	1	4	3
(c)	5	4	1	3
(d)	3	4	2	5

Ans : (d) .

Discovery (List I)		Scientist (List II)	
(A)	Explanation of the photoelectric	3	– Einstein
(C)	Discovery of a comet	4	– Edmund Halley
(C)	Measurement of the electronic charge	2	– Robert Millikan
(D)	Thermoelectricity	5	– Seebeck

• Electron was discovered by j.j Thomson in 1897.

95. A syringe is a hollow glass tube with lower end tapered to a nozzle. Due to which one of the following liquid can be drawn into a syringe?
सिरिंज एक खोखली कांच की नलिका होती है, जिसके नीचे की शिरा को टैपरित करके तुण्डाकार बनाया जाता है। सिरिंज के भीतर द्रव का खिंचाव निम्नलिखित में से किस एक के कारण होता है?
(a) Partial vacuum produced inside the glass tube. काँच की नलिका के अन्दर आंशिक निर्वात का बनना
(b) Diffusion/विसरण
(c) Surface tension effect/पृष्ठतनाव प्रभाव
(d) Capillary action/केशिका क्रिया

Ans : (a) When the nozzle of a syringe is dipped in a liquid and its piston is withdrawn, the pressure inside the syringe is low as compared to the atmospheric pressure acting on the surface of liquid.
• Due to this difference in pressure, the liquid is filled up into the syringe. A partial vacuum is produced inside the glass tube due to less pressure.

96. Consider the following statements:
If the net external torque acting on an object is switched off, then
निम्नलिखित कथनों पर विचार कीजिए
यदि किसी वस्तु पर क्रियाशील नेट बाहरी बल-आघूर्ण को बन्द कर दिया जाता है, तो
1. linear momentum will remain unchanged /रैखिक संवेग अपरिवर्तित रहता है।
2. angular momentum will remain unchanged/ कोणीय संवेग अपरिवर्तित रहता है।
Which of the statements given above is/are correct?
उपरोक्त कथनों में से कौन-सा/से सही है/हैं?
(a) 1 only/केवल 1
(b) 2 only/केवल 2
(c) Both 1 and 2/1 और 2 दोनों
(d) Neither 1 nor 2/न तो 1 और न ही 2

Ans : (b) Angular momentum is the vector product of the angular velocity of a particle and its moment of inertia.
• Law of conservation of Angular momentum – when the net external torque acting on a body about the given axis is zero, the total angular momentum of the body about that axis remains constant.

$$\frac{dL}{dt} = I \times a = \tau_{net}$$

where, L = angular momentum

I = moment of Inertia

a = angular acceleration

τ_{net} = Net external torque

$$\frac{dL}{dt} = 0$$

L = constant.

So, if the net external torque acting on an object is switched off, then angular momentum will remain constant. So option (b) is correct. Linear momentum is conserved when there is no external force on the body.

97. Which one of the following is not a nitrogenous fertilizer?
निम्नलिखित में से कौन-सा एक, नाईट्रोजनयुक्त उर्वरक नहीं है?

(a) $Ca(CN)_2$ (b) $CaCN_2$
(c) NH_4NO_3 (d) Urea/यूरिया

Ans : (a) A fertilizer is anything that is applied to plant tissue or soil to provide nutrients. Fertilizers are basically classified into two –
(i) Organic fertilizer – Agricultural waste, livestock, manure and municipal sludge etc.
(ii) Inorganic fertilizer – Nitrogen fertilizer, Phosphorus Fertilizer etc.

- Examples of nitrogenous fertilizers such as Nitrate fertilizer, Ammonium fertilizer, Nitrate and Ammonium fertilizers (Ammonium ($NH_4 NO_3$) and Amide fertilizer (Urea, calcium cyan nitrate amide ($CaCN_2$). etc. But Ca $(CN)_2$ is not a nitrogenous fertilizers.

98. Flint glass is obtained from which of the following?
फ्लिंट कांच निम्नलिखित में से किससे प्राप्त होता है?

(a) Zinc and barium borosilicate
जिंक तथा बेरियम बोरोसिलिकेट
(b) Sand, red lead and potassium carbonate
रेत, लाल सीसा तथा पोटैशियम
(c) Sodium aluminium borosilicate
सोडियम एल्युमिनियम बोरोसिलिकेट
(d) Pure silica and zinc oxide
विशुद्ध सिलिका तथा जिंक ऑक्साइड

Ans : (b) The flint is a type of glass that has a very high refractive index and very low Add number (50 to 55) value (Measure of materials dispersion). The currently known fling glasses have refractive indices ranging between 1.45 and 2.00.

- Flint glass is obtained from sand, led lead and potassium carbonate. Such glasses are used for malign electric gabs. Lenses of telescopes, camera and prisms etc.

99. Which one of the following is the correct order in which the gas H_2, Ne, O_2 and N_2 are evolved on fractional distillation of liquid air?
निम्नलिखित में से कौन-सा एक, वह सही क्रम है, जिसमें H_2,Ne,O_2 तथा N_2 गैसें द्रव वायु के प्रभाजी आसवन करने पर निकलती हैं?

(a) H_2, Ne, O_2, N_2 (b) H_2, Ne, N_2, O_2
(c) N_2, O_2, Ne, H_2 (d) O_2, N_2, H_2, Ne

Ans : (b) Fractional distillation is a process by which components in a chemical mixture are separated into different parts according to their different boiling points.

- Gasoline and many other chemicals are produced from crude oil using fractional distillation, Such as fuel oil, diesel, kerosene etc.
- As the order of boiling point of gases is H_2 > Ne > N_2 > O_2 so same will be the order of fractional distillation of gases.

100. Consider the following:
The concentration of hydrogen ions in an aqueous solution is expressed by its:
निम्नलिखित पर विचार कीजिए
किसी जलीय विलयन में हाइड्रोजन आयन की सान्द्रता अभिव्यक्त होती है उसके

1. pH द्वारा **2. pOH द्वारा**
3. pKa द्वारा **4. pKw द्वारा**

Which of the above is/are correct?
उपरोक्त में से कौन-सा/से सही है/हैं?

(a) 1 and 2/1 और 2
(b) 1 and 3/1 और 3
(c) 1, 2 and 3/1, 2 और 3
(d) 2, 3 and 4/2, 3 और 4

Ans : (a) pH is scale used to specify the acidity or basicity of an aqueous solution. pH is defined as the decimal logarithm of the reciprocal of the hydrogen ion activity in solution.

- pOH is sometimes used as a measure of the concentration of hydroxide ion, OH^- pOH values are derived from pH measurement. The concentration of hydroxide ions in water is related to the concentration of hydrogen ions.
- So option (1) and (2) i.e. The concentration of hydrogen ions in an aqueous solution is expressed by pH and pOH.

101. Which one of the following correctly defines the state of glass?
निम्नलिखित में से कौन-सा एक, काँच की अवस्था को सही परिभाषित करता है?

(a) Cystalline solid/क्रिस्टलीय ठोस
(b) Super cooled liquid/अतिशीतित द्रव
(c) Condensed gas/संघनित गैस
(d) Liquid crystal/द्रव क्रिस्टल

Ans : (b) Glass is a solid-like and transparent material. Glass is made from natural and abundant raw materials (sand, ash, soda and limestone).

- Glass is basically an amorphous solid. It does not form a crystalline structure. so, the constituent particles of the glass can move. In regular solids. there is no movement of constituent particles under normal condition. Due to this property, glass is called as super cooled liquid.

Crystalline solid – A crystalline solid is a homogenous solid in which the constituent particles, atoms, ions are arranged in a definite repeating pattern.
liquid crystal – It is a state of matter between liquid and solid (mesophase). They change shape like a fluid but have the molecular alignment characteristics of a solid crystal.

102. Match List-I with List-II select the correct answer using the code given below the lists:
सूची-I को सूची-II के साथ सुमेलित कीजिए और सूचियों के नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए

	List-I/सूची I (Substance added) (मिलाया गया पदार्थ)		List-II/सूची II (Colour imparted to glass) (काँच का प्रदान किया गया रंग)
A	Chromium (III) oxide/क्रोमियम (III) ऑक्साइड	1.	Red/ लाल
B	Cobalt (II) oxide/कोबाल्ट (II) ऑक्साइड	2.	Violet/ बैंगनी
C	Cuprous oxide/ क्यूप्रस ऑक्साइड	3.	Green/ हरा
D	Manganese dioxide/मैंग्नीज डाइ-ऑक्साइड	4.	Blue/ नीला

Code:/कूट:

	A	B	C	D
(a)	2	1	4	3
(b)	3	4	1	2
(c)	3	1	4	2
(d)	2	4	1	3

Ans : (b)

Substance added		Colour imparted to glass
chromium oxide (Cr_2O_3)	–	Green
Cobalt oxide (CoO)	–	Blue
Cuprous oxide Cu_2O	–	Red
Manganese dioxide (MnO_2)	–	Violet

103. Which one of the following materials is suitable for water purification?
निम्नलिखित पदार्थों में से कौन-सा एक जल के शोधन के लिए उपयुक्त है?

(a) Silicones/सिलिकॉन (b) Zeolites/जियोलाइट
(c) Asbestos/ऐस्बेस्टॉस (d) Quartz/क्वार्ट्ज

Ans : (b) Zeolites forms when volcanic rock or ash interacts with alkaline waters. The reaction can create a crystalline and microporous structure made of aluminosilicates Such as aluminum, silica and oxygen.

- Zeolites are very good at cationic exchange, removing dissolved ions from a solution and replacing. Hem with other ion. It can replace unwanted compounds in the solution.
- Due to its natural filtration abilities, zeolite is used in a variety of applications such as agriculture, water purification, filtration, animal nutrition and human health.
- Zeolites is a common material used for the purification of drinking water. It removes toxins of upto 5 microns and heavy metals through ion exchange. The removal of chemicals from the water can make it drinkable and cleaner tasting.

104. Consider the following:
Crude oil is a direct source of
निम्नलिखित पर विचार कीजिए
अपरिष्कृत तेल

1. **asphalt/ऐस्फाल्ट का प्रत्यक्ष स्त्रोत है।**
2. **paraffin wax/पैराफिन मोम का प्रत्यक्ष स्त्रोत है।**
3. **fatty acids/वसा अम्ल का प्रत्यक्ष स्त्रोत है।**
4. **gas oil/गैस तेल का प्रत्यक्ष स्त्रोत है।**

Wich of the above are correct?
उपरोक्त में से कौन-से सही हैं

(a) 1 and 2/1 और 2
(b) 2 and 3/2 और 3
(c) 1 and 4/1 और 4
(d) 1, 2 and 4/1, 2 और 4

Ans : (d) Gasoline and many other chemicals are produced from crude oil using fractional distillation. for example petrol, diesel, kerosene, gas oil, asphalt, paraffin wax and naphtha etc.
Fatty acid – Fatty acids are the building blocks of the fat in our bodies and in the food we eat. During digestion, the fat breaks down bats into fatty acid. Therefore, fatty acid are not produced from crude oil.

105. The deficiency of which one of the following leads to dental caries?
निम्नलिखित में से किस एक की कमी से अपक्षरण होता है?

(a) Iron/लौह (b) Copper/ताम्र
(c) Fluorine/फ्लोरीन (d) Zinc/जस्ता (जिंक)

Ans : (c) Fluorine is required for the proper formation of bones and teeth. Fluorine incorporated into hydroxyatite the crystalline mineral of bones and teeth to form fluorapatite, which increases hardness of bone and teeth and provides protection against dental caries and attack by acids.
• The deficiency of fluorine leads to the dental caries. Excessive amounts of fluoride can result In dental fluorosis and skeletal fluorosis.

106. In which one of the following, antibody formations takes place?
निम्नलिखित में से कौन-से एक में प्रतिरक्षी निर्मित होती है?

(a) RBC_s
(b) Blood Platelets/रक्त पट्टिकाणु
(c) Blood Plasma/रक्त प्लाज्मा
(d) Donnan's membrane/डोनन झिल्लिका