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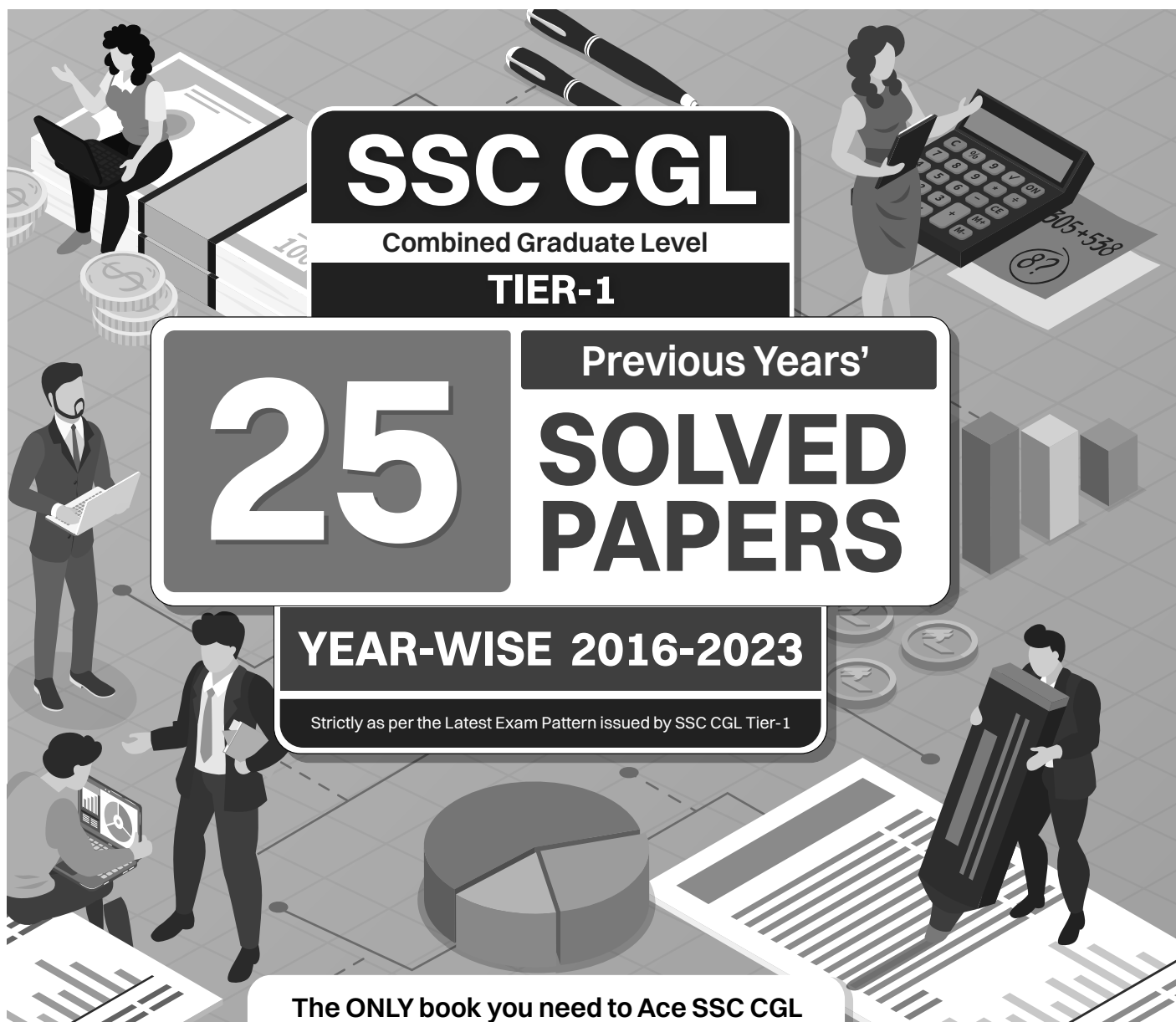| **1**	**2**	**3**	**4**	**5**
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We can't let you miss out on this!

Keep yourself updated! For the latest SSC CGL Tier-1 updates throughout the Academic year 2024 Scan the QR code below

PREFACE

The SSC (Staff Selection Commission) Combined Graduate Level examination is a competitive exam conducted by the SSC to recruit candidates for various Group 'B' and Group 'C' posts in government ministries, departments, and organizations.

The intake application rate for SSC CGL is relatively high. In this situation, candidates compete for a limited number of seats. However, with the right preparation strategy, you can secure a seat in SSC CGL and give your career the right push.

The term "Previous Years' Solved Papers" refers to actual Question Papers from past years that have been thoroughly solved and explained to aid applicants in understanding the blueprint and format of the exam. For any Competitive Exam, solving Previous Years' Question Papers is a crucial component of the study plan because it enables applicants to identify their learning gaps and fill them at the earliest.

This book aims to help students achieve a high score in SSC CGL Tier-1, prepared by the Editorial Board of Oswaal Books. It consists of solved question papers, which will enable students to answer the questions with confidence. This book has 25 Solved Papers (2016 - 2023) of SSC CGL Tier-I.

How will this book benefit students?
- **100% Updated** with 2023 Papers Fully Solved
- **Extensive Practice** with 2500+ Previous Years Questions & 2 Sample Papers
- **Concept Clarity**: Learn Key Concepts through Detailed Explanations
- **100% Exam Readiness** with Latest Five Years' Trend Analysis (2019-2023)
- **Valuable Exam Insights** with Hints, Short-cuts, Expert Tips to Crack SSC CGL Tier-1 Exam in the first attempt.

This book has developed with the highest editorial standards. The innovative learning pedagogy of the book makes it a must-have for anyone preparing for SSC CGL Tier-1. To stay true to our motto of 'Learning Made Simple', we constantly strive to present information in ways that are easy to understand and remember. We wish the readers great success ahead!

All the Best!
Team Oswaal

Oswaal Books Expert Tips to Crack the Exam in First Attempt

1. Start your planning at the right time 〉〉

It is advisable to start early. There are many instances where students fall short of time to finish the syllabus and wind up avoiding a couple of points that show up in the examination. Additionally, beginning the SSC CGL preparation at the initial stage can help in reviewing all the concepts on time and thus, scoring high marks.

2. Know the Syllabus 〉〉

The initial step prior to starting the planning is to know the detailed prospectus of SSC CGL. The syllabus assists with having a reasonable comprehension of what all must be examined. With the assistance of the SSC CGL syllabus, students can plan their studies and focus on points that will require additional time and concepts.

3. Check the SSC CGL Exam Pattern 〉〉

Having a knowledge of how the SSC CGL exam will be conducted, the type of questions posed or the marking scheme is profoundly advantageous. The SSC CGL test comprises of Multiple Choice Questions (MCQs).

4. Get the right tools and study material 〉〉

Success in scoring high in SSC CGL depends upon studying from the right books such as Oswaal Books. You can refer to Oswaal Books SSC CGL Tier-1 Solved Papers to your preparation. The books are on the lines of the current syllabus and can be entrusted upon before the examination for sure

5. Practice a lot of Sample Papers 〉〉

Sample Papers will not only help the candidates in understanding the examination pattern, but also help them in figuring out the questions that come up every year and this might give them an edge over other students. The candidates can refer to Oswaal SSC CGL Tier-I: 25 Solved Papers to practice for the upcoming exams.

6. Revise whenever you get time 〉〉

Make sure to revise as much as possible. Revision will help the candidates in keeping the concepts fresh in their mind.

7. Analysing your performance 〉〉

While solving papers, make sure to keep a track of time i.e. how much time does it take to solve one section or one question? Make a report of the sections and type of questions, which take minimum and maximum time.

Combined Graduate Level Examination - Scheme & Pattern

Staff Selection Commission will hold Combined Graduate Level Examination, filling up of various Group 'B' and Group 'C' posts in different Ministries/ Departments/ Organizations of Government of India and various Constitutional Bodies/ Statutory Bodies/ Tribunals, etc.

Scheme of the Examination:

The Computer Based Examination will be conducted in two tiers as indicated below:

Tier-I Examination:

Subject	Number of Questions	Maximum Marks	Time allowed
A. General Intelligence and Reasoning	25	50	1 hour
B. General Awareness	25	50	
C. Quantitative Aptitude	25	50	
D. English Comprehension	25	50	
	100	200	

Tier-I will consist of Objective Type, Multiple choice questions. The questions will be set both in English & Hindi except for English Comprehension. There will be negative marking of 0.50 for each wrong answer. Each question is compulsory for attempt and there will be no negative marking for unattempt questions.

Tier-II Examination:

Paper	Session	Subject	Number of Questions	Maximum Marks	Time allowed
Paper-I:	Session-I (2 hours and 15 minutes)	Section-I: Module-I: Mathematical Abilities Module-II: Reasoning and General Intelligence.	30 30 Total = 60	60*3 = 180	1 hour
		Section-II: Module-I: English Language and Comprehension Module-II: General Awareness	45 25 Total = 70	70*3 = 210	1 hour
	Session-II (15 minutes)	Section-III: Module-I: Computer Knowledge Module	20	20*3 = 60	15 Minutes
		Section-III: Module-II: Data Entry Speed Test Module	One Data Entry Task		15 Minutes
Paper-II		Statistics	100	100*2 = 200	2 hours
Paper-III		General Studies (Finance and Economics)	100	100*2 = 200	2 hours

Combined Graduate Level Examination Tier-1 Syllabus

<u>**Indicative Syllabus (Tier-I):**</u>

General Intelligence & Reasoning: It would include questions of both verbal and non-verbal type. This component may include questions on analogies, similarities and differences, space visualization, spatial orientation, problem solving, analysis, judgment, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, statement conclusion, syllogistic reasoning etc. The topics are, Semantic Analogy, Symbolic/Number Analogy, Figural Analogy, Semantic Classification, Symbolic/Number Classification, Figural Classification, Semantic Series, Number Series, Figural Series, Problem Solving, Word Building, Coding & de-coding, Numerical Operations, symbolic Operations, Trends, Space Orientation, Space Visualization, Venn Diagrams, Drawing inferences, Punched hole/ pattern- folding& un-folding, Figural Pattern-folding and completion, Indexing, Address matching, Date & city matching, Classification of centre codes/roll numbers, Small & Capital letters/numbers coding, decoding and classification, Embedded Figures, Critical thinking, Emotional Intelligence, Social Intelligence.

General Awareness: Questions in this component will be aimed at testing the candidates' general awareness of the environment around him and its application to society. Questions will also be designed to test knowledge of current events and of such matters of every day observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining History, Culture, Geography, Economic Scene, General Policy & Scientific Research.

Quantitative Aptitude: The questions will be designed to test the ability of appropriate use of numbers and number sense of the candidate. The scope of the test will be computation of whole numbers, decimals, fractions and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Partnership Business, Mixture and Alligation, Time and distance, Time & Work, Basic algebraic identities of School Algebra & Elementary surds, Graphs of Linear Equations, Triangle and its various kinds of centres, Congruence and similarity of triangles, Circle and its chords, tangents, angles subtended by chords of a circle, common tangents to two or more circles, Triangle, Quadrilaterals, Regular Polygons, Circle, Right Prism, Right Circular Cone, Right Circular Cylinder, Sphere, Hemispheres, Rectangular Parallelepiped, Regular Right Pyramid with triangular or square base, Trigonometric ratio, Degree and Radian Measures, Standard Identities, Complementary angles, Heights and Distances, Histogram, Frequency polygon, Bar diagram & Pie chart.

English Comprehension: Candidates' ability to understand correct English, his basic comprehension and writing ability, etc. would be tested.

Combined Graduate Level Examination Tier-I & II Cut-offs (2018-2022)

List-1: Candidates qualified in Tier-I for appearing in Tier-II [Paper-I, Paper-II and Paper-IV (General Studies (Finance & Accounts))]

Category	2018	2019	2020	2021	2022
SC	-	156.73419	145.28912	136.76166	137.54533
ST	148.97	151.46077	140.97604	131.61117	131.03984
OBC	141.86	172.76640	161.36748	153.36633	152.92049
EWS	-	175.31247	164.00018	156.80136	154.80185
UR	165.00	180.12237	167.45963	159.07699	158.36560
ESM	-	-	-	-	-
OH	170.00	147.08520	135.76854	124.29269	128.59598
HH	132.90	117.49075	109.04331	101.81933	96.45331
VH	-	-	-	-	-
Others-PWD	102.45	83.70627	95.12633	65.27562	72.79273

List-2: Candidates qualified in Tier-I for appearing in Tier-II [Paper-I, Paper-II and Paper-IV (General Studies (Finance & Accounts))]

Category	2018	2019	2020	2021	2022
SC	-	130.76651	124.61824	139.09377	150.55987
ST	140.11	119.99291	122.40547	125.58731	150.32888
OBC	129.56	154.87053	147.63201	162.48375	167.19245
EWS	-	152.03803	146.01050	162.48375	169.35896
UR	162.35	165.77474	153.08245	162.48375	-
OH	165.96	130.86331	120.17292	-	-
HH	112.48	86.44781	108.73007	-	-
VH	51.99	110.67982	-	-	-
Others-PWD	64.57	40.0000	-	-	-

List-3: Candidates qualified in Tier-I for appearing in Tier-II [Paper-I, Paper-II and Paper-IV (General Studies (Finance & Accounts))]

Category	2018	2019	2020	2021	2022
SC	-	115.35401	100.93079	75.77920	89.08864
ST	111.10	104.91984	93.75569	62.81674	77.57858
OBC	103.22	135.95037	119.23278	95.11560	114.27651
EWS	-	135.04329	109.21110	104.63758	102.35275
UR	131.18	147.78606	132.37260	114.84987	114.27651
ESM	137.07	89.29321	74.87478	-	40.00000
OH	40.00	98.42808	85.99074	47.42084	70.69038
HH	95.55	40.00000	40.00000	40.00000	40.00000
VH	40.00	110.41208	95.75915	40.00000	40.00000
Others-PWD	70.25	40.00000	40.00000	40.00000	40.00000

Trend Analysis (2023 -2019)

English Comprehension							
Chapter Name	**Topic Name**	**Aug-23**	**Dec-22**	**Apr-22**	**Aug-20**	**Mar-20**	**Jun-19**
Vacabulary	Antonym	2	1	2	2	2	2
	Synonym	1	3	2	2	2	2
	Spelling	3	2	1	2	2	2
	Idioms & Phrases	2	2	2	2	2	2
	One word substitution	1	2	2	2	2	2
Reading Comprehension	Reading Comprehension	0	0	0	0	0	0
Grammar	Error Identification	1	1	3	2	1	2
Fill in the blanks	Cloze test	5	5	5	5	5	5
	One Word	3	2	1	2	2	2
Sentence Formation & Logical Sequence	Parajumbles	3	2	1	2	2	2
	Sentence Corrections	2	2	3	2	2	2
	Actice & Passive	2	2	2	1	2	2
	Direct & Indirect Narration	0	1	1	1	1	0
Total Questions		**25**	**25**	**25**	**25**	**25**	**25**

Quantitative Aptitude							
Chapter Name	**Topic Name**	**Aug-23**	**Dec-22**	**Apr-22**	**Aug-20**	**Mar-20**	**Jun-19**
Number System	Simplification	1	0	1	1	1	1
	Divisibility Rules	2	0	1	1	1	1
	Sum of Numbers	1	1	0	0	0	0
	HCF & LCM	0	1	0	0	0	0
	Factors	0	0	1	0	0	0
Arithmetic	Percentage	1	1	1	1	1	1
	Simple Interest & Compund Interest	1	1	1	1	1	1
	Average	1	1	1	1	1	1
	Profit, loss and Discount	1	2	2	2	2	2
	Ratio & Proportion and Partnership	2	1	1	1	1	1
	Time, Speed & Distance	2	1	1	1	1	1
	Time & Work	4	1	1	1	1	1

Algebra	Algebraic Expression	1	3	2	3	3	3
Geometry	Triangles	2	2	2	2	3	2
	Circles	1	1	3	3	0	2
	Quadrilateral	0	0	0	0	1	0
Mensuration	Sphere	0	1	0	0	0	0
	Cube	0	1	0	0	1	1
	Hemishpere	0	0	0	0	0	0
	Cylinder	1	0	0	0	0	0
	Trapezium	0	0	0	0	0	0
	Rectangles	0	0	0	0	0	0
	Hexagon	0	0	0	0	0	0
Trigonometry	Trigonometric Ratios	2	1	1	1	2	2
	Properties of Triangle	0	0	0	0	0	0
	Trigonometric Identities	1	2	1	2	1	1
	Height & Distance	0	0	1	0	0	0
Data Interpretation	Pie Chart	1	2	1	0	0	0
	Tabular	0	2	0	4	4	4
	Bar Graph	0	0	3	0	0	0
Total Questions		**25**	**25**	**25**	**25**	**25**	**25**

General Intelligence and Reasoning							
Chapter Name	**Topic Name**	**Aug-23**	**Dec-22**	**Apr-22**	**Aug-20**	**Mar-20**	**Jun-19**
Mathematical Operations	Mathematical Symbol	3	4	2	1	2	1
	Mathematical Symbol & Alphabet letter	0	0	0	0	0	0
Blood Relations	Symbol & Letter Based Relation	1	2	0	1	0	0
	Family Relation	0	0	1	0	1	1
Matrix	Number Based	0	0	1	1	1	0
Non-Verbal (Mirror Image, Counting figure, Embedded figure)	Embedded figure	1	0	1	1	1	1
	Mirror Image	3	2	1	1	1	1
	Figure Letter & Symbol Series	0	0	0	0	0	0
	Paper Cutting	0	0	1	1	1	1
	Figure Series	2	2	1	1	1	1

Coding-Decoding	Word Coding	2	1	2	1	1	1
	Word & Number Coding	0	1	0	1	1	1
	Group of words Coding	0	0	0	0	0	0
Odd one out	Letters or word	1	0	2	2	2	2
	Number Based	0	0	0	0	0	1
Direction Sense Test	Movement - Left & Right	0	0	1	0	0	0
Sitting Arrangement	Row Arrangement	0	0	0	0	0	0
	Ractangular Arrangement	0	0	0	0	0	0
	Circular Arrangement	0	0	0	0	0	0
Statement & Conclusion	3 Statements & 4 Conclusions	0	1	0	1	0	0
	3 Statements & 3 Conclusions	0	1	1	0	0	0
	3 Statements & 2 Conclusions	2	0	0	0	1	1
	1 Statements & 2 Conclusions	0	0	0	0	0	0
Analogy	Word /Letter Analogy	3	2	2	2	2	3
	Number Analogy	0	0	1	2	1	0
Series	Alphabet Letter Series	2	3	1	2	2	1
	Number Series	1	1	2	1	1	1
Calendar	Day & Date Based	0	0	0	1	0	0
Cube & Dice	Face Number, Letter & Colour Based	0	1	1	1	1	1
	Symbol Based Cube	0	0	0	0	0	0
Miscellaneous	English Dictionary Order Words Sequence	0	1	1	1	1	0
	Venn Diagram	0	0	1	1	1	1
	Logical Words Sequence	0	0	0	0	0	1
	Number Ratio	1	0	0	0	1	1
	Logical Puzzle	3	3	2	1	1	3
	Number of Triangles/ Squares in the Figure	0	0	0	1	1	1
Total Questions		**25**	**25**	**25**	**25**	**25**	**25**

Trend Analysis (2023 -2019)

| General Awareness							
Chapter Name	**Topic Name**	**Aug-23**	**Dec-22**	**Apr-22**	**Aug-20**	**Mar-20**	**Jun-19**
Polity & Indian Costitution	Indian Constitution	4	3	4	1	2	0
	Five Year Plan	0	0	0	0	0	0
Economics	GDP	0	1	0	0	0	1
	Schemes	3	0	1	1	1	0
	Budget	1	0	2	0	1	0
History	Modern History	2	0	1	1	0	0
	Medieval History	0	3	1	0	0	2
	Ancient History	2	1	3	0	5	1
Geography	Ecology & Environment	0	0	0	2	0	1
Science & Technology	Physics	2	1	0	1	2	0
	Chemistry	1	1	1	1	0	4
	Biology	1	3	1	3	3	0
Miscellaneous	Sports	1	2	3	2	2	1
	Awards	0	0	1	0	0	2
	Art & Culture	3	3	1	2	1	2
	Book & Author	0	0	0	2	0	0
	Autobiography	0	0	0	0	1	0
	Personality	2	1	1	2	1	3
	Appointment	0	1	1	1	2	1
	Organizations	0	1	0	0	0	1
	Fact Based	3	4	4	6	4	6
Total Questions		**25**	**25**	**25**	**25**	**25**	**25**

Positive Affirmations

An affirmation is a positive statement or phrase that individuals repeat to themselves with the intention of fostering a positive mindset, self-confidence, or personal development. The practice involves affirming desired beliefs or qualities, often in the present tense, to reinforce a positive self-image and encourage a more optimistic outlook.

" EMBRACE YOUR UNIQUENESS, NOURISH SELF-CARE, AND PRESS FORWARD RELENTLESSLY. TO ACHIEVE FLIGHT, UNLOAD THE BAGGAGE THAT SLOWS YOUR ASCENT."

I strongly trust in my vision and work deligently towards making it a reality.
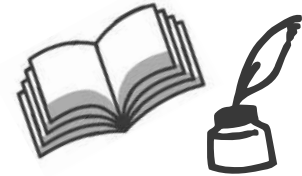
I am capable of learning and growing everyday.

I am not defined by grades & test scores. My true worth lies in my character, compassion and positive impact I have on others.

I celebrate my quirks, for they make me beautifully unique.

I embrace my mistakes, learn from them and use them to fuel my growth & resilience.

CHANGE

Positive Affirmations

My voice matters and I believe in the power of my words to shape the world around me.

I am not the product of circumstances, I am the product of my own choices.

I face challenges with courage and determination.

I celebrate the achievements of others without diminishning my journey.
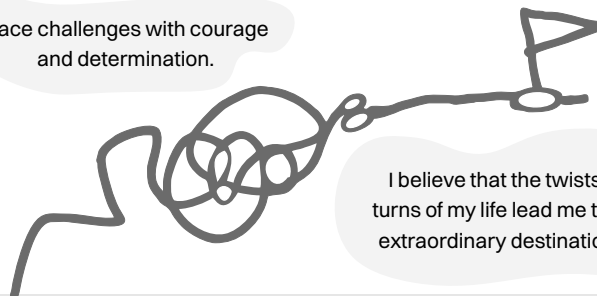
I believe that the twists & turns of my life lead me to an extraordinary destinations.

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Time Allotted: 1 hour   **Max marks:** 200

Important Instructions:-
- This paper contains 100 questions and divided into 4 sections and each section contains 25 questions.
  - General Intelligence and Reasoning
  - General Awareness
  - Quantitative Aptitude
  - English Comprehension
- Each question carries 2 marks. There will be a negative marking of 0.50 for every incorrect answer.
- All questions are compulsory to attempt and there will be no negative marking for unattempted questions.

General Intelligence and Reasoning

1. Select the option that is related to the fifth number in the same way as the second number is related to the first number and the fourth number is related to the third number.
   19 : 34 :: 5 : 6 :: 27 : ?
   1. 50   **2.** 67   **3.** 52   **4.** 63

2. Select the set in which the numbers are related in the same way as are the numbers of the following set.
   (NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits.)
   (4, 3, 16)
   (6, 4, 28)
   1. (5, 2, 49)   **2.** (8, 2, 20)   **3.** (8, 1, 18)   **4.** (3, 2, 12)

3. Which two signs should be interchanged to make the given equation correct?
   171 ÷ 3 – 16 + 72 × 412 = 572
   1. × and –   **2.** ÷ and –   **3.** ÷ and +   **4.** – and +

4. Three of the following four letter-clusters are alike in a certain way and one is different. Pick the odd one out.
   1. EBV   **2.** GET   **3.** BYY   **4.** JGQ

5. Which two signs should be interchanged to make the given equation correct?
   17 × 4 + 6 ÷ 2 – 27 = 92
   1. + and ×   **2.** ÷ and ×   **3.** + and −   **4.** ÷ and +

6. Which letter-cluster will replace the question mark (?) to complete the given series?
   PQST, TOVS, ?, BKBQ, FIEP
   1. XMYR   **2.** XYRM   **3.** YNZQ   **4.** XNYQ

7. 'E + B' means 'E is the husband of B'
   'E – B' means 'E is the daughter of B'
   'E $ B' means 'E is the father of B'
   'E # B' means 'E is the mother of B'
   If 'N + D # Z $ B', then how is N related to B?
   1. N is the paternal grandfather of B
   2. N is the mother-in-law of B
   3. N is the paternal grandmother of B
   4. N is the maternal grandmother of B

8. In this question, three statements are given, followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follows/follow from the statements.
   Statements:
   I. Some rings are fingers.   **II.** Some fingers are toes.
   III. No toe is an earring.
   Conclusions:
   I. No earring is a ring.   **II.** Some toes are rings.
   1. Neither conclusion I nor II follows
   2. Only conclusion II follows
   3. Only conclusion I follows
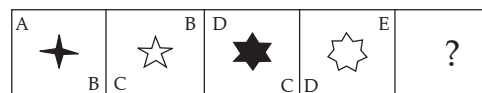   **4.** Both conclusions I and II follow

9. Select the option that represents the letters that, when placed from left to right in the following blanks, will complete the letter-series.
   S _ U C T S R _ _ T _ R U E _ S R _ _ T
   1. R U E S T V G   **2.** R V D S T U F
   3. R U D S T U F   **4.** R V E S T U F

10. Select the figure that will come in place of the question mark (?) in the following figure series.

11. Select the option that is related to the third word in the same way as the second word is related to the first word. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word.)
    India : Royal Bengal Tiger :: Australia : ?
    1. Horse   **2.** Dragon   **3.** Kangaroo   **4.** Elephant

12. Select the figure that will come next in the following figure series.
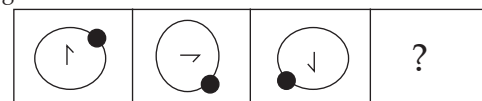
13. Which of the following numbers will replace the question mark (?) in the given series?

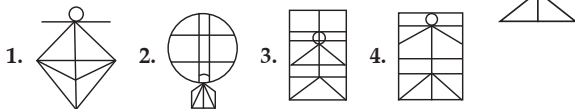11, 36, ?, 121, 185, 266

1. 68   **2.** 72   **3.** 70   **4.** 63

14. In a certain code language, 'FARM' is coded as HDTP and 'EGGS' is coded as GJIV. How will 'FOOD' be coded in the same language?

1. HQQG   **2.** GRQH   **3.** HRQG   **4.** HQRG

15. Select the option in which the given figure is embedded (rotation is NOT allowed).

16. Select the set in which the numbers are related in the same way as are the numbers of the given set.

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. For example: 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(13, 17, 23)

(8, 12, 18)

1. (17, 21, 15)   **2.** (18, 22, 28)   **3.** (11, 15, 23)   **4.** (5, 9, 16)

17. Select the correct mirror image of the given figure when the mirror is placed at AB.
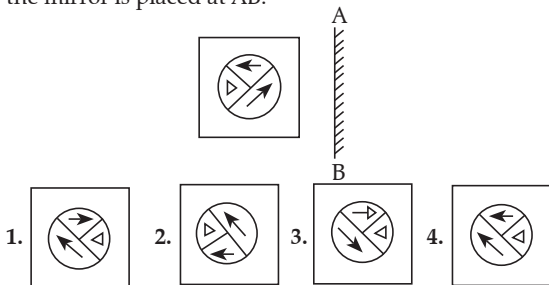
18. Select the correct combination of mathematical signs to sequentially replace the * signs and balance the given equation.

7 * 5 * 4 * 2 * 3 * 7

1. ÷, −, +, ×, =   **2.** +, −, ÷, −, =

3. ÷, +, ÷, +, =   **4.** −, ÷, +, ×, =

19. Select the option that is related to the fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is related to the third letter cluster.

COMFORT : FMOCTRO :: DIGNITY : NGIDYTI :: FOREIGN : ?

**1.** EROFNGI   **2.** ROFNGIE   **3.** EROFIGN   **4.** EFORNGI

20. Select the option that represents the letters that, when sequentially placed from left to right in the blanks below, will complete the letter series.

L _ _ RALMT _ _ _ _ TRALM_ R _

1. TRMALMTA   **2.** MRTLAMTA

3. MTRALMTA   **4.** MTRLAMTA

21. Which of the answer figures is the exact mirror image of the given problem figure when the mirror is held at the right side?

Problem figure:
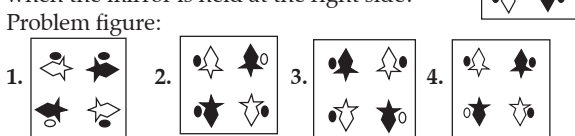
22. In this question, three statements are given, followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follows/follow from the statements.

Statements:

I. No streak is a line.   **II.** Some lines are bands.

III. All bands are flashes.

Conclusions:

I. Some flashes are streaks.   **II.** No flash is a line.

1. Only conclusion I follows

2. Both conclusions I and II follow

3. Only conclusion II follows

4. Neither conclusion I nor II follows

23. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. For example: 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(239, 127, 212)

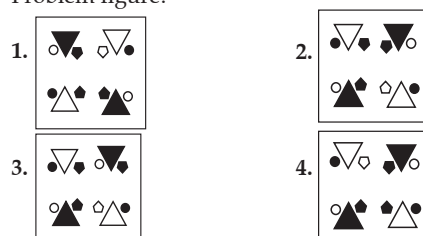(96, 64, 132)

1. (262, 132, 240)   **2.** (140, 76, 181)

3. (167, 89, 178)   **4.** (110, 91, 159)

24. Which of the answer figures is the exact mirror image of the given problem figure when the mirror is held at the right side?

Problem figure:

25. Select the option that is related to the fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is related to the third letter-cluster.

HEROES : LBVLBW :: INVEST : FRZBWX :: KIDNAP : ?

1. MUTYRS   **2.** LOBCSA   **3.** OFHRXT   **4.** AWSLPO

General Awareness

26. The Shevaroy Hills are located in which state of India?

1. Chhattisgarh   **2.** Odisha

3. Rajasthan   **4.** Tamil Nadu

27. In India Who among the following has the power to pardon, reprieve or commute the punishment of any criminal?

1. Prime Minister   **2.** Attorney General of India

3. President   **4.** Vice-President

28. The "Nalacharitam" play is associated with which Indian dance form?

1. Kathak   **2.** Kathakali   **3.** Sattriya   **4.** Odissi

29. The President of which country attended the first Republic Day celebrations of India as its chief guest?

1. Bhutan   **2.** Indonesia   **3.** China   **4.** Japan

30. Which of the following pair of compound – melting point is correct?

I. Acetic acid – 290K   **II.** Ethanol – 156K

1. Only I   **2.** Both I and II

3. Neither I nor II   **4.** Only II

31. In India, what type of unemployment is created due to lack of employable skills among the educated youths in India?

1. Structural unemployment

2. Educated unemployment
3. Cyclical unemployment
4. Technological unemployment

32. Indian boxers _____ won gold medals at the 73rd Strandja Memorial Boxing Tournament, held in Sofia, Bulgaria in February 2022.
1. Manju Rani (52 kg) and Nitu (48 kg)
2. Nikhat Zareen (52 kg) and Nitu (48 kg)
3. Nikhat Zareen (52 kg) and Pooja Rani (48 kg)
4. Manju Rani (52 kg) and Pooja Rani (48 kg)

33. Who was associated with the foundation of the Fergusson College?
1. Dadabhai Naoroji   2. Gopal Krishna Gokhale
3. Lajpat Rai   4. Bal Gangadhar Tilak

34. Name the Bhakti Saint from South India who was initially a Jaina and a minister in the court of a Chalukya king in the twelfth century.
1. Karaikkal Ammaiyar   2. Basavanna
3. Eknath   4. Tallapaka Annamacharya

35. Which amendment of Indian Constitution removed the right to property from the list of fundamental rights?
1. 41st   2. 42nd   3. 43rd   4. 44th

36. Who was the founder of Benaras Gharana of Kathak?
1. Ishwari Prasad   2. Shambhu Maharaj
3. Raja Chakradhar Singh 4. Janaki Prasad

37. What happens to the guard cells when water flows into them?
1. The guard cells close.   2. Stomatal pores open.
3. Stomatal pores shrink.   4. Stomatal pores close.

38. The question consists of two statements, namely, Assertion (A) and Reason (R). Use them to choose the correct alternative.
Assertion (A): During the British rule, India's exports exceeded the imports leading to surplus of balance of trade.
Reason (R): The surplus of balance of trade was used for growth and development of India.
1. Both A and R are true, and R is the correct explanation of A
2. Both A and R are true, but R is not the correct explanation of A
3. A is false but R is true   4. A is true and R is false

39. The Mauryan pillar capital found at _____ is popularly known as the Lion Capital.
1. Bhabru   2. Bairat   3. Sanchi   4. Sarnath

40. How many engines drive 'PM Gati Shakti', a project launched by the central government with an aim to revolutionise infrastructure in India?
1. Two   2. Seven   3. Nine   4. Four

41. Where is the National Dope Testing Laboratory located?
1. Mumbai   2. Bangalore   3. Punjab   4. New Delhi

42. Pandit Ram Narayan was associated with which of the following instruments?
1. Ghatam   2. Tabla   3. Bansuri   4. Sarangi

43. In January 2022, the Supreme Court conferred daughters with equal right to the father's property even prior to codification of Hindu Personal Laws and enactment of the Hindu Succession Act in _____.
1. 1959   2. 1952   3. 1947   4. 1956

44. Who coined the term 'zeroth law of thermodynamics' in 1931, which asserts that two bodies in equilibrium with a third are in equilibrium with each other?
1. James Clerk Maxwell   2. Max Planck
3. Josiah Willard Gibbs   4. Ralph H Fowler

45. Which of the following is NOT included in capital receipts?
1. Foreign aid   2. Taxes
3. Recovery of loans   4. Borrowings

46. What is the name of the portal launched by the Government in 2022 that aims to ease the loan application and disbursement process by the applicant?
1. Swayatta   2. Jan Samarth   3. E- Shram   4. Yukti

47. In which year did Narendra Modi propose to celebrate a day for yoga as 'International Day of Yoga' while speaking at the United Nations General Assembly?
1. 2013   2. 2015   3. 2016   4. 2014

48. What would happen if the difference in pressure in Tahiti was negative?
1. Above average late monsoon   2. Drought
3. Below average and late monsoon
4. Above average and early monsoon

49. In which year was an approach and program named Joint Forest Management (JFM) launched in the context of National Forest Policy?
1. 1965   2. 1988   3. 1996   4. 1947

50. Which Session of Congress and Muslim League reached an understanding of creating a joint front against the British regime?
1. Bombay   2. Allahabad   3. Lucknow   4. Delhi

Quantitative Aptitude

51. If the measure of one angle of a right triangle is 30° more than the measure of the smallest angle, then the measure of the smallest angle is:
1. 90°   2. 60°   3. 30°   4. 75°

52. How many of the following numbers are divisible by 3 but NOT by 9?
5826, 5964, 6039, 6336, 6489, 6564, 6867 and 6960
1. 5   2. 3   3. 4   4. 6

53. The distribution of monthly expenditure of Ramesh on various items is shown in the following pie chart.
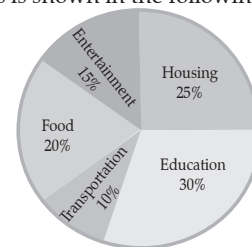
If the monthly income of Ramesh is ₹45,000, then find his total monthly expenditure (in ₹) on housing and transportation.
1. 16,800   2. 15,750   3. 11,250   4. 13,500

54. The sum of the cubes of two given natural numbers is 9728, while the sum of the two given numbers is 32. What is the positive difference between the cubes of the two given numbers?
1. 6272   2. 5832   3. 4662   4. 7904

55. A circular arc whose radius is 4 cm makes an angle 45° at the centre. Find the perimeter of the sector formed.
(Take $\pi = \frac{22}{7}$)
1. $\frac{78}{7}$ cm   2. $\frac{72}{7}$ cm   3. $\frac{74}{7}$ cm   4. $\frac{76}{7}$ cm

56. Which number among 11368, 11638, 11863 and 12638 is divisible by 11?
1. 11368   2. 12638   3. 11638   4. 11863

57. The curved surface area of a right circular cylinder of height 56 cm is 1408 cm². Find the diameter of the base of the cylinder.
1. 8m   2. 0.04m   3. 0.08m   4. 0.008m

58. Select the correct statement about the properties of a triangle.
1. The sum of two sides may be equal to the third side.
2. The sum of two sides is always equal to the third side.
3. The sum of two sides is always greater than the third side.
4. The sum of two sides is always less than the third side.

59. Sara can finish a work in 18 days and Tara can complete the same work in 15 days. Tara worked for 10 days and left the job. In how many days can Sara finish the remaining work alone?
1. 6   2. 7   3. 8   4. 5

60. If $\left(x+\dfrac{1}{x}\right)=6$, and $x > 1$, find the value of $\left(x^2-\dfrac{1}{x^2}\right)$.
1. $18\sqrt{2}$ 2. $30\sqrt{2}$ 3. $24\sqrt{2}$ 4. $12\sqrt{10}$

61. The third proportional to 7 and 63 is:
1. 576   2. 567   3. 441   4. 625

62. 40 men can complete a work in 30 days. However, if 10 men leave the group, how many days will the group take to complete the work?
1. 40   2. 35   3. 45   4. 50

63. If the cost price of 28 oranges is equal to selling price of 24 oranges, then the profit percentage is:
1. $16\dfrac{2}{3}\%$ 2. $16\dfrac{1}{3}\%$ 3. $18\dfrac{2}{3}\%$ 4. $18\dfrac{1}{3}\%$

64. A 252 m long train is running at a speed of 125 km/h. What is the time (in seconds) in which it will pass a man who starts from the engine running at the speed of 17 km/h in the same direction as that of the train?
1. 7.6   2. 8   3. 8.4   4. 6.4

65. If $\tan^4\theta + \tan^2\theta = 1$, what is the value of $11(\cos^4\theta + \cos^2\theta)$?
1. -11 2. 8   3. 0   4. 11

66. Evaluate the following $\sqrt{2+\sqrt{2+\sqrt{2+2\cos8\theta}}}$
1. $2\cos\theta$ 2. $2\cos2\theta$ 3. $\sin2\theta$ 4. $\cos2\theta$

67. Simplify the expression. $\dfrac{7.35\times7.35 - 2.25\times2.25}{0.24}$
1. 204   2. 320   3. 225   4. 304

68. Avinash's monthly salary is ₹50,000 and his monthly expenditure is ₹18,000. Radha's monthly salary is ₹60,000 and her monthly expenditure is ₹24,000. Find the ratio of Radha's savings to Avinash's saving's.
1. 9 : 8   2. 9 : 7   3. 6 : 5   4. 8 : 7

69. A can finish a job in 8 hours and B can finish the same job in 12 hours independently. If they work simultaneously, in how many hours can they do the same job?
1. 4.8   2. 3.7   3. 4.5   4. 3.2

70. The following pie charts show the data of the number of appeared and passed students of class 12 in sections A, B, C, D and E.
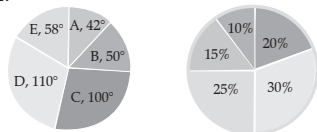
How many students failed in Section C?
1. 250   2. 200   3. 300   4. 400

71. In a circular path of 600 m, Pankaj and Rohit start walking in opposite directions from the same point at the speeds of 2.85 m/s and 5.4 km/h, respectively. After how many minutes will they meet for the first time? (Rounded off to one decimal point)
1. 3.2   2. 2.3   3. 2.7   4. 4.7

72. The average of all prime numbers between 32 and 69 is:
1. 52.5   2. 60   3. 51   4. 56.5

73. If $7\cot P = 24$, then find $\sin P$.
1. $\dfrac{625}{7}$ 2. $\dfrac{24}{25}$ 3. $\dfrac{49}{625}$ 4. $\dfrac{7}{25}$

74. In what time will ₹3,720 amount to ₹5,282.4 at 12% simple interest per annum?
1. 3 years   2. $3\dfrac{1}{2}$ years   3. $5\dfrac{1}{2}$ years   4. 5 years

75. Ram can complete a piece work in 15 days, Rohan in 25 days, and Rohit in 30 days. Rohan and Rohit worked together for 2 days and then Rohit was replaced by Ram. In how many days altogether was the work completed?
1. 10 days   2. 8 days   3. 12 days   4. 7 days

English Comprehension

76. Select the most appropriate option that can substitute the underlined segment in the given sentence.
Polyethylene terephthalate, one of the most often recycled plastics and the material used in the majority of water and soda bottles, <u>can be transformed</u> into everything from polyester fabric to automotive parts.
1. might be placed   2. might be evolved
3. may be converted   4. may be devaluated

77. Select the most appropriate synonym of the underlined word.
I have thus far sketched the events of my life, but I have not shown how much I have depended on books not only for pleasure and for the <u>wisdom</u> they bring to all who read, but also for that knowledge which comes to others through their eyes and their ears.
1. clarity   2. folly   3. insight   4. emotion

78. Select the option that expresses the given sentence in active voice.
The deer was killed by the boar.
1. The deer killed the boar.
2. The boar was killing the deer.
3. The boar was killed by the deer.
4. The boar killed the deer.

79. Select the most appropriate option to fill in the blank.
She could easily eat the _____ biryani by herself.
1. haul   2. whole   3. hall   4. hole

80. Select the option that can be used as a one-word substitute for the given group of words.
A place where airplanes are kept for maintenance
1. Hanger   2. Scullery   3. Hangar   4. Aviary

81. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.
It can/get extreme cold/during/the winters.
1. the winters   2. during   3. It can   4. get extreme cold

82. Select the INCORRECTLY spelt word.
1. Dearth   2. Acceptible   3. Corrupt   4. Barely

83. Select the INCORRECTLY spelt word.
1. Sufficeint   2. Syrup   3. Superior   4. Shrubbery

84. Select the most appropriate ANTONYM of the underlined word.
My niece is an <u>amateur</u> artist. I hope she becomes famous one day.
1. Boring   2. Freelancing   3. Expert   4. Decent

85. Select the most appropriate option to substitute the underlined segment in the given sentence.
The secretary to my boss is very efficient as he not only gives him the required information <u>and also handles</u> correspondence independently.
1. yet also handles   2. but also handles
3. along with also handles   4. not also handles

86. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.
A. My grandmother always went to school with me because the school was attached to the temple.
B. When we both finished, we would be back together.
C. While the children sat in rows on either side of the verandah singing the alphabet or prayer in chorus, my grandmother sat inside reading the scriptures.
D. The priest taught us the alphabet and the morning prayer.
1. ACBD   2. ABDC   3. ADCB   4. ADBC

87. Select the most appropriate synonym to substitute the underlined word.
The weather forecast mentioned that there would be a <u>cloud burst</u> this afternoon.
1. rainstorm   **2.** sandstorm **3.** famine   **4.** snowfall

88. Select the most appropriate option to fill in the blank.
Keats and Shelly were poets of the same period; in other words, they were _____.
1. contemporaries   **2.** co-writers
3. colleagues   **4.** associates

89. Select the most appropriate meaning of the given idiom.
Get up on the wrong side of the bed
1. Someone who is having a horrible day
2. Destroy or ruin a plan
3. Someone who is having a good day
4. Go to bed or go to sleep

90. Identify the option that can be substituted as the correct idiom for the underlined part of the given sentence.
My cousin sister Neetu had an <u>aerial view</u> of the trade fair from the top of the giant wheel.
1. A bird in the gilded cage   **2.** Bird's eye view
3. Birds of same feather   **4.** Bird brain

91. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.
A. He later tried to franchise his restaurant.
B. Colonel Harland Sanders' real-life story of being disappointed numerous times in his life and still making his ambition come true late in life is truly motivating.
C. He began selling chicken at the age of 40, but his dream of opening a restaurant was repeatedly denied owing to conflicts and wars.
D. He is a seventh-grade dropout who tried many things in life but found them bitter.
1. BCDA   **2.** BDCA   **3.** BDAC   **4.** BACD

92. Select the option that expresses the given sentence in passive voice.
We are organising the charity function tomorrow.
1. The charity function is been organised tomorrow.
2. The charity function is being organised tomorrow.
3. The charity function is being organise tomorrow.
4. The charity function is organised tomorrow.

93. Identify the option that arranges the given parts in the correct order to form a meaningful and coherent paragraph.

A. In Shakespeare's hands, English drama
B. that first shone forth in his early history plays
C. William Shakespeare is considered as the greatest dramatist and poet of English language.
D. achieved a matchless brilliance
1. d, b, a, c   **2.** a, b, c, d   **3.** c, a, d, b   **4.** b, c, a, d

94. Select the most appropriate ANTONYM of the word 'Naive' from the given sentence.
After years of working in politics, she had become cynical and jaded, convinced that all politicians were corrupt and that the system was rigged against the people.
1. Jaded   **2.** Corrupt   **3.** Cynical   **4.** Convinced

95. Select the most appropriate phrasal verb to fill in the blank.
The driver very subtly _____ the traffic violation he committed.
1. ironed through   **2.** ironed in
3. ironed out   **4.** ironed aside

Comprehension:
In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.
Colonialism had a great impact on the lives of the aboriginal Australians who were eventually (1) _____ by the whites with all power and privilege. The colonisers turned their land into rubbish pits and (2) _____ sites for their own betterment. The aborigines were often (3) _____ as sub-humans with low status and dirty habits. The whites not only displaced the tribes off their homeland but also (4) _____ the beauty and balance of the natural world. An increase in deforestation and destruction of traditional land led (5) _____ like emu, eagle, and kangaroo, among many others to dwindle over time.

96. Select the most appropriate option to fill in blank number 1.
1. caught   **2.** understood **3.** subjugated **4.** raised

97. Select the most appropriate option to fill in blank number 2.
1. dating   **2.** construction **3.** halting   **4.** recreation

98. Select the most appropriate option to fill in blank number 3.
1. created   **2.** perceived   **3.** received   **4.** led

99. Select the most appropriate option to fill in blank number 4.
1. destroyed **2.** climbed   **3.** utilised   **4.** fed

100. Select the most appropriate option to fill in blank number 5.
1. fauna   **2.** pets   **3.** thugs   **4.** homies

Answer Key

1. (1)	2. (2)	3. (1)	4. (2)	5. (3)	6. (1)	7. (1)	8. (1)	9. (3)	10. (4)	11. (3)	12. (4)	13. (2)
14. (3)	15. (4)	16. (2)	17. (1)	18. (2)	19. (1)	20. (3)	21. (2)	22. (4)	23. (3)	24. (2)	25. (3)	26. (4)
27. (3)	28. (2)	29. (2)	30. (2)	31. (2)	32. (2)	33. (4)	34. (2)	35. (4)	36. (4)	37. (2)	38. (4)	39. (4)
40. (2)	41. (4)	42. (4)	43. (4)	44. (4)	45. (2)	46. (2)	47. (4)	48. (3)	49. (2)	50. (3)	51. (3)	52. (3)
53. (2)	54. (1)	55. (1)	56. (3)	57. (3)	58. (3)	59. (1)	60. (3)	61. (2)	62. (1)	63. (1)	64. (3)	65. (5)
66. (1)	67. (1)	68. (1)	69. (1)	70. (3)	71. (2)	72. (3)	73. (4)	74. (2)	75. (1)	76. (3)	77. (3)	78. (4)
79. (2)	80. (3)	81. (4)	82. (2)	83. (1)	84. (3)	85. (2)	86. (3)	87. (1)	88. (1)	89. (1)	90. (2)	91. (2)
92. (2)	93. (3)	94. (3)	95. (3)	96. (3)	97. (2)	98. (2)	99. (1)	100. (1)				

Answers with Explanations

General Intelligence and Reasoning

1. Option (1) is correct.
Explanation: 19 : 34 :: 5 : 6 :: 27 : 50

Logic: $19 \times 2 - 4 = 34$
$5 \times 2 - 4 = 6$
$27 \times 2 - 4 = 50$

2. Option (2) is correct.
Here, $(4, 3, 16) \Rightarrow 4 \times 3 + 4 = 16$
and $(6, 4, 28) \Rightarrow 6 \times 4 + 4 = 28$
Checking option (2),
$(8, 2, 20) \Rightarrow 8 \times 2 + 4 = 20$

3. Option (1) is correct.
Explanation: Interchange $\times$ and $-$ and using BODMAS Rule,
$171 \div 3 \times 16 + 72 - 412$
$57 \times 16 + 72 - 412$
$912 + 72 - 412 = 572 = $ RHS

4. Option (2) is correct.
Explanation: $E - 3 \to B, B - 6 \to V$
$G - 2 \to E, E \to T$
$B - 2 \to Y, B \to Y$
$J - 3 \to G, G \to Q$
Hence, only GET is a meaningful word

5. Option (3) is correct.
Explanation: Interchange $+$ and $-$ and using BODMAS Rule,
$17 \times 4 - 6 \div 2 + 27$
$17 \times 4 - 3 + 27$
$68 - 3 + 27 = 92 = $ RHS

6. Option (1) is correct.
Explanation:
Logic: Table of Alphabetical series (point to remember)

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

$P + 4 \to T, T + 4 \to X, X + 4 \to B, B + 4 \to F$
$Q - 2 \to O, O - 2 \to M, M - 2 \to K, K - 2 \to 1$
$S + 3 \to V, V + 3 \to Y, Y + 3 \to B, B + 3 \to E$
$T - 1 \to S, S - 1 \to R, R - 1 \to Q, Q - 1 \to P$

7. Option (1) is correct.
Explanation:

N+ :::::::::::::::D–

Z+

B
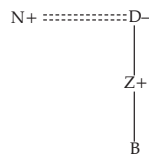
Hence, N is the paternal grandfather of B.

8. Option (1) is correct.
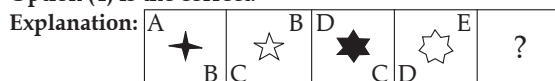**Explanation:**

Rings Fingers Toes Earrings

From the Venn diagram, neither Conclusion I nor Conclusion II follows.

9. Option (3) is correct.
Explanation: S_UCTSR__T_RUE_SR__T
Logic: SRU/CT/SRU/DT/SRU/ET/SRU/FT

10. Option (4) is the correct.
Explanation:

| A ★ | ☆ B | D ★ | ☆ E | ? |
| B C | | C D | | |

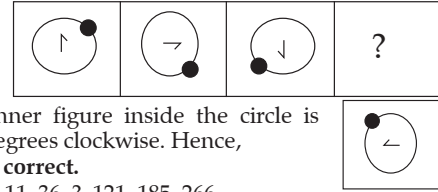**Logic:** Follow the pattern and the sequence.
Hence,

E ★ F

11. Option (3) is correct.
Explanation: India : Royal Bengal Tiger :: Australia : ?
Logic: The Royal Bengal tiger is the national animal of India. Similarly, Kangaroo is the National animal of Australia.

12. Option (4) is correct.
Explanation:

Logic: The inner figure inside the circle is moving 90 degrees clockwise. Hence,

13. Option (2) is correct.
Explanation: 11, 36, ?, 121, 185, 266
Logic:
$11 + 5^2 = 36$
$36 + 6^2 = 72$
$72 + 7^2 = 121$
$121 + 8^2 = 185$
$185 + 9^2 = 266$

14. Option (3) is correct.
Explanation:
Logic:
$F + 2 \to H$
$A + 3 \to D$
$R + 2 \to T$
$M + 3 \to P$
Similarly,
$F + 2 \to H$
$O + 3 \to R$
$O + 2 \to Q$
$D + 3 \to G$

15. Option (4) is correct.
Explanation:
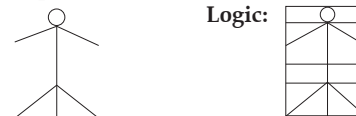
Logic:

16. Option (2) is correct.
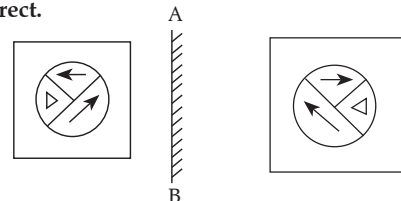Here, $(8, 12, 18) = (3 + 5, 7 + 5, 13 + 5)$
and $(13, 17, 23) = (3 + 5 + 5, 7 + 5 + 5, 13 + 5 + 5)$
Checking option (2),
$(18, 22, 28) = (3 + 5 + 5 + 5, 7 + 5 + 5 + 5, 13 + 5 + 5 + 5)$

17. Option (1) is correct.
Explanation:

Logic: In the mirror image left becomes right and right becomes left. Hence,

18. Option (2) is correct.
Explanation: 7 * 5 * 4 * 2 * 3 * 7
Logic: $7 + 5 - 4 \div 2 - 3 = 7$
LHS $= 7 + 5 - 2 - 3$
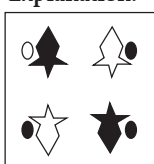$12 - 5 = 7 = $ RHS

19. Option (1) is correct.
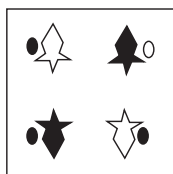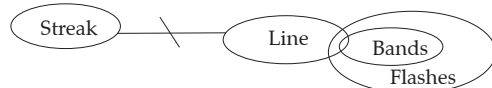**Explanation:** COMFORT : FMOCTRO :: DIGNITY : NGIDYTI :: FOREIGN : ?
Logic:
C O M F   O R T
F M O C   T R O

F O R E   I G N
E R O F   N G I

20. Option (3) is correct.
Explanation: L M T R A/L M T R A/L M T R A/L M T R A

21. Option (2) is correct.
   Explanation:

Logic:
Following the pattern and the symmetry. Hence,

22. Option (4) is correct.
   Explanation:

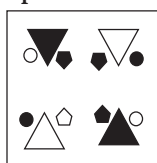From the Venn diagram neither conclusion I nor II follows.

23. Option (3) is correct.
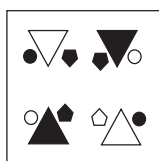   Here, (239, 127, 212) = 239 – 127 + 100 = 212
   and (96, 64, 132) = 96 – 64 + 100 = 132
   Checking option (3),
   (167, 89, 178) = 167 – 89 + 100 = 178

24. Option (2) is correct.
   Explanation:

Logic:
Following the pattern and the symmetry. Hence,

25. Option (3) is correct.
   Explanation:

General Awareness

26. Option (4) is correct.
The Shevaroy Hills are located in the Tamil Nadu state of India. The Shevaroy hill range is positioned to the northeast of Salem, approximately 26 km away, forming a significant feature of the Eastern Ghats. Covering an expanse of about 8640 square kilometres, this hill range includes the Shevaroy hills, encompassing a space of 40 square kilometres. Notably, Yercaud stands as a popular hill station within this region.

Comprising mainly of archean charnockites, intermingled with a limited layer of granite gneiss, the Shevaroys exhibit geological richness. The laterite found here is notable for its high content of hydrated alumina, with estimated bauxite reserves surpassing 15 million tons. These bauxite deposits vary in thickness, spanning from 5 to 20 meters. The geological formations in this area are characterized by prevailing north-northeast to south-southeast orientation, with a distinctive dip towards the southeast. On the slopes of the Shevaroys, the soil predominantly comprises red sandy loam.

27. Option (3) is correct.
Article 72 of the Indian Constitution grants the President of India the power to grant pardons, reprieves, respites, or remissions of punishment or to suspend, remit, or commute the sentence of any person convicted of any offence. This power is derived from the President's role as the head of the state and the highest executive authority in the country.

The President's power to grant pardons is a discretionary power, meaning it is exercised at the President's own discretion and judgment. However, it is exercised on the advice of the Council of Ministers. The Council of Ministers usually considers the recommendations of the Home Ministry and other relevant authorities before making a recommendation to the President.

28. Option (2) is correct.
"Nalacharitham," authored by Unnayi Warrier, is a Kathakali play (Aattakatha). Adapted from the Mahabharatha, it narrates the saga of King Nalan and his consort Damayanthi. The play is divided into four segments – referred to as First, Second, Third, and Fourth Day – each section possesses sufficient length for an entire night's performance. The narrative foundation originates from the Nalan and Damayanthi tale within the Mahabharatha. In the 18th century, Unnayi Warrier meticulously reconfigured this narrative to suit the artistic medium of Kathakali, culminating in the creation of "Nalacharitham Attakatha."

"Nalacharitham" stands as an exemplar of romantic artistry crafted within the framework of Kathakali's classical essence. Its intricate construction has led to it being hailed as the "Shakuntalam" of Malayalam literature. This evocative work remains an artistic homage to love, intrigue, and the timeless appeal of storytelling, resonating with the core of Kathakali's classical heritage.

29. Option (2) is correct.
The inaugural Republic Day Parade occurred on January 26, 1950, with President Sukarno of Indonesia as the distinguished guest of honour. From 1950 to 1954, the Republic Day parades were held at diverse venues including Irwin Stadium (now National Stadium), Kingsway, Red Fort, and Ramlila Maidan. This date also marked the commencement of Dr. Rajendra Prasad's initial term as the President of India. Preceding Republic Day, the President addresses the nation. The festivities encompass three pivotal components: the Republic Day Parade, the Beating Retreat ceremony, and the distribution of awards.

30. Option (2) is correct.
Acetic acid, an organic compound, falls within the category of carboxylic acids. Its chemical formula is CH_3COOH, encompassing a carboxyl functional group to which a methyl group is attached. The melting point of acetic acid is 290 K or around 16.5°C, leading to its tendency to freeze during colder winter periods in regions with cold climates. Ethanoic acid serves as the IUPAC name for acetic acid. In contrast, ethanol consistently exists as a liquid at room temperature, boasting a melting point of 156 K and a boiling point of 351 K. Ethanol stands as a pivotal ingredient in various alcoholic beverages. Moreover, it plays a vital role in the formulation of medicines like cough syrups, tonics, and tinctures of iodine due to its exceptional solvent properties. Ethanol is well-known for its remarkable solubility in water at any proportion.

31. Option (2) is correct.
In India, an educated type of unemployment is created due to a lack of employable skills among educated youths in India. Labour scarcity is evident in specific regions, while labour surplus is noticeable in others. Individuals with technical qualifications often encounter unemployment due to their technical education falling short of industry benchmarks, resulting in a deficiency of skilled workforce. Unemployment linked to education emerges when individuals with advanced educational backgrounds struggle to secure employment. One of the predominant causes of elevated unemployment rates among educated young men in India is lack of industrial and technological training.

Cyclical unemployment holds a pivotal role in driving high unemployment rates, stemming from business cycle downturns. These downturns are integral parts of the periodic ebbs and flows in economic growth. The duration of recession-triggered economic contractions influences the temporary nature of cyclical unemployment.

Structural unemployment arises due to a mismatch between available job positions and the competencies of individuals accessible in the workforce. In India, many individuals fail to

secure jobs owing to inadequate skills and low educational attainment, posing a challenge to their employment prospects. Technological unemployment, on the other hand, ensues from the integration of novel technologies into the economy. This leads to job automation previously carried out by human workers or the replacement of labour with automated machinery. This type of unemployment, inherently structural, stems from technological advancements.

32. Option (2) is correct.

Nikhat Zareen and Nitu both won gold medals at the 73rd Strandja Memorial Boxing Tournament, held in Sofia, Bulgaria in February 2022.

Nikhat Zareen won the gold medal in the 52 kg weight category, defeating her Bulgarian opponent, Stoyka Krasteva, by a score of 5-0. This was Zareen's second gold medal at the Strandja Memorial Boxing Tournament.

Nitu won the gold medal in the 48 kg weight category, defeating her Ukrainian opponent, Hanna Okhota, by a score of 4-1. This was Nitu's first gold medal at the Strandja Memorial Boxing Tournament.

33. Option (4) is correct.

Fergusson College, a renowned educational institution located in Pune, India, owes its foundation to the visionary efforts of Bal Gangadhar Tilak, a prominent freedom fighter, social reformer, and educator. The college was established in 1885, and its formation was driven by Tilak's commitment to providing modern education infused with a sense of Indian cultural and national identity.

Tilak recognized the need for higher education that blended Western knowledge with Indian values and traditions. He believed that such an education system would empower the youth and contribute to India's progress. Fergusson College was established with this ethos, aimed at nurturing well-rounded individuals with a strong sense of patriotism and dedication to the country's advancement.

The college was initially named "Deccan Education Society's Fergusson College" in honour of Sir James Fergusson, the then Governor of Bombay Presidency, who supported Tilak's educational endeavours. The establishment of Fergusson College marked a departure from the prevailing education system, focusing on holistic development and fostering a sense of national pride.

34. Option (2) is correct.

The Bhakti Saint from South India who was initially a Jaina and a minister in the court of a Chalukya king in the twelfth century is Basavanna.

Basavanna was born in the town of Bagevadi in Karnataka. He was a brilliant scholar and a talented poet. He was also a staunch Jaina and served as a minister in the court of the Chalukya king Bijjala II.

However, Basavanna had a spiritual crisis in his early 30s. He was dissatisfied with the Jaina philosophy and he began to question the caste system. He eventually renounced his Jaina faith and became a Lingayat, a Hindu sect that emphasized the worship of the lingam, a symbol of Shiva.

Basavanna became a vocal critic of the caste system and he advocated for social equality. He also founded the Virashaiva movement, which was a major force for social reform in medieval India.

Basavanna is considered to be one of the most important Bhakti saints in Indian history. He is credited with popularizing the use of the Kannada language in literature and with promoting the cause of social justice. His poems are still recited today and they continue to inspire people all over the world.

35. Option (4) is correct.

The 44th Amendment of the Indian Constitution removed the right to property from the list of fundamental rights. The right to property was originally included in the Constitution as a fundamental right in Article 31. However, the 44th Amendment, which was passed in 1978, deleted Article 31 and replaced it with Article 300-A, which guarantees the right to property as a legal right, but not as a fundamental right. The 44th Amendment was passed by the Indira Gandhi

government. The government argued that the right to property was being misused by the wealthy to exploit the poor. The government also argued that the right to property was hindering economic development. The 44th Amendment was controversial and it was challenged in the Supreme Court. However, the Supreme Court upheld the amendment in the case of Minerva Mills Vs. Union of India (1980).

36. Option (4) is correct.

The Kathak style known as the Banaras Gharana originated through the efforts of Jankiprasad, who hailed from Bikaner initially. As he imparted the intricacies of this ancient dance form to his disciples, he laid the foundation for the Banaras Gharana of Kathak. Distinguished by their distinctive approach, practitioners of the Kathak Banaras Gharana confidently execute spins from both the right and left sides. This Gharana stands apart from others in several aspects, encompassing the rendition of that (a segment of performance) and the Tatkaar (footwork) techniques.

37. Option (2) is correct.

Guard cells undergo swelling as water enters them, leading to the opening of the stomatal pore. These specialized cells encircle each stoma, being present on both the upper and lower epidermis of leaves. Their primary role encompasses the regulation of stomatal opening and closure, facilitation of transpiration control, and safeguarding the stomatal pore.

Guard cells envelop the stomata, which are minute openings on leaf surfaces. These cells possess the pivotal role of governing the initiation and termination of stomatal function. As water infiltrates the guard cells, they expand, resulting in the unfolding of the stomatal pore. This mechanism enables the diffusion of carbon dioxide and oxygen into and out of the leaf. Carbon dioxide, essential for photosynthesis, is utilized by the plant to produce nourishment, while oxygen is released as a byproduct of the photosynthesis process.

Upon water exiting the guard cells, they contract, thereby causing the stomata to close. This closure mechanism aids in preventing the loss of water from the leaf. Consequently, it can be established that the influx of water into the guard cells is directly linked to the opening of stomatal pores.

38. Option (4) is correct.

Assertion (A) is true. During British rule, India's exports exceeded the imports leading to a surplus in the balance of trade. This was because India was exporting raw materials, such as cotton and jute, to Britain at very low prices. Britain was then using these raw materials to produce finished goods, which were then sold back to India at much higher prices. This created a trade imbalance in favour of Britain.

Reason (R) is false. The surplus of the balance of trade was not used for the growth and development of India. Instead, it was used to finance Britain's industrial revolution and to pay for the costs of maintaining the British Empire.

The British Raj did not invest in the development of India's infrastructure, such as roads, railways, and ports. This made it difficult for India to industrialize and compete with Britain in the global economy.

The British Raj also imposed high taxes on India, which drained the country's wealth. This money was then used to finance Britain's wars and to pay for the salaries of British officials in India.

As a result of British rule, India became a poor and underdeveloped country. The surplus of the balance of trade did not benefit the Indian people. Instead, it benefited the British Empire.

39. Option (4) is correct.

The Lion Capital of Ashoka is a sculpture that was found at Sarnath, a town in Uttar Pradesh, India. It is the capital, or topmost part, of a pillar that was erected by the Mauryan emperor Ashoka in the 3rd century BCE. The capital is made of polished sandstone and it is about 7 feet tall.

The Lion Capital is crowned by four lions that are standing back to back. The lions are facing the four cardinal directions. The lions are supported by a lotus flower. Below the lions is a frieze that depicts a herd of elephants.

The Lion Capital is a symbol of the Mauryan Empire and it is also a symbol of Buddhism. The lions represent the power and strength of the empire, while the lotus flower represents purity and enlightenment. The herd of elephants represents the peace and prosperity that the empire brought to India.

The Lion Capital is one of the most famous sculptures in India and it is a UNESCO World Heritage Site. It is a reminder of the greatness of the Mauryan Empire and the importance of Buddhism in Indian history.

40. Option (2) is correct.

The PM Gati Shakti project, launched by the central government with an aim to revolutionise infrastructure in India, has seven engines.

The seven engines of PM Gati Shakti are Roads, Railways, Airports, Ports, Waterways, Mass transport, and Logistics infrastructure.

The PM Gati Shakti project aims to create a seamless multimodal transportation network that will connect all parts of India. The project will also focus on improving the efficiency of the logistics sector and reducing the cost of transportation.

The PM Gati Shakti project is a major initiative of the central government to boost infrastructure development in India. The project is expected to create millions of jobs and boost economic growth.

41. Option (4) is correct.

The National Dope Testing Laboratory (NDTL) is located in New Delhi. It is a premier laboratory that conducts dope tests for athletes and sportspersons in India. The NDTL is also responsible for developing and validating testing methods for doping substances.

The NDTL was established in 1990 by the Sports Authority of India (SAI). The laboratory is accredited by the World Anti-Doping Agency (WADA) and it is one of the most advanced doping testing laboratories in the world.

The NDTL has a team of experienced scientists and technicians who are equipped with the latest equipment to conduct dope tests. The laboratory has a wide range of testing methods for doping substances, including gas chromatography-mass spectrometry (GC-MS), liquid chromatography-mass spectrometry (LC-MS), and enzyme-linked immunosorbent assay (ELISA).

The NDTL conducts dope tests for athletes and sportspersons at all levels, from the grassroots to the international level. The laboratory also conducts dope tests for sports events, such as the Olympics, the Commonwealth Games, and the Asian Games.

The NDTL is a valuable asset to the Indian sports fraternity. The laboratory helps to ensure that athletes and sportspersons compete in a doping-free environment.

42. Option (4) is correct.

Pandit Ram Narayan is associated with the sarangi, a bowed stringed instrument that is popular in North India. He is considered to be one of the greatest Sarangi players of all time. Ram Narayan was born in 1927 in a village in Rajasthan, India. He started learning the sarangi at the age of five from his father, who was also a sarangi player. He moved to Mumbai in the early 1950s to pursue a career in music. Ram Narayan quickly became one of the most sought-after Sarangi players in Mumbai. He performed all over India and he also toured internationally. He collaborated with some of the biggest names in Indian classical music, including Ravi Shankar, Ali Akbar Khan, and Kumar Gandharva. Ram Narayan was also a pioneer in the field of sarangi music. He experimented with new techniques and he adapted the sarangi to play a wider range of music. He is credited with popularizing the sarangi outside of India. Ram Narayan was awarded the Padma Bhushan, the third-highest civilian award in India, in 1991. He died in 2018 at the age of 90.

43. Option (4) is correct.

The Supreme Court (SC) has ruled that daughters will have equal rights to their father's property even prior to the enactment of the Hindu Succession Act (HSA) of 1956.

The case involved a dispute over the property of a person who died in 1949 leaving behind a daughter who also died issueless in 1967.

Earlier, the trial court held that since the person had died prior to the enforcement of HSA, 1956 therefore the petitioner and her other sisters were not the heirs as of the date of his death and were not entitled to partition of share in the suit properties. Later, the High Court, too, dismissed the appeal against the trial court.

44. Option (4) is correct.

The Zeroth Law of Thermodynamics, a fundamental principle in thermodynamics, asserts that if two systems are both in a state of thermal equilibrium with a third system, they must also be in a state of thermal equilibrium with each other. In essence, this law establishes temperature as a measure that enables the comparison of two systems. When two systems share the same temperature, they are considered to be in a state of thermal equilibrium.

Introduced by Ralph H. Fowler in 1931, the Zeroth Law of Thermodynamics holds the moniker "Zeroth" as it was formulated subsequent to the establishment of the initial three laws of thermodynamics. These initial laws encompass energy conservation, the direction of spontaneous processes, and system entropy.

Temperature emerges as a characteristic that serves as a basis for the comparison of two systems, in accordance with the principles of the Zeroth Law of Thermodynamics.

45. Option (2) is correct.

Capital receipts are the inflow of funds that increase the assets of the government. They are classified into two categories:

Revenue capital receipts: These are receipts that are not recurring in nature and do not create any liability for the government. They include proceeds from the sale of assets, such as land and buildings, and receipts from privatization.

Capital receipts: These are receipts that are recurring in nature and create a liability for the government. They include loans, borrowings, and grants.

Taxes are not included in capital receipts because they are recurring in nature and do not create any liability for the government. Taxes are used to finance the government's current expenditures.

The other three options, foreign aid, recovery of loans, and borrowings are all included in capital receipts. Foreign aid is a grant that is given to the government by a foreign government or organization. Recovery of loans is the amount of money that the government collects from borrowers who have defaulted on their loans. Borrowings are funds that the government raises from the public or financial institutions.

46. Option (2) is correct.

On June 6, 2022, Prime Minister Modi initiated the Jan Samarth Portal aimed at credit-linked government schemes. This digital platform serves as a comprehensive hub connecting various government credit schemes. The Prime Minister also marked the commencement of the Iconic Week Celebrations by the Ministries of Finance and Corporate Affairs on June 6, 2022. This Iconic Week (June 6-11, 2022) is an integral part of the 'Azadi ka Amrit Mahotsav' festivities.

Distinguished as a pioneering initiative, this platform fosters direct connectivity between beneficiaries and lending institutions. It ensures a seamless coverage of all the affiliated schemes. The Jan Samarth Portal is a distinct digital platform designed to consolidate 13 Credit Linked Government schemes onto a unified interface.

47. Option (4) is correct.

Prime Minister Narendra Modi proposed to celebrate a day for yoga as "International Day of Yoga" while speaking at the United Nations General Assembly on September 27, 2014.

Modi said in his speech, "Yoga is an invaluable gift of India's ancient tradition. It is not just a set of physical exercises but a way to connect with our inner selves. Yoga brings peace to our minds and harmony to our bodies. It is the journey of the self, towards the self, and with the self."

He further said, "I propose that we declare June 21 as the International Day of Yoga. This is the day the sun is at its highest point in the northern hemisphere. It is the longest day of the year in the Northern Hemisphere and the shortest day of the year in the Southern Hemisphere. It is a day of joy and celebration. It is a day when people come together to celebrate the power of yoga."

The United Nations General Assembly adopted a resolution on December 11, 2014, declaring June 21 as the International Day of Yoga. The first International Day of Yoga was celebrated on June 21, 2015.

The International Day of Yoga is now celebrated all over the world. It is a day when people come together to practice yoga and to learn about the benefits of yoga. It is a day to celebrate the ancient Indian tradition of yoga and its relevance to the modern world.

48. Option (3) is correct.

If the difference in pressure in Tahiti was negative, it would lead to a below-average and late monsoon in India.

The difference in pressure between Tahiti and Darwin is used to predict the strength and timing of the monsoon in India. When the pressure in Tahiti is lower than the pressure in Darwin, it creates a pressure gradient that draws winds from the Indian Ocean to the Pacific Ocean. This causes the monsoon winds to weaken and the monsoon rains to be delayed.

A negative difference in pressure in Tahiti can also lead to drought conditions in India. This is because the monsoon rains are essential for agriculture in India. When the monsoon rains are delayed or below average, it can lead to crop failures and drought conditions.

The last time there was a negative difference in pressure in Tahiti was in 2002. This led to a below-average and late monsoon in India, which caused crop failures and drought conditions in many parts of the country.

49. Option (2) is correct.

Joint Forest Management (JFM) is a forest management approach that involves the participation of local communities and forest dwellers in the management and protection of forest resources. It was introduced in India as a response to the degradation of forest ecosystems and the need to involve local communities in sustainable forest management.

JFM was officially launched in the context of the National Forest Policy in the year 1988. The policy recognized the importance of involving local communities in the conservation and management of forests to address issues of deforestation, over-exploitation of resources, and degradation of forest ecosystems.

Under the JFM approach, local communities are encouraged to actively participate in the protection, regeneration, and sustainable use of forest resources. This often involves joint efforts between forest departments and local communities, where communities are given rights and responsibilities to manage and protect designated forest areas. They may be involved in activities such as afforestation, reforestation, protection against illegal logging, and preventing forest fires.

50. Option (3) is correct.

The Congress and Muslim League reached an understanding of creating a joint front against the British regime in the Lucknow Session of 1916. The agreement between the Congress and the Muslim League in 1916, known as the Lucknow Pact, holds historical significance. During the 1916 session, presided over by Ambikacharan Majumdar, a turning point emerged due to the Anti-British sentiments among Muslims triggered by the war between Britain and Turkey. This event paved the way for the unity between the Congress and the Muslim League.

The Congress and the Muslim League held their sessions concurrently in Lucknow in 1916, culminating in the renowned Lucknow Pact. This pact marked a significant agreement where Congress conceded to the idea of separate electorates, and both organizations jointly advocated for the attainment of dominion status for India.

Quantitative Aptitude

51. Option (3) is correct.

Let the smallest angle of triangle $= x$

$\therefore$ Another angle of that triangle $= x + 30°$

According to question

$x + (x + 30°) + 90° = 180°$

[Sum of angles of a triangle]

$\Rightarrow 2x + 120° = 180°$

$\Rightarrow \qquad 2x = 180° - 120° = 60°$

$\Rightarrow \qquad x = \dfrac{60°}{2} = 30°$

52. Option (3) is correct.

We know that:

(i) Sum of digits of a number is divisible by 3 then the number is also divisible by 3.

(ii) Sum of digits of a number is divisible by 9 then the number is also divisible by 9.

Sum of digits of 5826 = 5 + 8 + 2 + 6 = 21 [Divisible by only 3]

Sum of digits of 5964 = 5 + 9 + 6 + 4 = 24 [Divisible by only 3]

Sum of digits of 6039 = 6 + 0 + 3 + 9 = 18

[Divisible by both 3 & 9]

Sum of digits of 6336 = 6 + 3 + 3 + 6 = 18

[Divisible by both 3 & 9]

Sum of digits of 6489 = 6 + 4 + 8 + 9 = 27

[Divisible by both 3 & 9]

Sum of digits of 6564 = 6 + 5 + 6 + 4 = 21

Sum of digits of 6867 = 6 + 8 + 6 + 7 = 27

Sum of digits of 6960 = 6 + 9 + 6 + 0 = 21

So, there are 4 such numbers which is divisible by 3 but not by 9.

53. Option (2) is correct.

Percentage of total expenditure (monthly) on housing and transportation = 25% + 10% = 35%

$\therefore$ Required amount $= \dfrac{35}{100} \times 45000 = ₹15,750$

54. Option (1) is correct.

Let one number be x.

$\Rightarrow$ Second number $= 32 - x$

According to question,

$$x^3 + (32 - x)^3 = 9728$$

$\Rightarrow x^3 + 32^3 - x^3 - 3x\,(32 - x)(x + 32 - x) = 9728$

$\Rightarrow \qquad 32^3 - 3 \times 32x\,(32 - x) = 9728$

$\Rightarrow \qquad 32^2 - 3x\,(32 - x) = 304$

$\Rightarrow \qquad 1024 - 96x + 3x^2 = 304$

$\Rightarrow \qquad x^2 - 32x + 240 = 0$

$\Rightarrow \qquad x^2 - 20x - 12x + 240 = 0$

$\Rightarrow \qquad (x - 20)(x - 12) = 0$

So, two numbers are 20 & 12.

$\therefore$ Required difference $= 20^3 - 12^3 = 8000 - 1728 = 6272$
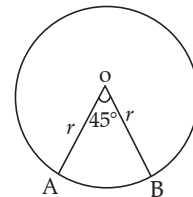
55. Option (1) is correct.

Radius of arc, $r = 4$ cm

Angle of arc, $\theta = 45°$

$\therefore$ Perimeter of arc

$$= \dfrac{\theta}{360°} \times 2\pi r + 2r$$

$$= \dfrac{45°}{360°} \times 2 \times \dfrac{22}{7} \times 4 + 2 \times 4 = \dfrac{78}{7} \text{ cm}$$

56. Option (3) is correct.

Divisibility test of 11

[Sum of odd place digits – Sum of even place digits] must be divisible by 11 to have number divisible by 11.

∴ In 11638

Sum of odd place digits = 1 + 6 + 8 = 15

Sum of even place digits = 1 + 3 = 4

∴ Difference = 15 – 4 = 11 (Divisible by 11)

∴ 11638 is divisible by 11.

57. Option (3) is correct.

Let radius of cylinder = r cm

Height of cylinder, h = 56 cm

Curved surface area of cylinder = $2\pi rh$

Now, $2 \times \dfrac{22}{7} \times r \times 56 = 1408$

⇒ $\qquad 2r = \dfrac{1408 \times 7}{22 \times 56}$

⇒ $\qquad 2r = 8$

Diameter of the base of the cylinder = 8 cm

$\qquad\qquad\qquad\qquad = 0.08$ m

58. Option (3) is correct.

Since, we know that sum of two sides of a triangle is always greater than the third side.

59. Option (1) is correct.

Sara finishes work in 18 days.

Tara completes work in 15 days.

Now, 10 days work of Tara

$= 10 \times \dfrac{1}{15} = \dfrac{2}{3}$rd of complete work

Remaining work $= 1 - \dfrac{2}{3} = \dfrac{1}{3}$rd

Time needed by Sara to finish remaining work

$= \dfrac{\frac{1}{3}}{\frac{1}{18}} = \dfrac{18}{3} = 6$ days

60. Option (3) is correct.

∵ $\qquad x + \dfrac{1}{x} = 6$

⇒ $\qquad \dfrac{x^2 + 1}{x} = 6 \Rightarrow x^2 - 6x + 1 = 0$

Here, $a = 1$, $b = -6$ and $c = 1$

⇒ $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \dfrac{6 \pm \sqrt{(-6)^2 - 4 \times 1 \times 1}}{2 \times 1}$

⇒ $\qquad x = 3 \pm \sqrt{8}$

$\qquad\qquad\qquad\qquad\qquad [\because x > 1]$

∴ $\qquad x = 3 + \sqrt{8} = 3 + 2\sqrt{2}$

Now, $x^2 - \dfrac{1}{x^2} = \left(3 + 2\sqrt{2}\right)^2 - \dfrac{1}{\left(3 + 2\sqrt{2}\right)^2}$

$= \left(17 + 12\sqrt{2}\right) - \dfrac{1}{17 + 12\sqrt{2}} \times \left[\dfrac{17 - 12\sqrt{2}}{17 - 12\sqrt{2}}\right]$

$= 17 + 12\sqrt{2} - \left(17 - 12\sqrt{2}\right)$

$= 24\sqrt{2}$

61. Option (2) is correct.

If a, b and c are in proportion (c is third proportion)

⇒ $\qquad \dfrac{a}{b} = \dfrac{b}{c}$

∴ $\qquad \dfrac{7}{63} = \dfrac{63}{c}$

⇒ $\qquad c = \dfrac{63 \times 63}{7} = 567$

62. Option (1) is correct.

40 men can complete a work in 30 days.

∴ Work (in units) = Men × days

$\qquad\qquad = 40 \times 30 = 1200$ units

1200 units of work can be completed by 30 men.

$\qquad m = \dfrac{1200}{30}$ days = 40 days.

63. Option (1) is correct.

If cost price of m articles = selling price of n articles

∴ Profit percentage $= \dfrac{m - n}{n} \times 100\%$

According to question

$m = 28$ and $n = 24$

∴ Profit percentage $= \dfrac{28 - 24}{24} \times 100\% = \dfrac{4}{24} \times 100\% = 16\dfrac{2}{3}\%$

64. Option (3) is correct.

Effective speed of train with respect to man = (125 – 17) km/h = 108 km/h = 30 m/s

Time taken to pass man by train

$= \dfrac{\text{Length of train}}{\text{Speed of train}} = \dfrac{252}{30} = 8.4$ m

[As man has negligible length with respect to train]

65. Option (4) is correct.

∵ $\qquad \tan^4 \theta + \tan^2 \theta = 1$

⇒ $\tan^2 \theta [\tan^2 \theta + 1] = 1$

⇒ $\qquad \tan^2 \theta \cdot \sec^2 \theta = 1$ $\qquad [\because \tan^2 \theta + 1 = \sec^2 \theta]$

⇒ $\dfrac{\sin^2 \theta}{\cos^2 \theta} \times \dfrac{1}{\cos^2 \theta} = 1$

$\left[\because \tan \theta = \dfrac{\sin \theta}{\cos \theta}, \sec \theta = \dfrac{1}{\cos \theta}\right]$

⇒ $\qquad \dfrac{1 - \cos^2 \theta}{\cos^4 \theta} = 1$ $\qquad [\because \sin^2 \theta = 1 - \cos^2 \theta]$

⇒ $\qquad 1 - \cos^2 \theta = \cos^4 \theta$

⇒ $\qquad 1 = \cos^4 \theta + \cos^2 \theta$

⇒ $11[\cos^4 \theta + \cos^2 \theta] = 1 \times 11 = 11$

66. Option (1) is correct.

∵ $\cos 2\theta = 2\cos^2 \theta - 1$

∴ $\sqrt{2 + \sqrt{2 + \sqrt{2 + 2\cos 8\theta}}} =$

$\sqrt{2 + \sqrt{2 + \sqrt{2 + 2(2\cos^2 4\theta - 1)}}}$

$= \sqrt{2 + \sqrt{2 + \sqrt{4\cos^2 4\theta}}} = \sqrt{2 + \sqrt{2 + 2\cos 4\theta}}$

$= \sqrt{2 + \sqrt{2 + 2[2\cos^2 2\theta - 1]}}$

$= \sqrt{2 + \sqrt{4\cos^2 2\theta}}$

$= \sqrt{2 + 2\cos 2\theta} = \sqrt{2 + 4\cos^2 \theta - 2}$

$= \sqrt{4\cos^2 \theta} = 2\cos \theta$

67. Option (1) is correct.

$\dfrac{7.35 \times 7.35 - 2.25 \times 2.25}{0.24}$

$= \dfrac{(7.35 + 2.25)(7.35 - 2.25)}{0.24}$

$\qquad\qquad\qquad\qquad [\because a^2 - b^2 = (a + b)(a - b)]$

$= \dfrac{9.6 \times 5.1}{0.24} = 4 \times 51 = 204$

68. Option (1) is correct.

$$\text{Required Ratio} = \frac{\text{Radha's saving}}{\text{Avinash's saving}}$$

$$= \frac{\text{Radha's [Salary-Expenditure]}}{\text{Avinash's [Salary-Expenditure]}}$$

$$= \frac{60000 - 24000}{50000 - 18000} = \frac{36}{32} = 9:8$$

69. Option (1) is correct.

A can finish job in 8 hours.

B can finish job in 12 hours

∴ Simultaneously, they will finish the job in $\dfrac{1}{\dfrac{1}{8}+\dfrac{1}{12}}$ hours.

$$= \frac{24}{3+2} = \frac{24}{5} = 4.8 \text{ hours}$$

70. Option (3) is correct.

Number of students appeared in exam from section

$$C = \frac{100}{360} \times 1800 = 500$$

Number of students passed in exam from section

$$C = \frac{25}{100} \times 800 = 200$$

∴ Number of students failed in section C = 500 – 200 = 300

71. Option (2) is correct.

Effective speed of Pankaj and Rohit

$$= \left(2.85 + 5.4 \times \frac{5}{18}\right) \text{m/s}$$

$$= 4.35 \text{ m/s}$$

Time when they will meet first time $= \dfrac{600}{4.25} \text{s} = 2.29 \text{ min}$

$\approx 2.3 \text{ min}$

72. Option (3) is correct.

Prime numbers between 32 and 69 are 37, 41, 43, 47, 53, 59, 61, 67.

Total number of prime numbers between 32 and 69 = 8

$$\therefore \text{Average} = \frac{37 + 41 + 43 + 47 + 53 + 59 + 61 + 67}{8} = 51$$

73. Option (4) is correct.

We know that: $\cot\theta = \dfrac{\cos\theta}{\sin\theta} = \dfrac{\sqrt{1 - \sin^2\theta}}{\sin\theta}$

$$\because \qquad 7 \cot P = 24$$

$$\Rightarrow \qquad \cot P = \frac{24}{7}$$

$$\Rightarrow \qquad \frac{\sqrt{1 - \sin^2 P}}{\sin P} = \frac{24}{7}$$

Squaring both sides

$$\Rightarrow \qquad \frac{1 - \sin^2 P}{\sin^2 P} = \frac{576}{49}$$

$$\Rightarrow \quad 49 - 49 \sin^2 P = 576 \sin^2 P$$

$$\Rightarrow \qquad 49 = 625 \sin^2 P$$

$$\Rightarrow \qquad \sin P = \sqrt{\frac{49}{625}} = \frac{7}{25}$$

74. Option (2) is correct.

A, Amount = ₹ 5282.4

P, Principal = ₹ 3720

Rate of interest, $R = 12\%$

Time = t years

∴ Simple interest = 5282.4 – 3720 = ₹ 1562.4

∴ Simple interest $= \dfrac{P \times R \times T}{100}$

$$\Rightarrow \qquad 1562.4 = \frac{3720 \times 12 \times t}{100}$$

$$\Rightarrow \qquad t = 3.5 \text{ years} = 3\frac{1}{2} \text{ years}$$

75. Option (1) is correct.

Ram can finish work in 15 days.

Rohan can finish work in 25 days.

Rohit can finish work in 30 days.

2 days work of Rohan & Rohit

$$= 2\left[\frac{1}{25} + \frac{1}{30}\right]$$

$$= 2\left[\frac{6+5}{150}\right]$$

$$= \frac{11}{75} \text{ parts of work}$$

Remaining work $= 1 - \dfrac{11}{75} = \dfrac{64}{75}$ parts of work

1 day work of Ram & Rohan

$$= \frac{1}{15} + \frac{1}{25} = \frac{10+6}{150}$$

$$= \frac{8}{75} \text{ parts of work}$$

∴ Ram & Rohan will finish remaining work in $\dfrac{64/75}{8/75}$

days i.e., $\dfrac{64}{8} = 8$ days.

So work will be complete in 8 + 2 = 10 days

English Comprehension

76. Option (3) is correct.

The correct sentence is: Polyethylene terephthalate, one of the most often recycled plastics and the material used in the majority of water and soda bottles, may be converted into everything from polyester fabric to automotive parts. Transformed means to change/convert. Therefore, the best substitute for 'can be transformed' is 'may be converted'. Words like 'placed/evolved/devaluated' have different connotations.

77. Option (3) is correct.

The word 'wisdom' implies 'the fact of being based on sensible or wise thinking'. The sentence speaks of the wisdom/ understanding/insight books give. 'Folly' means 'foolishness'; 'clarity' implies 'precision'.

78. Option (4) is correct.

The sentence 'The deer was killed by the boar' is in passive voice, to change in active voice we need to interchange the object and subject with each other, i.e. object of the passive sentence becomes the subject of the active sentence. The correct sentence is: The boat killed the deer. The verb in simple past tense, will change into the form: subject + was/ were + past form + object.

79. Option (2) is correct.

The correct sentence is: She could easily eat the whole biryani by herself. 'Haul' implies 'pull or drag with effort or force.' While, 'whole' means the entire part.

80. Option (3) is correct.

'Hanger' refers to 'a shaped piece of wood, plastic, or metal with a hook at the top, from which clothes may be hung in order to keep them in shape.' A 'scullery' is 'a small kitchen or room at the back of a house used for washing dishes and other dirty household work.' An 'aviary' is a large cage, building, or enclosure for keeping birds in, while a 'hangar' is 'a large building with an extensive floor area, typically for housing aircraft.'

81. Option (4) is correct.

The correct sentence is: It can get extremely cold during the winters. The part 'extreme cold' has the error. It must be written as 'extremely cold'. This is because the adjective 'cold' can be modified by an adverb, so 'extremely' is appropriate.

82. Option (2) is correct.

The word 'Acceptible' will be spelled as 'Acceptable', meaning tolerable.

83. Option (1) is correct.

The word 'Sufficeint' will be spelled as 'sufficient', meaning enough.

84. Option (3) is correct.

The word 'amateur' implies 'a person who follows a pursuit without attaining proficiency or professional status'. Therefore, the correct antonym is 'expert'. Other options hardly stand a chance. Moreover, the sentence clarifies that the niece is still to accomplish as an artist, so she is not an expert.

85. Option (2) is correct.

The correct sentence is: The secretary of my boss is very efficient as he not only gives him the required information but also handles correspondence independently. The part 'and also' will be substituted by 'but also'. This is because 'not only… but also' is a conjunction in pair.

86. Option (3) is correct.

The correct sequence is ADCB. (A) initiates the paragraph, by introducing the para by stating that grandmother who always went to school with me because the school was attached to the temple. This idea of a temple visit is continued in (D) by mentioning the priest taught us the alphabet and the morning prayer. While teaching, the children were made to sit in rows on either side of the verandah, while grandmother sat inside reading the scriptures. The conclusion comes in (B). The correct paragraph is: My grandmother always went to school with me because the school was attached to the temple. The priest taught us the alphabet and the morning prayer. While the children sat in rows on either side of the verandah singing the alphabet or prayer in chorus, my grandmother sat inside reading the scriptures. When we both finished, we would be back together.

87. Option (1) is correct.

The phrase 'cloud burst' implies 'a sudden, very heavy rainfall, usually local in nature and of brief duration.' Therefore, the correct substitute is 'rainstorm'.

88. Option (1) is correct.

The correct sentence is: Keats and Shelly were poets of the same period; in other words, they were contemporaries. A contemporary means 'a person or thing living or existing at the same time as another.' The context 'poets of the same period' justifies the appropriateness of 'contemporaries'.

89. Option (1) is correct.

The idiom 'get up on the wrong side of the bed' connotes 'to be in a bad mood throughout the day'. Therefore, the correct option is: Someone who is having a horrible day. Example: I think I have got up on the wrong side of the bed, as I have been constantly at loggerheads with my boss.

90. Option (2) is correct.

The idiom 'an aerial view' is also known as a bird's eye view. This is the viewpoint seen at a high elevation. The reference to Neetu taking a view of the fair from the top of the giant wheel corroborates 'a bird's eye view'.

91. Option (2) is correct.

The correct sequence is BDCA. (B) introduces the subject: 'Colonel Harland Sanders' and his ambition coming true late in life. This continues in (D) followed by (A), by stating: how he started off-he was a seventh-grade dropout who tried many things in life but found them bitter and how in he started with selling chicken at the age of 40, but his dream of opening a restaurant was repeatedly denied owing to conflicts and wars. But later he tried to franchise his restaurant. Therefore, the logically coherent link is BDCA.

92. Option (2) is correct.

The sentence 'We are organising the charity function tomorrow' is in active voice. To change in passive voice, we need to interchange the object and subject with each other, i.e. object of the active sentence becomes the subject of the passive sentence. The correct sentence is: The charity function is being organised tomorrow. The correct structure of verbs in passive voice: subject + Am/is/are + Being + verb [past participle] + by/with/to + Object.

93. Option (3) is correct.

The correct sequence is c, a, d, b. The statement (c)introduces the topic: William Shakespeare as the greatest dramatist and poet of the English language. This is justified in (a) by mentioning, that it was in his hands that English drama (subject) + achieved a matchless brilliance (verb + object). Therefore, the correct sentence is: William Shakespeare is considered as the greatest dramatist and poet of the English language. In Shakespeare's hands, English drama achieved a matchless brilliance that first shone forth in his early history plays. Thus, c, a, d, b is the most logically coherent link.

94. Option (3) is correct.

'Naïve' means 'showing a lack of experience, wisdom, or judgement.' Jaded means fatigued by overwork: exhausted. Cynical implies ' not trusting or respecting the goodness of other people and their actions'. Convinced means completely certain about something. Therefore, the antonym of 'naïve' is 'cynical'.

95. Option (3) is correct.

The correct sentence is: The driver very subtly ironed out the traffic violation he committed. The phrase 'ironed out' connotes 'to resolve or work out a solution to'. In the sentence, the driver tried to resolve the traffic violation he committed.

96. Option (3) is correct.

The correct sentence is: Colonialism had a great impact on the lives of the aboriginal Australians who were eventually subjugated by the whites with all power and privilege. The word 'subjugated' implies 'bring under domination or control, especially by conquest.' The context clarifies that the whites used their power and privilege to dominate the aboriginal Australians.

97. Option (2) is correct.

The correct sentence is: The colonisers turned their land into rubbish pits and construction sites for their own betterment. The word 'betterment' suggests that the land of the aboriginal Australians was used for construction purposes to suit the needs of the whites.

98. Option (2) is correct.

The correct sentence is: The aborigines were often perceived as sub-humans with low status and dirty habits. It is clear from the sentence that the aborigines were deemed as sub-humans with low status and dirty habits.

99. Option (1) is correct.

The correct sentence is: The whites not only displaced the tribes of their homeland but also destroyed the beauty and balance of the natural world. The sentence refers to the domination of the whites and their heinous acts against the aborigines- displacing the tribes of their homeland, thus, another negative word is appropriate for the blank-destroyed. The whites had destroyed the beauty and balance of the natural world.

100. Option (1) is correct.

The correct sentence is: An increase in deforestation and destruction of traditional land led fauna like emu, eagle, and kangaroo, among many others to dwindle over time. The term 'fauna' refers to 'the animal life present in a particular region or time.' Animals like 'emu, eagle, and kangaroo' belonged to that time, so 'fauna' is appropriate.

General Intelligence and Reasoning

1. Select the option figure which is embedded in the given figure. (Rotation is NOT allowed).

1. **2.** **3.** **4.**

2. Select the option that represents the correct order of the given words as they would appear in an English dictionary.
1. Warriors $\quad$ 2. Warehouse $\quad$ 3. Warcraft
4. Warranty $\quad$ 5. Wardrobe $\quad$ 6. Wardenship
1. 3, 6, 5, 2, 1, 4 $\qquad$ **2.** 3, 5, 6, 2, 1, 4
3. 3, 5, 6, 2, 4, 1 $\qquad$ **4.** 3, 6, 5, 2, 4, 1

3. Three statements are given, followed by four conclusions numbered I, II, III and IV. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.
Statements:
Some desks are trays.
Some trays are plates.
Some plates are desks.
Conclusions:
I. All desks are plates. $\qquad$ II. All plates are desks.
III. Some plates are trays. $\quad$ IV. All trays are desks.
1. Only conclusion III follows
2. Only conclusion IV follows
3. Only conclusion II follows
4. Only conclusion I follows

4. Select the option that is related to the third word in the same way as the second word is related to the first word. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word.)
Skin : Touch :: Nose : ?
1. Smell $\qquad$ **2.** Taste $\qquad$ **3.** Nose ring $\quad$ **4.** Sweat

5. Ganesh was taking a walk with his mother's brother's father's grand-daughter. Who was he walking with?
**1.** Daughter $\qquad$ **2.** Mother
3. Cousin $\qquad$ **4.** Grand-daughter

6. Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.
T e 2 9 E K P
M ——————— N
1. ꓔ 𝟞 𝟸 δ E K ꓑ $\qquad$ **2.** ꓔ 𝟞 Ɔ 𝟨 E K ꓑ
3. ꓔ ꓘ Ǝ 𝟫 Ƨ e ꓔ $\qquad$ **4.** ꓔ 𝟞 Ƨ δ E K ꓑ

7. Which of the following letter-clusters will replace the question mark (?) in the given series?
UV, OY, IB, EE, ?
1. ZK $\qquad$ **2.** AH $\qquad$ **3.** BI $\qquad$ **4.** BH

8. The second number in the given number-pairs is obtained by performing certain mathematical operation(s) on the first number. The same operation(s) is/are followed in all the number-pairs except one. Find that odd number-pair.
1. 20 : 11 $\qquad$ **2.** 6 : 4 $\qquad$ **3.** 15 : 9 $\qquad$ **4.** 12 : 7

9. Select the figure that will replace the question mark (?) in the following figure series.
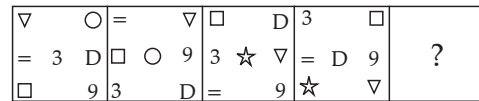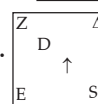
1. **2.** **3.** **4.**

10. Three different positions of the same dice are shown. Find the number on the face opposite the face showing '1'.
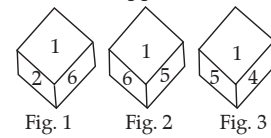
Fig. 1 $\qquad$ Fig. 2 $\qquad$ Fig. 3
1. 6 $\qquad$ **2.** 2 $\qquad$ **3.** 3 $\qquad$ **4.** 4

11. Select the set in which the numbers are related in the same way as are the numbers of the following sets.
(55, 11, 25)
(64, 16, 16)
(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is NOT allowed)
1. (33, 11, 9) $\quad$ **2.** (33, 11, 22) **3.** (33, 11, 3) $\quad$ **4.** (33, 11, 10)

12. Select the option that is related to the sixth letter-cluster in the same way as the first letter-cluster is related to the second letter-cluster and the third letter-cluster is related to the fourth letter-cluster.
HMD : KOE : : BNQ : EPR :: ? : FLV
1. SJE $\qquad$ **2.** UJC $\qquad$ **3.** EJS $\qquad$ **4.** CJU

13. Select the figure from the options that can replace the question mark (?) and complete the given pattern.
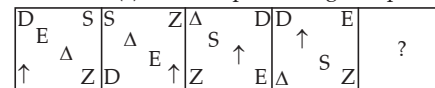
1. **2.** **3.** **4.**

14. Select the Venn diagram that best illustrates the relationship between the following classes.
Ticket, Aeroplane, Rail

1. $\qquad$ **2.**

3. $\qquad$ **4.**
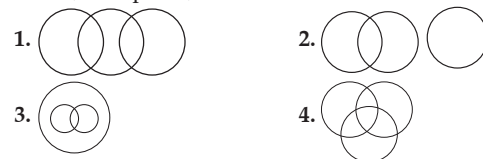
15. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the odd letter-cluster.
    1. BFJN   **2.** DHLP   **3.** HJKP   **4.** JNRV

16. Select the option that is related to the fifth number in the same way as the second number is related to the first number and the fourth number is related to the third number.
5 : 45 :: 3 : 3 :: 6 : ?
    1. 90   **2.** 106   **3.** 110   **4.** 96

17. Which of the following numbers will replace the question mark (?) in the given series?
8, 15, 26, ?, 56, 75
    1. 39   **2.** 41   **3.** 35   **4.** 43

18. Select the option that is related to the third term in the same way as the second term is related to the first term and the sixth term is related to the fifth term.
7183 : 3850 :: 6957 : ? :: 8972 : 5639
    1. 3426   **2.** 3624   **3.** 3246   **4.** 3642

19. Three different positions of the same dice are shown. Find the number on the face opposite the face showing '4'.

Fig. 1   Fig. 2   Fig. 3
    1. 5   **2.** 6   **3.** 2   **4.** 3

20. Select the option that is related to the fifth number in the same way as the second number is related to the first number and the fourth number is related to the third number.
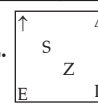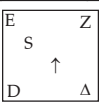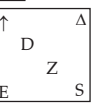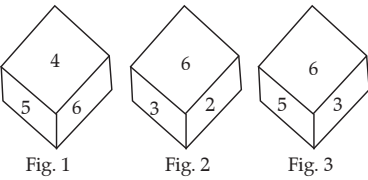625 : 5 :: 2560 : 8 :: 5000 : ?
    1. 9   **2.** 12   **3.** 10   **4.** 15

21. In a certain code language, 'ASK' is written as '62' and 'BYE' is written as '64'. How will 'CRY' be written in that language?
    1. 68   **2.** 72   **3.** 86   **4.** 92

22. Select the correct combination of mathematical signs that can sequentially replace the * signs and balance the given equation.
256 * 4 * 9 * 3 * 14 = 51
    1. × + − ÷   **2.** ÷ × − +   **3.** × ÷ + −   **4.** ÷ − × +

23. Select the option that represents the letters that, when placed from left to right in the following blanks, will complete the letter-series.
C L _ V E C _ _ W E C L O _ _ C _ O _ E
    1. O L P X E L Y   **2.** O L O Y E L Z
    3. O L O X F M Y   **4.** O L O X E L Y

24. In a certain code language, 'TABLE' is coded as ELEAT and 'SWING' is coded as GNLWS. How will 'FRAME' be coded in the same language?
    1. EMERF   **2.** EMDRF   **3.** ERMDF   **4.** MEDFR

25. Which two signs should be interchanged to make the given equation correct?
588 ÷ 28 × 32 + 72 − 160 = 760
    1. − and +   **2.** ÷ and −   **3.** + and ×   **4.** ÷ and +

General Awareness

26. The length of the badminton court for singles is:
    1. 13.44 m   **2.** 13.55 m   **3.** 14 m   **4.** 13.40 m

27. Who is the Administrative Head of the Indian Audit and Accounts Department?
    1. Accountant General
    2. Principal Accountant General
    3. Director General
    4. The Comptroller and Auditor General

28. Which of the following is the largest pan-India scheme to strengthen health care infrastructure across the country with focus on primary, secondary and tertiary care services?
    1. LaQshya   **2.** AB-PMJAY   **3.** PM-ABHIM   **4.** PM-MI

29. Which of the following festivals is associated with the term 'ties of protection'?
    1. Baisakhi   **2.** Karwa Chauth
    3. Chhath Pooja   **4.** Raksha Bandhan

30. In October 2021, 19-year-old _____ won the silver medal at the World Wrestling Championship.
    1. Anshu Malik   **2.** Seema Bisla
    3. Sanju Devi   **4.** Sonam Malik

31. _____ emerged as the poorest state as per the first-ever Multi-dimensional Poverty Index (MPI) prepared by Niti Aayog and launched in November 2021.
    1. Bihar   **2.** Madhya Pradesh
    3. Uttar Pradesh   **4.** Mizoram

32. The consumption of fixed capital is also known as _____.
    1. depreciation   **2.** net investment
    3. appreciation   **4.** gross investment

33. The Vedic Aryans lived in the area called Sapt-Sindhu, which means area drained by seven rivers. One of the rivers among the seven is Jhelum. What was its ancient name?
    1. Askini   **2.** Parushni   **3.** Vipash   **4.** Vitasta

34. In Chola administration, _____ was the assembly in the villages which were inhabited predominantly by the Brahmanas.
    1. Ur   **2.** Khilya   **3.** Nagaram   **4.** Sabha

35. Which of the following states is NOT a part of the Tapi Basin?
    1. Rajasthan   **2.** Maharashtra
    3. Madhya Pradesh   **4.** Gujarat

36. Which of the following is used as a cooling medium for the Large Hadron Collider (LHC) and the superconducting magnets in MRI scanners and NMR spectrometers?
    1. Neon   **2.** Chlorine   **3.** Argon   **4.** Helium

37. In 2018, Google Doodle celebrated the 100th birthday of Mrinalini Sarabhai. She is an exponent of which of the following dance forms?
    1. Bharatanatyam and Kathakali
    2. Odissi and Kathak
    3. Kuchipudi and Bharatanatyam
    4. Yakshagana

38. Bharatanatyam expresses South Indian religious themes and spiritual ideas of _____.
    1. Sufism   **2.** Shaivism   **3.** Buddhism   **4.** Jainism

39. Who among the following musicians is popular for his mastery over the musical instrument Sitar?
    1. Ali Akbar Khan   **2.** Vilayat Khan
    3. Bahadur Khan   **4.** Amjad Ali Khan

40. Which of the following countries was the host of AFC Women's Asia Cup Football–2022?
    1. Japan   **2.** Bangladesh
    3. India   **4.** China

41. Ms. Bhakti Pradip Kulkarni was conferred with the Arjuna Award 2022 for her outstanding contribution in which of the following sports?
    1. Table Tennis   **2.** Chess
    3. Badminton   **4.** Wrestling

42. Who among the following was the founder of 'Tiger Legion' or 'Free India Legion'?
    1. Vinayak Damodar Savarkar
    2. Subhash Chandra Bose
    3. Sohan Singh Bhakhna
    4. Lala Hardayal

43. Name a reproductive strategy in which parasites take advantage of the care of other individuals of the same species or different species to raise their young.
1. Brood parasitism   **2.** Sexual parasitism
3. Klepto parasitism   **4.** Competitive parasitism

44. On the basis of tribal population (2011), identify the option that arranges the following states in ascending order.
A. Madhya Pradesh   B. Maharashtra   C. Odisha
1. (C), (B), (A)   **2.** (B), (A), (C) **3.** (C), (A), (B)   **4.** (B), (C), (A)

45. In which industrial policy was the investment limit for tiny industry/unit increased to ₹2 lakh?
1. 1977   **2.** 1991   **3.** 1980   **4.** 1956

46. Which scientist thought of the concept of steady state of the universe?
1. Harold Jeffrey   **2.** Edwin Hubble
3. Fred Hoyle   **4.** Pierre-Simon Laplace

47. Match the columns.

Column-A (Class)	Column-B (Common name)
i. Chlorophyceae	a. Brown algae
ii. Phaeophyceae	b. Green algae
iii. Rhodophyceae	c. Blue-green algae
iv. Cyanophyceae	d. Red algae

1. i-b, ii-c, iii-a, iv-d   **2.** i-b, ii-a, iii-d, iv-c
3. i-d, ii-c, iii-b, iv-a   **4.** i-a, ii-b, iii-c, iv-d

48. Ryotwari system of revenue collection in India, introduced by the British, was based on the _____.
1. Smith's theory of rent   **2.** Ricardian theory of rent
3. Malthusian theory of rent **4.** Marx's theory of rent

49. Who received the Nobel Prize in 1901 for 'recognition of the extraordinary services rendered by the discovery of the laws of chemical dynamics and osmotic pressure in solutions'?
1. Hermann Emil Fischer   **2.** Jacobus Henricus van 't Hoff
3. Svante August Arrhenius **4.** Henri Moissan

50. Which of the following Articles of the Indian Constitution are related to citizenship?
1. Articles 15 to 21   **2.** Articles 5 to 11
**3.** Articles 2 to 4   **4.** Articles 25 to 31

Quantitative Aptitude

51. If A is 95% of B, then what percent of A is B?
1. $110\frac{3}{19}\%$ **2.** $104\frac{7}{19}\%$ **3.** $108\frac{17}{19}\%$ **4.** $105\frac{5}{19}\%$

52. The marked price of mustard oil is 25% more than its cost price. At what percentage less than the marked price should it be sold to have no profit and no loss?
1. 15%   **2.** 20%   **3.** 18%   **4.** 22%

53. A can complete a piece of work in 25 days while B can complete the same work in 30 days. They work on alternate basis, starting with A. Both A and B follow this pattern for 5 days and then A leaves the work. In how many days will B finish the remaining work?
1. $24\frac{2}{5}$ **2.** $5\frac{2}{5}$ **3.** $5\frac{3}{5}$ **4.** $24\frac{3}{5}$

54. As part of his journey, a person travels 120 km at 80 km/h, the next 100 km at 40 km/h, and comes back to the starting point at 75 km/h. The average speed of the person throughout the journey (approximately) is:
1. 63.46 km/h   **2.** 58.74 km/h **3.** 68.15 km/h **4.** 49.58 km/h

55. 8 men can complete a work in 45 days. 8 women can complete the same work in 18 days. In how many days will 5 men and 8 women, together, complete the same work?
1. $13\frac{1}{5}$ **2.** $12\frac{4}{5}$ **3.** $14\frac{2}{5}$ **4.** $15\frac{3}{5}$

56. 625 + 626 + 627 + 628 is divisible by:
**1.** 256   **2.** 254   **3.** 255   **4.** 259

57. Study the given table and answer the question that follows. The table shows the classification of 100 students based on the marks obtained by them in History and Geography in an examination.

Subject	Marks out of 50				
	40 and above	30 and above	20 and above	10 and above	0 and above
History	9	32	80	92	100
Geography	4	21	66	81	100
Average (Aggregate)	7	27	73	87	100

Based on the table, what is the number of students scoring less than 20% marks in aggregate?
1. 13   **2.** 11   **3.** 10   **4.** 12

58. Two concentric circles are of radii 10 cm and 6 cm. Find the length of the chord of the larger circle which touches the smaller circle.
1. 8 cm   **2.** 16 cm   **3.** 12 cm   **4.** 9 cm

59. If $\sin(a + b) = 1$ and $\cos(a - b) = \frac{1}{2}$, then find a.
1. 75°   **2.** 30°   **3.** 15°   **4.** 45°

60. A train 900 m long is running at 108 km/h. How long will it take to clear a 900 m long platform completely?
1. 60 s   **2.** 45 s   **3.** 30 s   **4.** 18 s

61. If $7b - \frac{1}{4b} = 7$, then what is the value of $16b^2 + \frac{1}{49b^2}$?
1. $\frac{80}{49}$ **2.** $\frac{104}{7}$ **3.** $\frac{120}{7}$ **4.** $\frac{7}{2}$

62. If $m\angle C = m\angle Z$ and $AC = XZ$, then which of the following conditions is necessary for $\triangle ABC$ and $\triangle XYZ$ to be congruent?
1. $AB = AC$ **2.** $BC = YZ$ **3.** $AB = XY$ **4.** $BC = AB$

63. In the given figure, PAB is a secant and PT is a tangent to the circle from P. If PT = 8 cm, PA = 6 cm and AB = x cm, then the value of x is:
1. $\frac{14}{9}$ **2.** $\frac{1}{3}$ **3.** $\frac{14}{3}$ **4.** $\frac{4}{3}$
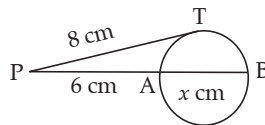
64. A shopkeeper offers the following two discount schemes.
(A) Buy 3 get 4 free   (B) Buy 5 get 6 free
Which scheme has the maximum discount percentage?
1. A
2. A does not give any discount
3. A and B both have the same discount percentage
4. B

65. The following bar chart represents the gross amount (in ₹ lakhs) and total cost (in ₹ lakhs) of a firm.
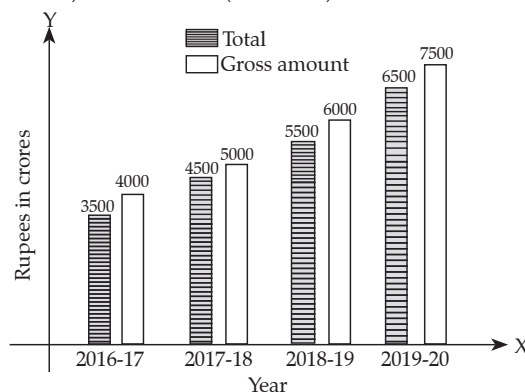
In order to make a profit of 25%, what should the gross amount have been (in ₹ crores) in 2019-2020, if the total cost remained the same?
1. 7800   **2.** 8000   **3.** 8250   **4.** 8125

66. In what time will ₹10,000 at 4% per annum, produce the same interest as ₹ 8,000 does in 4 years at 5% simple interest?
1. 5 years   **2.** 3 years   **3.** 4 years   **4.** 6 years

67. A man, a boy and a woman can finish a work in 10 days, 15 days and 30 days, respectively. In how many days can the work be finished by a man, a woman and a boy when all of them work together?
1. 10   **2.** 5   **3.** 8   **4.** 6

68. If cos θ = $\dfrac{\sqrt{3}}{2}$, then tan² θ cos² θ = ?
1. $\dfrac{1}{\sqrt{3}}$ **2.** $\dfrac{1}{4}$ **3.** $\dfrac{1}{2}$ **4.** $\sqrt{3}$

69. What is the value of $(3x^3 + 5x^2y + 12xy^2 + 7y^3)$, when $x = -4$ and $y = -1$?
1. – 329   **2.** – 359   **3.** – 361   **4.** – 327

70. If the four numbers, 39, 117, 17 and y are in proportion, then find the value of y.
1. 49   **2.** 51   **3.** 57   **4.** 85

71. The volume of a sphere of radius 4.2 cm is: $\left(\text{Use } \pi = \dfrac{22}{7}\right)$
1. 278.234 cm³   **2.** 312.725 cm³ **3.** 297.824 cm³ **4.** 310.464 cm³

72. If $(a + b + c) = 16$, and $(a^2 + b^2 + c^2) = 90$, find the value of $(ab + bc + ca)$.
1. 84   **2.** 83   **3.** 82   **4.** 81

73. If $\{(3 \sin θ - \cos θ)/(\cos θ + \sin θ)\} = 1$, then the value of cot θ is:
1. 3   **2.** 0   **3.** 1   **4.** 2

74. Two runners, Sony and Mony, start running on a circular track of length 200 m at speeds of 18 and 24 km/h, respectively, in the same direction. After how much time from the start will they meet again at the starting point?
1. 120 s   **2.** 110 s   **3.** 100 s   **4.** 90 s

75. What will be the remainder when (265)4081 + 9 is divided by 266?
1. 8   **2.** 6   **3.** 1   **4.** 9

English Comprehension

76. The following sentence has been split into four segments. Identify the segment that contains an error.
Neetu have been/waiting for me/since 10 o'clock /in the morning.
1. Neetu have been   **2.** in the morning
3. since 10 o'clock   **4.** waiting for me

77. Select the most appropriate ANTONYM of the underlined word.
Her dog can climb <u>under</u> the fence.
1. Over   **2.** Sink   **3.** Behind   **4.** Beneath

78. Select the INCORRECTLY spelt word in the given sentence.
The village beggars, no longer ill at ease in the gathering of gliterring dignitaries, sat in their assigned rows and joked with vegetarian Brahmin apprentices.
1. assigned   **2.** apprentices   **3.** beggars   **4.** gliterring

79. Select the option that expresses the given sentence in passive voice.
The company's board of directors will announce the financial results at the annual meeting tomorrow.
1. The financial results will have been announced by the company's board of directors at the annual meeting tomorrow.
2. The financial results are being announced by the company's board of directors at the annual meeting tomorrow.
3. The company's board of directors announced the financial results at the annual meeting tomorrow.
4. The financial results will be announced by the company's board of directors at the annual meeting tomorrow.

80. Select the grammatically correct sentence.
1. The participants of the competition are waiting for their turn curiously.
2. The participants of the competition has been waiting for their turn curiously.
3. A participants of the competition is waiting for their turn curiously.
4. The participants of the competition is waiting for their turn curiously.

81. Select the most appropriate ANTONYM of the underlined word in the given sentence.
Henry is so <u>servile</u> that other people take advantage of him.
1. Arrogant   **2.** Sheepish   **3.** Bickering   **4.** Cunning

82. Select the option that can be used as a one-word substitute for the given group of words.
A thing fit to eat.
1. Eligible   **2.** Digestible   **3.** Curable   **4.** Edible

83. Select the most appropriate meaning of the given idiom.
Lily-livered
1. Brave   **2.** Comical   **3.** Not brave   **4.** Naughty

84. Select the most appropriate synonym of the given word.
Zealous
1. Enthusiastic   **2.** Detached   **3.** Apathetic   **4.** Indifferent

85. Select the most appropriate option that can substitute the underlined word in the given sentence.
She had an ability to <u>persuade</u> others.
1. halt   **2.** suppress   **3.** outrage   **4.** impress

86. Select the most appropriate option that can substitute the underlined segment in the given sentence.
We must remember that what we teach our children is what we <u>inculcate</u> in them.
1. endanger   **2.** inspire   **3.** instil   **4.** import

87. Select the option that expresses the given sentence in passive voice.
He won't receive any better choice than this from anywhere.
1. Any better choice won't be received by him than this from anywhere.
2. Any better choice wouldn't have received by him than this from anywhere.
3. Any better choice shouldn't be received by him than this from anywhere.
4. Any better choice won't have been be received by him than this from anywhere.

88. Select the most appropriate synonym of the given word.
Feeble
1. Unheedful   **2.** Strong   **3.** Weak   **4.** Baneful

89. Select the correct spelling of the underline word.
They denied having any <u>associasion</u> with the terrorists.
1. asociation   **2.** asocciation **3.** assosiation **4.** association

90. Select the most appropriate meaning of the underlined idiom in the given sentence.
Pooja tried to explain the problem, but soon she tied herself up in knots.
1. Be forced to explain your actions and (probably) punished
2. Become very confused when you are trying to explain something
3. Make no progress in an argument or discussion
4. Won't modify an opinion or agree to even small changes that another person wants

91. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.
A. In Bihar and Central India, in particular, every district had smelters that used local deposits of ore to produce iron which was widely used for the manufacture of implements and tools of daily use.

B. The smelting was done by men while women worked on the bellows, pumping air that kept the charcoal burning.

C. But iron smelting in India was extremely common till the end of the nineteenth century.

D. Production of Wootz steel required a highly specialised technique of refining iron.

1. ACDB   **2.** DCAB   **3.** BCDA   **4.** CBDA

92. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.

A. He repeated the experiment, increasing the amount until he had weighed up to a thousand pounds.

B. During the spring of 1717, the iron foundries in a remote district were often visited by a thin, middle-aged man with a notebook.

C. Three cauldrons were next prepared under his directions.

D. He would weigh out two pounds of iron, have them heated till they were red-hot and then weigh them again.

1. BDAC   **2.** ABDC   **3.** BCAD   **4.** CABD

93. Select the most appropriate option to fill in the blank.
She is _____ a peacock in the blue satin saree.

1. very beautiful as   **2.** so beautiful as
3. as beautiful as   **4.** beautiful like

94. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.

A. The top band is made of saffron, which symbolises power and courage.

B. The constituent assembly adopted our national flag, Tiranga, which means tricolour, on 22nd July 1947.

C. As a symbol of nationalism and freedom, it is fashioned from khadi, which is domestically spun Indian cotton.

D. It features three horizontal stripes that are all the same width.

1. CBAD   **2.** CBDA   **3.** BCDA   **4.** BDCA

95. Select the most appropriate homonym to fill in the blank.
The hunter dogs followed the hyena's _____.

1. sense   **2.** scent   **3.** cense   **4.** cents

Comprehension:

In the following passage some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each number.

Human life is (1) _____ a unique blessing, which in turn depends on the (2) _____ of the Self. He who is not aware of the Self can neither have peace nor can he foster peaceful co-existence. We have to link our soul with God and body with the physical world for substance. (3) _____ the formless God is invisible to the naked eye, our mind often wanders wherever it goes. (4) _____ , we are unable to develop any love for the Divine. And religion like the white light of heavens (5) _____ multi-coloured fragmentations by the prisms of men and loses its gravity. Instead of uniting, it becomes a major dividing force. French philosopher Tail hard de Chardin, thinking deeply on meaning of our existence and relationship with the Divine, expounds, "we are not human beings having a spiritual experience, we are spiritual beings having a human experience".

96. Select the most appropriate option to fill in blank no. 1.
1. considering   **2.** to consider **3.** considered **4.** consider

97. Select the most appropriate option to fill in blank no. 2.
1. witness   **2.** known   **3.** awareness **4.** aware

98. Select the most appropriate option to fill in blank no. 3.
1. Since   **2.** From   **3.** As per   **4.** For

99. Select the most appropriate option to fill in blank no. 4.
1. As a result   **2.** As a reaction
3. Causing   **4.** As a reason

100. Select the most appropriate option to fill in blank no. 5.
1. break into **2.** breaks to   **3.** break from **4.** breaks into

Answer Key

1. (2)	2. (4)	3. (1)	4. (1)	5. (3)	6. (4)	7. (2)	8. (3)	9. (3)	10. (3)	11. (1)	12. (4)	13. (4)	14. (1)
15. (3)	16. (4)	17. (1)	18. (2)	19. (4)	20. (3)	21. (4)	22. (4)	23. (4)	24. (2)	25. (1)	26. (4)	27. (4)	28. (3)
29. (4)	30. (1)	31. (1)	32. (1)	33. (4)	34. (4)	35. (1)	36. (4)	37. (1)	38. (2)	39. (2)	40. (3)	41. (2)	42. (2)
43. (1)	44. (1)	45. (3)	46. (3)	47. (2)	48. (2)	49. (2)	50. (2)	51. (4)	52. (2)	53. (1)	54. (1)	55. (3)	56. (4)
57. (1)	58. (2)	59. (1)	60. (1)	61. (3)	62. (2)	63. (3)	64. (1)	65. (4)	66. (3)	67. (2)	68. (2)	69. (4)	70. (2)
71. (4)	72. (2)	73. (3)	74. (1)	75. (1)	76. (1)	77. (1)	78. (4)	79. (4)	80. (1)	81. (1)	82. (4)	83. (3)	84. (1)
85. (4)	86. (3)	87. (1)	88. (3)	89. (4)	90. (2)	91. (2)	92. (1)	93. (3)	94. (3)	95. (2)	96. (3)	97. (3)	98. (1)
99. (1)	100. (4)												

Answers with Explanations

General Intelligence and Reasoning

1. Option (2) is correct.
Explanation:

Logic:
Follow the logic and the pattern. Hence,

2. Option (4) is correct.
Explanation:

3. Warcraft	6. Wardenship	5. Wardrobe
2. Warehouse	4. Warranty	1. Warriors
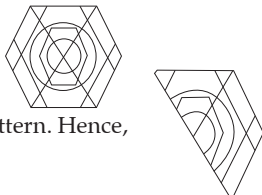
3. Option (1) is correct.
Explanation: From the Venn diagram, only conclusion III follows.
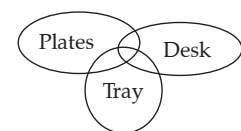
4. Option (1) is correct.
Explanation: Skin : Touch :: Nose : smell
Logic: As touch is related to the skin in the same way Nose is related to smell.

5. Option (3) is correct.
Explanation:

Hence, Ganesh was walking with his cousin.

6. Option (4) is correct.
Explanation:

$$\text{Te29EKP}$$

M ——————— N

Logic:
In the mirror image left becomes right and right becomes left. But in this case, the mirror is placed at the bottom hence everything will look inverted.

$$\text{ℲᵉƧᵭEKb}$$

7. Option (2) is correct.
Explanation: UV, OY, IB, EE, AH
Logic: Table of Alphabetical series (point to remember)

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

U – 6 = O

O – 6 = I

I – 4 = E

E – 4 = A

V + 3 = Y

Y + 3 = B

B + 3 = E

E + 3 = H

Hence, AH is the correct answer.

8. Option (3) is correct.
Explanation: Solving by options:
$$20 \div 2 + 1 = 11$$
$$6 \div 2 + 1 = 4$$
$$15 \div 2 + 1 \neq 9$$
$$12 \div 2 + 1 = 7$$

9. Option (3) is correct.
Explanation:

▽		○	=		▽	□		D	3		□	
=	3	D	□	○	9	3	☆	▽	=	D	9	**?**
□		9	3		D	=		9	☆		▽	

Logic: Check the position of 9 in alternative figure. After 2 figures a new letter will be added.

=		▽
☆	C	□
3		9

10. Option (3) is correct.
Explanation:

Fig. 1   Fig. 2   Fig. 3
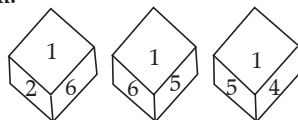
Logic:
From figure 1 and 3
1 – 6 – 2
1 – 4 – 5
Opposite pairs:
6 – 4
2 – 5
1 – 3

11. Option (1) is correct.
Explanation: (55, 11, 25) (64, 16, 16)
Logic:

$$\frac{55}{11} = 5$$

Now, $(5)^2 = 25$

Same way, $\frac{64}{16} = 4$

Now, $(4)^2 = 16$

So, (33, 11, 9) is the correct answer.

12. Option (4) is correct.
Explanation: HMD : KOE :: BNQ : EPR :: ? : FLV
Logic: H + 3 = K, M + 2 = O, D + 1 = E
B + 3 = E, N + 2 = P, Q + 1 = R
C + 3 = F, J + 2 = L, U + 1 = V
Hence, CJU is the correct answer.

13. Option (4) is correct.
Explanation:

Logic: Following the logic and the pattern.
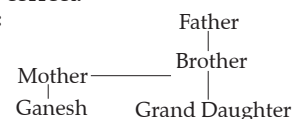Hence,

14. Option (1) is correct.
Explanation: Ticket, Aeroplane, Rail
Logic:

Aeroplane Ticket Rail
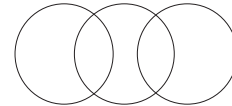
15. Option (3) is correct.
Explanation:
Logic:
B + 4 → F, F + 4 → J, J + 4 → N
D + 4 → H, H + 4 → L, L + 4 → P
H + 2 → J, J + 1 → K, K + 5 → P
J + 4 → N, N + 4 → R, R + 4 → V
Hence, HJKP is the correct answer.

16. Option (4) is correct.
Explanation: Given: 5 : 45 :: 3 : 3 :: 6 : ?
Logic:
For first pair   ⇒ $(5)^1 \times (5 - 2)^2$
                    = 5 × 9 = 45
For second pair ⇒ $(3)^1 \times (3 - 2)^2$
                    = 3 × 1 = 3
So, for third pair ⇒ $(6)^1 \times (6 - 2)^2$
                    = 6 × 16
                    = 96
Hence, the missing number is 96.

17. Option (1) is correct.
Explanation: 8, 15, 26, ?, 56, 75
Logic: Adding the prime numbers in each step:
$$8 + 7 = 15$$
$$15 + 11 = 26$$
$$26 + 13 = 39$$
$$39 + 17 = 56$$
$$56 + 19 = 75$$

18. Option (2) is correct.
Explanation: 7183 : 3850 :: 6957 : ? :: 8972 : 5639
Logic: 7183 – 3333 = 3850
    8972 – 3333 = 5639
  6957 – 3333 = 3624

19. Option (4) is correct.
Explanation:

Fig. 1   Fig. 2   Fig. 3
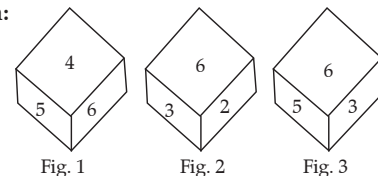
Logic: 6 – 5 – 4
6 – 2 – 3
So, 3 is opposite to 4.

20. Option (3) is correct.
Explanation: Given: 625 : 5 :: 2560 : 8 :: 5000 : ?
Logic:
$$625 \times 2 = 1250 = (5)^3 \times 10$$
$$2560 \times 2 = 5120 = (8)^3 \times 10$$
So, $5000 \times 2 = 10000 = (10)^3 \times 10$
Hence, the missing number is 10.

21. Option (4) is correct.
Explanation:
ASK = 1 + 19 + 11 = 31 × 2 = 62
BYE = 2 + 25 + 5 = 32 × 2 = 64
CRY = 3 + 18 + 25 = 46 × 2 = 92

22. Option (4) is correct.
Explanation:
256 * 4 * 9 * 3 * 14 = 51
Logic:
256 ÷ 4 – 9 × 3 + 14
Using BODMAS Rule
64 – 27 + 14
78 – 27 = 51 = RHS

23. Option (4) is correct.
Explanation:
Logic: C L O V E C L O W E C L O X E C L O Y E

24. Option (2) is correct.
Explanation:

T A B L E

↓ +3

← E L E A T

S W I N G

↓ +3

← G N L W S

F R A M E

← ↓ +3

E M D R F
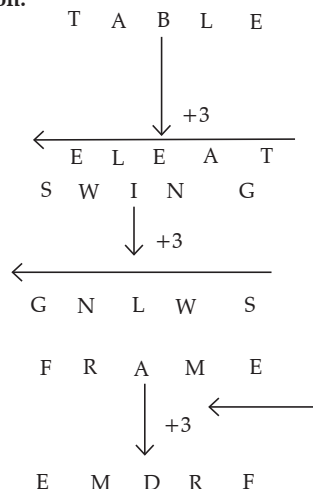
25. Option (1) is correct.
Explanation: 588 ÷ 28 × 32 + 72 – 160 = 760
Logic: Interchange – and +
588 ÷ 28 × 32 – 72 + 160
21 × 32 – 72 + 160
672 – 72 + 160
600 + 160 = 760

General Awareness

26. Option (4) is correct.
As an indoor game, the synthetic surface is often used over the wooden base as a badminton court. This synthetic surface is considered the best playing surface for a badminton court. This anti-slippery surface reduces the stress on your knees and ankles and provides a very good grip to jump and shift in any direction with ease. The length of a badminton court for singles is 44 feet (13.4 meters). The width of a singles court is 17 feet (5.18 meters), while the width of a doubles court is 20 feet (6.1 meters). The net is 760 millimeters (29.92 inches) high at the centre and 1550 millimeters (61.02 inches) high at the edges. The diagonal length of a badminton court is 48.30 feet (14.72 meters).

27. Option (4) is correct.
The Administrative Head of the Indian Audit and Accounts Department is the Comptroller and Auditor General of India (CAG). The CAG is an independent statutory authority that is responsible for auditing the accounts of the Union and State governments and public sector organizations. The CAG is also responsible for maintaining the accounts of State governments. The current CAG of India is G. C. Murmu. He was appointed as the CAG on 30 August 2022. Murmu is a former Lt. Governor of the Union Territory of Jammu and Kashmir. He is a member of the Indian Audit and Accounts Service (IA&AS). The CAG is assisted by a number of Deputy Comptrollers and Auditors General (DCAs), Additional Deputy Comptrollers and Auditors General (ADCAGs), Principal Accountants General (PAGs), Accountants General (AGs), and other officers. The CAG's office is located in New Delhi.

28. Option (3) is correct.
The largest pan-India scheme to strengthen healthcare infrastructure across the country with a focus on primary, secondary and tertiary care services is the Pradhan Mantri Ayushman Bharat Health Infrastructure Mission (PM-ABHIM). It was launched by the Government of India in October 2021 with an outlay of ₹ 64,180 crore.
The PM-ABHIM aims to: Strengthen public health infrastructure, especially in critical care facilities and primary care in both urban and rural areas, Improve access to quality healthcare services for all citizens, and Promote research and innovation in the healthcare sector. The PM-ABHIM will be implemented in a phased manner over a period of five years. The first phase of the mission will focus on strengthening primary healthcare facilities, while the second phase will focus on strengthening secondary and tertiary care facilities.
The PM-ABHIM is a major step towards improving the healthcare infrastructure in India. It is expected to benefit millions of people across the country.

29. Option (4) is correct.
Raksha Bandhan is a Hindu festival that celebrates the ties of protection between siblings. On this day, sisters tie a rakhi (a sacred thread) on the wrists of their brothers, and brothers vow to protect their sisters. The festival is also celebrated by some Jains and Sikhs. The word "Raksha" means "protection" and "Bandhan" means "bond" or "tie". So, Raksha Bandhan literally means "the bond of protection".
The festival is celebrated on the full moon day of the month of Shravan (August-September). On this day, sisters pray for the long life and well-being of their brothers, and brothers promise to protect their sisters from all harm. Raksha Bandhan is a festival of love, affection, and protection. It is a day for siblings to reaffirm their love and commitment to each other. The other festivals mentioned are not associated with the term "ties of protection". Baisakhi is a harvest festival, Karwa Chauth is a festival of fasting by married women, and Chhath Pooja is a festival of thanksgiving to the Sun God.

30. Option (1) is correct.
Anshu Malik is an Indian freestyle wrestler who won the silver medal in the women's 57 kg event at the 2021 World Wrestling Championships held in Oslo, Norway. She is the first Indian wrestler to win a silver medal at the World Championships in the women's division. Malik was born in Jind, Haryana, India in 2001. She started wrestling at the age of 12 and quickly rose through the ranks. She won the gold medal at the 2018 Cadet World Championships and the silver medal at the 2019 Junior World Championships. In 2021, Malik made her senior international debut at the World Wrestling Championships. She won her first two matches but lost to two-time Olympic champion Helen Maroulis of the United States in the final. Despite the loss, Malik's silver medal was a historic achievement for Indian wrestling. Malik is a rising star in Indian wrestling and is expected to achieve even greater success in the future.

31. Option (1) is correct.
According to the report, 51.91 per cent of the population of Bihar is poor. Whereas Kerala is the least poor state in the country, only 0.71 percent of its population is poor.
Bihar's 51.88 percent population (the highest in the country) is malnourished, while Sikkim is the least malnourished state in the country. According to the data of the National Family Health Survey-4 (2015-16) report, 39.86 percent of the population of Bihar was away from access to electricity, while according to the provisional data of the National

Family Health Survey-5 (2019-20) Bihar's only 3.7 percent of the population is out of reach of electricity, which shows the remarkable progress of Bihar in the field of electricity.

Bihar has got a score of 0.265 in this multidimensional index, out of which the MPI score of rural areas is 0.286 and the MPI score of the urban areas is 0.117, which indicates that the rural areas of Bihar have more poverty. Kishanganj is the poorest district of Bihar, where 64.75 percent of the population is poor. On the other hand, Araria (64.65 percent), Madhepura (64.35 percent), East Champaran (64.13 percent) and Supaul (64.10 percent) are the poorest districts. Patna is the least poor district of Bihar, where only 29.20 percent of the population is poor. Bhojpur (40.50 percent), Siwan (40.55 percent), Rohtas (40.74 percent) and Munger (40.99 percent) are the least poor districts of Bihar.

32. Option (1) is correct.

Consumption of fixed capital is the decline in the value of fixed assets over time due to wear and tear, obsolescence, and accidental damage. It is also known as depreciation. Depreciation is a non-cash expense, which means that it does not involve the actual transfer of money. However, it is an important expense to consider when calculating the true cost of owning and operating a fixed asset. Net investment is the difference between gross investment and depreciation. Gross investment is the total amount of money spent on new fixed assets, while depreciation is the amount of money spent on replacing worn-out fixed assets. Net investment is the amount of money that is actually available to increase the stock of fixed assets. Appreciation is the opposite of depreciation. It is the increase in the value of a fixed asset over time due to factors such as inflation or technological improvements. Gross investment is the total amount of money spent on new fixed assets, including both replacement and expansion. Therefore, the consumption of fixed capital is also known as depreciation.

33. Option (4) is correct.

The correct answer is 4. Vitasta. The ancient name of the Jhelum River was Vitasta. It is mentioned in the Rig Veda, the oldest of the Hindu scriptures. The Rig Veda describes the Vitasta as a beautiful and sacred river. It is said that the river was born from the tears of the god Vishnu. The Vitasta River played an important role in the history of the Vedic Aryans. It was a major source of water for irrigation and drinking. The river was also a transportation route. The Vedic Aryans used the Vitasta River to travel between different parts of their territory. The Vitasta River is still an important river in the region. It is a major source of water for irrigation and drinking. The river is also a popular tourist destination. People come to the Vitasta River to enjoy its beauty and to participate in religious activities.

34. Option (4) is correct.

During the Chola rule in the Tamil country from the 9th to 13th century, there were several villages that were granted to Brahmins and referred to as Brahmadeya. These villages were predominantly inhabited by Brahmins, who formed an assembly known as Sabha to administer village affairs. The Chola Empire's administrative structure included provinces called Mandalams, which were further divided into districts known as Valanadus. At the local level, the taxation on land was managed by village assemblies, which also had the responsibility of maintaining irrigation tanks to support agricultural development. There were three distinct types of village assemblies: Ur: Comprising ordinary villagers, Sabha or Mahasabha: Comprising knowledgeable Brahmins, and Nagaram: Comprising merchants, traders, and artisans.

35. Option (1) is correct.

The Tapi River is a west-flowing river that originates in the Satpura Range in Madhya Pradesh and flows through the states of Maharashtra and Gujarat before emptying into the Arabian Sea. Rajasthan is not a part of the Tapi Basin. The other states that are part of the Tapi Basin are Maharashtra, Madhya Pradesh, and Gujarat. The basin spans the states of Madhya Pradesh, Maharashtra, and Gujarat and has an area of 65,000 square kilometres.

The basin is located on the Deccan plateau and is limited on the north by the Satpura range, on the east by the Mahadev Hills, on the south by the Ajanta Range and the Satmala Hills, and on the west by the Arabian Sea. The basin is important for irrigation, drinking water, and hydroelectric power generation. The Tapi River is a popular tourist destination. The river is known for its scenic beauty and its many waterfalls. The Tapi River is also an important fishing ground.

36. Option (4) is correct.

Helium is used as a cooling medium for the Large Hadron Collider (LHC) and the superconducting magnets in MRI scanners and NMR spectrometers. Helium has the lowest boiling point of any element, and it can be liquefied at very low temperatures. This makes it ideal for cooling superconducting magnets, which require temperatures of around -273 degrees Celsius. The LHC is the world's largest and most powerful particle accelerator. It is located at the European Organization for Nuclear Research (CERN) in Switzerland. The LHC uses superconducting magnets to accelerate protons to speeds close to the speed of light. These magnets need to be cooled to very low temperatures in order to operate. MRI scanners and NMR spectrometers are medical imaging devices that use superconducting magnets to create images of the body. These magnets also need to be cooled to very low temperatures in order to operate. Helium is a scarce resource, and its price has been rising in recent years. However, it is still the best cooling medium for superconducting magnets. The other gases mentioned are not used as cooling mediums for the LHC or superconducting magnets. Neon has a boiling point of –246 degrees Celsius, chlorine has a boiling point of –34 degrees Celsius, and argon has a boiling point of –185 degrees Celsius. These gases are not cold enough to cool superconducting magnets.

37. Option (1) is correct.

Google Doodle celebrated the 100th birthday of Mrinalini Sarabhai in 2018. She was an exponent of Bharatanatyam and Kathakali, two of the major classical dance forms of India. Bharatanatyam is a classical dance form from Tamil Nadu in southern India. It is a highly stylized dance form that is characterized by its intricate footwork, graceful movements, and expressive facial expressions. Kathakali is a classical dance-drama from Kerala in southern India. It is a more vigorous dance form that is characterized by its elaborate costumes, makeup, and facial expressions. Mrinalini Sarabhai studied both Bharatanatyam and Kathakali under the guidance of some of the leading masters of these dance forms. She went on to become a renowned dancer and choreographer. She also founded the Darpana Academy of Performing Arts in Ahmedabad, India, which is one of the leading dance schools in the world. Mrinalini Sarabhai's work has had a profound impact on the field of Indian classical dance.

38. Option (2) is correct.

Bharatanatyam is a classical dance form from Tamil Nadu in southern India. It is a highly stylized dance form that is characterized by its intricate footwork, graceful movements, and expressive facial expressions. Bharatanatyam expresses South Indian religious themes and spiritual ideas, particularly of Shaivism and in general of Hinduism. Shaivism is a major sect of Hinduism that worships the god Shiva. Shiva is one of the three main gods of Hinduism, along with Vishnu and Brahma. The dance form is based on the Natya Shastra, an ancient treatise on dance, music, and theatre. The Natya Shastra describes Bharatanatyam as a "divine dance" that can be used to express the highest spiritual truths. Bharatanatyam is a living tradition that has evolved over centuries. It is still performed today in temples, festivals, and other cultural events. The dance form is also taught in schools and dance academies around the world. The other religions mentioned are not as closely

associated with Bharatanatyam. Sufism is a mystical tradition within Islam, Buddhism is a religion that originated in India, and Jainism is a religion that originated in India.

39. Option (2) is correct.

Vilayat Khan was a highly acclaimed sitar player who was known for his mastery of the instrument. He was born in 1928 in Maihar, India, and began learning the sitar at a young age from his father, Ali Akbar Khan. Khan was a prolific composer and recorded over 100 albums. He was also a gifted improviser and was known for his ability to create new and exciting sounds on the sitar. Khan was a major influence on many other sitar players, including his son, Amjad Ali Khan. He was also a pioneer in the field of fusion music, and he collaborated with many Western musicians, including John Coltrane and George Harrison. Khan died in 2004, but his music continues to be enjoyed by people all over the world. He is considered to be one of the greatest sitar players of all time. The other musicians mentioned are also highly acclaimed sitar players, but Vilayat Khan is considered to be the most famous. Ali Akbar Khan is his father, and Amjad Ali Khan is his son. Bahadur Khan was a sitar player who was active in the early 20th century.

40. Option (3) is correct.

India hosted the 20th edition of the AFC Women's Asian Cup in 2022, from January 20 to February 06. The football tournament was won by China PR (People's Republic), who emerged victorious by defeating Korea Republic (South Korea) with a score of 3-2 in the final match held at the D.Y. Patil Stadium in Navi Mumbai. The AFC Women's Asian Cup, established in 1975, is a women's football competition for national teams under the Asian Football Confederation, and it takes place every four years.

41. Option (2) is correct.

The Arjuna Award is the second-highest sporting honour in India. Recipients of this prestigious award are selected by a committee formed by the Ministry of Sports. They are recognized for their exceptional performance in sports at the international level over a period of four years, as well as for demonstrating qualities of leadership, sportsmanship, and discipline. In the field of chess, Bhakti Kulkarni and GM R Praggnanandhaa were honoured with the Arjuna Award in 2022. Both of them received several accolades, including a cash prize worth ₹15 lacs, a bronze statue, ceremonial attire, and a certificate in recognition of their outstanding achievements in the sport.

42. Option (2) is correct.

Subhas Chandra Bose, a prominent leader in the Indian independence movement, played a pivotal role in establishing the formation of the "Free Indian Legion." His aim was to secure India's independence by waging war against British rule and to achieve this, he sought assistance from Germany during his visit to Berlin in 1941. The initial members of the legion, in 1941, consisted of volunteers from Indian students residing in Germany at that time, along with a few Indian prisoners of war who had been captured during the North Africa Campaign. As time passed, a larger number of Indian prisoners of war also joined as volunteers. In January 1942, the Propaganda Ministry in Berlin officially announced the creation of the "Indian National Army" (Jai Hind). Later, at the end of July 1942, three hundred volunteers were provided with German Army uniforms bearing a distinctive badge on their right arm. This badge depicted a leaping tiger superimposed on an Indian tricolour, with the words "Freies Indien" (Free India) surrounding it. These men were then officially recognized as the "Free Indian Legion."

43. Option (1) is correct.

Brood parasitism is a reproductive strategy in which parasites lay their eggs in the nests of other individuals, typically of a different species. The host birds then raise the parasitic eggs as their own. There are many different types of brood parasites, including cuckoos, cowbirds, and honey guides.

These parasites have evolved a number of strategies to ensure that their eggs are accepted by the host birds. For example, some parasites lay eggs that are similar in appearance to the host eggs, while others lay eggs that are larger or smaller than the host eggs. Brood parasitism is a successful reproductive strategy for many parasites. It allows them to avoid the costs of building their own nests and raising their own young. However, it can also be harmful to the host birds, as it can reduce the number of eggs that they successfully raise. The other options are incorrect. Sexual parasitism is a type of parasitism in which the parasite mates with a host individual, but does not provide any care for the offspring. Klepto parasitism is a type of parasitism in which the parasite steals food from other individuals. Competitive parasitism is a type of parasitism in which the parasite competes with other individuals for resources.

44. Option (1) is correct.

According to the 1991 census, there were 6.7 Cr. Scheduled Tribes in the country (excluding Jammu and Kashmir), make up 8.08 percentage of the overall population. India's tribal population increased to 10.43 Cr. from 8.43 Cr. in 2001. As per the 2011 census, 10.42 crore Indians are notified as 'Scheduled Tribes' (ST), which constitute 8.6% of countries total population. As of the 2011 Census of India, here are the details of the tribal population in the mentioned states:

Madhya Pradesh: Total population of Madhya Pradesh in 2011: Approximately 72.6 million, Tribal population of Madhya Pradesh in 2011: Approximately 15.04 million, and Percentage of tribal population in Madhya Pradesh: Approximately 20.7%.

Maharashtra: Total population of Maharashtra in 2011: Approximately 112.4 million, Tribal population of Maharashtra in 2011: Approximately 10.2 million, and Percentage of tribal population in Maharashtra: Approximately 9.1%.

Odisha: Total population of Odisha in 2011: Approximately 41.9 million, the Tribal population of Odisha in 2011: Approximately 9.1 million, and the Percentage of the tribal population in Odisha is approximately 21.7%

Based on the tribal population figures from the 2011 Census, the ascending order of the states is Odisha, Maharashtra, and Madhya Pradesh.

45. Option (3) is correct.

In 1980, the Government of India introduced the New Industrial Policy (NIP) with the aim of promoting industrial growth and development in the country. One of the key provisions of this policy was the revision of the investment limits for tiny industries or units. As part of the NIP, the investment limit for tiny industries or units was increased to ₹22 lakh (2.2 million rupees). This move was intended to provide more opportunities for small entrepreneurs and encourage investment in the small-scale sector, contributing to the overall industrialization and economic growth of the nation. The NIP of 1980 was a significant step in shaping India's industrial landscape, and it laid the foundation for subsequent economic reforms and policies aimed at the liberalization and modernization of industries in the country.

46. Option (3) is correct.

Fred Hoyle was an English astronomer and cosmologist who proposed the steady-state theory of the universe in 1948. The steady-state theory states that the universe is in a state of continuous creation, with new matter being created to replace the matter that is lost through expansion. Hoyle's theory was a challenge to the Big Bang theory, which was proposed by George Gamow and others in the same year. The Big Bang theory states that the universe began with a very hot, dense state and has been expanding and cooling ever since. The steady-state theory was eventually disproved by observations of the cosmic microwave background radiation, which is a faint afterglow of the Big Bang. The cosmic microwave background radiation is evidence that the universe was once very hot

and dense, and that it has been expanding and cooling ever since. The other options are incorrect. Harold Jeffreys was a British mathematician and statistician who did not propose the steady-state theory. Edwin Hubble was an American astronomer who discovered that the universe is expanding, but he did not propose the steady-state theory. Pierre-Simon Laplace was a French mathematician and astronomer who proposed the nebular hypothesis, which is a different model of the formation of the solar system.

47. Option (2) is correct.

The Chlorophyceae represent a significant and extensive collection of freshwater green algae. This group encompasses both widely recognized species and numerous members with ecological and scientific significance. With an estimated count of about 350 genera and 2650 extant species, chlorophyceans exhibit a diverse range of shapes and forms, including unicellular organisms capable of free swimming, colonies, non-flagellate single cells, filaments, and more. Their reproduction methods are varied, yet all conform to a haploid life cycle where only the zygote cell maintains a diploid status. This zygote often functions as a resting spore, remaining dormant even when exposed to potentially harmful environmental shifts like desiccation.

Brown algae, classified under the category Phaeophyceae, constitute a grouping of algae that stands out due to their colouration, which spans from brown to olive green. Typically inhabiting marine environments, this group consists of approximately 1500 species, exhibiting considerable diversity in terms of size and morphology. Being multicellular, their colour is contingent upon the proportion of chlorophyll to the pigment fucoxanthin. Notable examples include Ectocarpus, Fucus, giant kelps, and Sargassum.

The marine algae family Rhodophyceae, commonly referred to as "red algae," predominantly displays a red hue and possesses either filamentous or membranous foundational structures. Representing one of the oldest eukaryotic algae families, red algae tend to be found at greater depths in comparison to green algae (Chlorophyta). These organisms store their food in the form of floridean starch, a structure closely resembling that of amylopectin and glycogen. Notably, they lack flagella. Prominent examples of Rhodophyceae include Gracilaria, Gelidium, Porphyra, and Polysiphonia.

Cyanophyceae, often referred to as Blue-green algae, constitute a group of primitive algae. Despite their name, they are green due to the presence of the pigment chlorophyll, enabling them to perform photosynthesis. As such, they represent the most basic autotrophic prokaryotic organisms. Operating as prokaryotes, they lack a genuine nuclear membrane around their genetic material.

48. Option (2) is correct.

The Ryotwari system of revenue collection in India, introduced by the British, was based on the Ricardian theory of rent. The Ricardian theory of rent states that rent is the price paid for the use of land. It is a surplus that arises from the fact that land is a scarce resource. The amount of rent that a piece of land can command depends on its productivity and its location. The Ryotwari system was based on the idea that the cultivator (Ryot) should be given secure rights to the land that he cultivated. In return, the ryot would pay a fixed rent to the government. The rent was calculated on the basis of the average yield of the land. The Ryotwari system was introduced in the early 19th century. It was a radical departure from the previous system of revenue collection, which was based on the Zamindari system. Under the Zamindari system, the Zamindars (landlords) were responsible for collecting revenue from the cultivators. The Zamindars often exploited the cultivators and extracted high rents. The Ryotwari system was designed to be more equitable than the Zamindari system. It gave the cultivators secure rights to the land and it reduced the amount of rent that they had to pay.

The Ryotwari system also helped to promote agricultural development. The Ryotwari system was not without its problems. One problem was that it was difficult to assess the average yield of the land. This led to disputes between the cultivators and the government. Another problem was that the Ryotwari system did not provide enough incentive for the cultivators to invest in their land. Despite its problems, the Ryotwari system was a significant improvement over the Zamindari system. It helped to reduce the exploitation of the cultivators and it promoted agricultural development. The Ryotwari system is still in use in some parts of India today.

49. Option (2) is correct.

Jacobus Henricus van 't Hoff, a Dutch physical chemist, was awarded the Nobel Prize in Chemistry in 1901 for his ground breaking contributions to the field of chemical dynamics and osmotic pressure in solutions. His work had a profound impact on the understanding of chemical reactions and the behaviour of solutions. In the late 19th century, van 't Hoff developed the concept of chemical kinetics, which focuses on the rates at which chemical reactions occur and the factors that influence their rates. He formulated equations that described the relationship between reaction rates and factors such as concentration, temperature, and pressure. His work laid the foundation for the field of physical chemistry and provided a quantitative framework for understanding reaction mechanisms.

50. Option (2) is correct.

Part II of the Constitution of India deals with the Citizenship of India. It includes Articles 5 to 11, which are as follows:

Article 5: Citizenship at the Commencement of the Constitution.

Article 6: Rights of citizenship of persons who have migrated from Pakistan to India.

Article 7: Rights of citizenship of certain migrants to Pakistan.

Article 8: Rights of citizenship of certain persons of Indian origin resident outside India.

Article 9: Persons acquiring citizenship of a foreign State voluntarily.

Article 10: Continuance of the rights of citizenship.

Article 11: Regulation of citizenship by the Parliament through law.

Quantitative Aptitude

51. Option (4) is correct.

Given that A is 95% of B.

$$\Rightarrow \quad A = \frac{95}{100}B = \frac{19}{20}B$$

$$\Rightarrow \quad B = \frac{20}{19}A$$

$$= \frac{\frac{20}{19}}{100} \times 100\,A$$

$$= \frac{\frac{2000}{19}}{100}A = \frac{105\frac{5}{19}}{100}A$$

$\therefore$ B is $105\frac{5}{19}\%$ of A.

52. Option (2) is correct.

Let us assume the cost price of mustard oil = ₹100

$\therefore$ Marked price of mustard oil = ₹125

For no profit and no loss, selling price should be ₹100.

$$\text{Required percent} = \frac{125-100}{125} \times 100\%$$

$$= \frac{25 \times 100}{125}\% = 20\%$$

53. Option (1) is correct.

A can complete work in 25 days and B can complete work in 30 days.

∴ The part of work done in first five days

$$= \frac{1}{25} + \frac{1}{30} + \frac{1}{25} + \frac{1}{30} + \frac{1}{25}$$

$$= \frac{6+5+6+5+6}{150}$$

$$= \frac{28}{150} = \frac{14}{75} \text{ parts}$$

Remaining work $= 1 - \frac{14}{75} = \frac{61}{75}$ parts

Time taken by B to complete remaining work

$$= \frac{61/75}{1/30} = 24\frac{2}{5} \text{ days.}$$

54. Option (1) is correct.

According to question,

Distance travelled (km)	120	100	220
Speed (km/h)	80	40	75

Average speed $= \dfrac{\text{Total distance}}{\text{Total time}}$

$$= \frac{120 + 100 + 220}{\dfrac{120}{80} + \dfrac{100}{40} + \dfrac{220}{75}}$$

$$= \frac{440}{\dfrac{3}{2} + \dfrac{5}{2} + \dfrac{44}{15}} = \frac{440}{\dfrac{104}{15}}$$

$$= 63.46 \text{ km/h}$$

55. Option (3) is correct.

8 men can complete a work in 45 days.

8 women can complete some work in 18 days.

1 man's 1 day work $= \dfrac{1}{8 \times 45} = \dfrac{1}{360}$

1 woman's 1 day work $= \dfrac{1}{8 \times 18} = \dfrac{1}{144}$

5 men and woman's 1 day work

$$= \frac{5}{360} + \frac{8}{144} = \frac{1}{72} + \frac{4}{72} = \frac{5}{72}$$

∴ Required time to complete work

$$= \frac{72}{5} = 14\frac{2}{5} \text{ days}$$

56. Option (4) is correct.

$6^{25} + 6^{26} + 6^{27} + 6^{28} = 6^{25}(1 + 6^1 + 6^2 + 6^3)$

$\qquad = 6^{25}(1 + 6 + 36 + 216) = 6^{25} \times 259$

Clearly, given expression is divisible by 259.

57. Option (1) is correct.

The data is given in cumulative form.

Number of students scoring less than 20% marks in aggregate $= 100 - 87 = 13$

58. Option (2) is correct.

According to question, we can have:

AB is chord of bigger circle and touching smaller circle at C.

⇒ $\qquad OC \perp AB$

In ΔAOC

$$AC = \sqrt{AO^2 - OC^2} = \sqrt{10^2 - 6^2} = 8$$

Now, $AB = 2 \times AC = 2 \times 8 = 16$ cm

[∵ Perpendicular from centre bisect the chord]
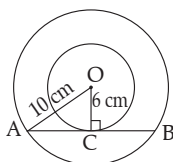
59. Option (1) is correct.

∵ $\sin 90° = 1$ and $\cos 60° = \dfrac{1}{2}$

⇒ $\qquad \sin(a + b) = \sin 90°$ and $\cos(a - b) = \cos 60°$

⇒ $\qquad a + b = 90°$ ...(i)

and $\qquad a - b = 60°$ ...(ii)

On solving both equations, we get $a = 75°$ and $b = 15°$

60. Option (1) is correct.

Speed of train $= 108$ km/h $= 108 \times \dfrac{5}{18}$ m/s $= 30$ m/s

Total distance to be travelled by train = length of train + length of platform

$$= 900 + 900 = 1800 \text{ m}$$

Time taken by the train to clear the platform $= \dfrac{1800}{30} = 60$ s

61. Option (3) is correct.

∵ $\qquad 7b - \dfrac{1}{4b} = 7$

⇒ $\qquad \dfrac{4}{7} \times 7b - \dfrac{4}{7} \times \dfrac{1}{4b} = \dfrac{4}{7} \times 7$

⇒ $\qquad 4b - \dfrac{1}{7b} = 4$

Squaring both sides,

⇒ $\qquad \left(4b - \dfrac{1}{7b}\right)^2 = 4^2$

⇒ $\qquad 16b^2 + \dfrac{1}{4b^2} - 2 \times 4b \times \dfrac{1}{7b} = 16$

⇒ $\qquad 16b^2 + \dfrac{1}{4b^2} = \dfrac{120}{7}$

62. Option (2) is correct.

Given that, in ΔABC and ΔXYZ,

$\qquad \angle C = \angle Z$

$\qquad AC = XZ$

If $\qquad BC = YZ$

⇒ $\qquad ΔABC \cong ΔXYZ \qquad$ (SAS)

63. Option (3) is correct.

Given that PT = 8 cm, PA = 6 cm and AB = x cm

By tangent-secant theorem,

$\qquad PT^2 = PA \times PB$

⇒ $\qquad 8^2 = 6 \times (6 + x)$

⇒ $\qquad \dfrac{32}{3} = 6 + x$

⇒ $\qquad x = \dfrac{32}{3} - 6 = \dfrac{32 - 18}{3} = \dfrac{14}{3}$ cm

64. Option (1) is correct.

Let selling price of 1 article is ₹100.

Scheme-1 On ₹3 × 100 we are getting ₹4 × 100.

We are getting $= \dfrac{400}{300} \times 100 = 133\dfrac{1}{3}\%$ more

Scheme-2 On ₹5 × 100 we are getting ₹6 × 100.

We are getting $= \dfrac{600}{500} \times 100 = 120\%$ more

Clearly scheme-1 has more discount.

65. Option (4) is correct.

Total cost (in ₹ crores) in 2019 − 2020 = 6500

Profit percentage = 25%

∴ Required gross amount (in ₹ crores)

$$= \frac{125}{100} \times 6500 = 8125$$

66. Option (3) is correct.

∵ Simple interest $= \dfrac{P \times R \times T}{100}$

$P \to$ Principal amount, $R \to$ Rate of interest, $T \to$ Time
According to question,

$$\frac{10000 \times 4 \times T}{100} = \frac{8000 \times 4 \times 5}{100}$$

$$\Rightarrow \quad T = \frac{8000 \times 5}{10000} = 4$$

Required time is 4 years.

67. Option (2) is correct.
According to question,

1 day work of	Man	Woman	Boy
Part of work	$\frac{1}{10}$th	$\frac{1}{15}$th	$\frac{1}{30}$th

Time taken to complete work by 1 man, 1 woman and 1 boy (in days) $= \dfrac{1}{\frac{1}{10} + \frac{1}{15} + \frac{1}{30}} = \dfrac{30}{3+2+1} = \dfrac{30}{6} = 5$

68. Option (2) is correct.

$$\because \quad \cos 30° = \frac{\sqrt{3}}{2}$$

$$\Rightarrow \quad \cos 30° = \cos \theta$$

$$\Rightarrow \quad \theta = 30°$$

$\tan^2 \theta \cdot \cos^2 \theta = \tan^2 30° \cdot \cos^2 30°$

$$= \left(\frac{1}{\sqrt{3}}\right)^2 \times \left(\frac{\sqrt{3}}{2}\right)^2 = \frac{1}{3} \times \frac{3}{4} = \frac{1}{4}$$

69. Option (4) is correct.
$3x^3 + 5x^2y + 12xy^2 + 7y^3$
$= 3 \times (-4)^3 + 5 \times (-4)^2 \times (-1) + 12 \times (-4) \times (-1)^2 + 7 \times (-1)^3$ [$\because x = -4$ and $y = -1$]
$= 3 \times (-64) - 80 - 48 - 7 = -327$

70. Option (2) is correct.
According to question,

$$\frac{39}{117} = \frac{17}{y}$$

$$\Rightarrow \quad \frac{3}{9} = \frac{17}{y}$$

$$\Rightarrow \quad y = 3 \times 17 = 51$$

71. Option (4) is correct.

Volume of sphere $= \dfrac{4}{3}\pi r^3$ [$r \to$ radius of sphere]

Radius of sphere, $r = 4.2$ cm

$\therefore$ Volume $= \dfrac{4}{3} \times \dfrac{22}{7} \times (4.2)^3 = 310.464$ cm^3

72. Option (2) is correct.
$\because \quad (a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$
Put all the given values in above formula.

$$\Rightarrow \quad 16^2 = 90 + 2(ab + bc + ca)$$

$$\Rightarrow \quad \frac{256 - 90}{2} = ab + bc + ca$$

$$\Rightarrow \quad ab + bc + ca = 83$$

73. Option (3) is correct.

$$\because \quad \frac{3\sin\theta - \cos\theta}{\cos\theta + \sin\theta} = 1$$

$$\Rightarrow \quad \frac{\dfrac{3\sin\theta - \cos\theta}{\sin\theta}}{\dfrac{\cos\theta + \sin\theta}{\sin\theta}} = 1$$

$$\Rightarrow \quad \frac{3 - \cot\theta}{\cot\theta + 1} = 1 \qquad \left[\because \frac{\cos\theta}{\sin\theta} = \cot\theta\right]$$

$$\Rightarrow \quad 3 - \cot\theta = \cot\theta + 1$$
$$\Rightarrow \quad 3 - 1 = \cot\theta + \cot\theta$$
$$\Rightarrow \quad 2 = 2\cot\theta$$
$$\Rightarrow \quad \cot\theta = 1$$

74. Option (1) is correct.

Speed of Sony $= 18 \times \dfrac{5}{18}$ m/s $= 5$ m/s

Speed of Mony $= 24 \times \dfrac{5}{18}$ m/s $= \dfrac{20}{3}$ m/s

Effective speed of both $= \dfrac{20}{3} - 5 = \dfrac{5}{2}$ m/s

$\therefore$ Time to meet again $= \dfrac{200}{5/3} = \dfrac{3 \times 200}{5} = 120$ s

75. Option (1) is correct.
$(265)^{4081} + 9 = (266 - 1)^{4081} + 9$
$= 266^{4081} - 266^{4080} + \ldots + (-1)^{4081} + 9$
$= 266^{4081} - 266^{4080} + \ldots + 266 - 1 + 9$
$= 266^{4081} - 266^{4080} + \ldots + 266 + 8$
Clearly on dividing given expression by 266, we will get remainder $= 8$

English Comprehension

76. Option (1) is correct.
The correct sentence is: Neetu has been waiting for me since ten o'clock in the morning. The correct usage is 'has been waiting' instead of 'have been waiting'. Since, the subject 'Neetu' is singular; therefore, the verb following the subject will also be in a singular degree 'has'.

77. Option (1) is correct.
The preposition 'under' implies 'at a lower level than.' Therefore, the opposite of the word is 'over', which means 'at a higher level or layer than.'

78. Option (4) is correct.
All options, except (4) are spelled correctly. The correct spelling of 'gliterring' is 'glittering' (shining).

79. Option (4) is correct.
The sentence 'The company's board of directors will announce the financial results of the meeting tomorrow' is in active voice, to change it in the passive voice we need to interchange the object and subject with each other, i.e. object of the active sentence becomes the subject of the passive sentence. The correct sentence is: The financial results will be announced by the company's board of directors at the annual meeting tomorrow. The verb in simple future tense, will change into the form: subject + will + be + V3 form + by + object.

80. Option (1) is correct.
The correct sentence is: The participants of the competition are waiting for their turn curiously. It is to be noted that the subject is 'the participants' (plural), therefore, the verb in the agreement should also be plural 'are waiting'. All options, except (1) have verbs in a singular degree.

81. Option (1) is correct.
If people take advantage of Henry, it implies that he has an undesirable quality. Servile means 'showing an excessive willingness to serve or please others.' An arrogant (showing an offensive attitude of superiority) person can never be subservient to others. Hence 'arrogant' is the correct antonym. 'Sheepish' implies 'resembling a sheep (as in being meek or shy)', while 'bickering' means 'argue about petty and trivial matters.'

82. Option (4) is correct.
A thing fit to eat is referred to as edible. Eligible means 'having the right to do or obtain something'; 'curable' means

'something that is cured'. While 'digestible' means 'easy to digest.'

83. Option (3) is correct.

The idiom 'lily-livered' means 'weak and cowardly.' (1) is the antonym.

84. Option (1) is correct.

The word 'zealous' means 'showing great energy or enthusiasm'. Therefore, 'enthusiastic' is the synonym. All other options are antonymous to the word.

85. Option (4) is correct.

It is apparent from the sentence that the person had a positive quality. All options, except (4) are negative. 'Impress' implies 'make (someone) feel admiration and respect'. So 'persuade' is the only closer in meaning.

86. Option (3) is correct.

'Inculcate' implies 'instil (an idea, attitude, or habit) by persistent instruction.' Therefore, 'instil' best substitutes 'inculcate'.

87. Option (1) is correct.

The sentence 'He won't receive any better choice than this from anywhere' is in the active voice, to change in a passive voice we need to interchange the object and subject with each other, i.e. object of the active sentence becomes the subject of the passive sentence. The correct sentence is: Any better choice won't be received by him than this from anywhere. The negative verb in simple future tense, will change into the form: subject + will not + be + V3 form + by + object.

88. Option (3) is correct.

'Feeble' means 'lacking physical strength'; therefore 'weak' is the correct synonym for feeble. 'Baneful' means 'harmful or destructive.'

89. Option (4) is correct.

The correct spelling is 'association', meaning 'an organization of people with a common purpose and having a formal structure'.

90. Option (2) is correct.

The idiom 'tie yourself in knots' means 'get very confused and anxious.' Therefore, the correct meaning is 'become very confused when you are trying to explain something'. In this context, Pooja while trying to explain her problem, gets confused.

91. Option (2) is correct.

The correct sequence is DCAB. Statement (D) introduces the topic of the paragraph: specialised technique of refining iron. The conjunction 'but' emphasizes on the contradicting scenario in the case of India. This is explicated in (A) with the examples of Bihar and Central India, with reference to smelters that used local deposits of ore to produce iron. This process is explained in B: smelting was done by men while women worked on the bellows, pumping air that kept the charcoal burning. The correct paragraph is: Production of Wootz steel required a highly specialised technique of refining iron. But iron smelting in India was extremely common till the end of the nineteenth century. In Bihar and Central India, in particular, every district had smelters that used local deposits of ore to produce iron which was widely used for the manufacture of implements and tools of daily use. The smelting was done by men while women worked on the bellows, pumping air that kept the charcoal burning.

92. Option (1) is correct.

The correct sequence is BDAC. B starts the paragraph with the mention of a certain time and person: the spring of 1717, the iron foundries were visited by a thin, middle-aged man. The acts of the man starts in D: he would weigh out two pounds of iron, have them heated till they were red-hot and then weigh them again. This act is referred in A: 'he repeated the experiment'. The next step was to prepare three cauldrons. The correct paragraph is : During the spring of 1717, the iron foundries in a remote district were often visited by a thin, middle-aged man with a notebook. He would weigh out two pounds of iron, have them heated till they were red-hot and then weigh them again. He repeated the experiment, increasing the amount until he had weighed up to a thousand pounds. Three cauldrons were next prepared under his directions.

93. Option (3) is correct.

The correct sentence is: She is as beautiful as a peacock. The phrase 'as…as' is used with an adjective or adverb to show the similarity or equality of one thing with another. It can be used as a simile.

94. Option (3) is correct.

The correct sequence is BCDA. The subject of the paragraph is introduced in B: our national flag, Tiranga. This is referred to as the symbol of nationalism and freedom in (C). Next comes the description: it features three horizontal stripes that are all the same width, where the top band is made of saffron (A). The correct paragraph is : The constituent assembly adopted our national flag, Tiranga, which means tricolour, on 22 July 1947. As a symbol of nationalism and freedom, it is fashioned from khadi, which is domestically spun Indian cotton. It features three horizontal stripes that are all the same width. The top band is made of saffron, which symbolises power and courage.

95. Option (2) is correct.

The correct sentence is: The hunter dogs followed the hyena's scent. 'Scent' is a noun that implies a trail indicated by the characteristic smell of an animal and perceptible to hounds or other animals.

96. Option (3) is correct.

The correct sentence is: Human life is considered a unique blessing. It is to be noted that the auxiliary 'is' takes the participle form of verb; hence, 'considered' is correct.

97. Option (3) is correct.

The correct sentence is: Human life is considered a unique blessing which in turn depends on the awareness of the Self. 'Awareness' is a noun that suggests 'consciousness'. In fact, the next sentence insinuates the appropriateness of 'awareness' : 'He who is not aware of the Self can neither have peace nor can he foster peaceful coexistence.'

98. Option (1) is correct.

The correct sentence is: Since the formless God is invisible to the naked eye, our mind often wanders wherever it goes. 'Since' is a conjunction of reason; therefore, justified in the context.

99. Option (1) is correct.

The correct sentence is: As a result, we are unable to develop any love for the Divine. The preceding sentence states the reason, whereas the given sentence states the outcome. Thus, 'as a result' is the appropriate conjunction. Other options do not justify the blank.

100. Option (4) is correct.

The correct sentence is: And religion like the white light of heavens breaks into multi-coloured fragmentations by the prisms of men and loses its gravity. Since the subject is singular 'the white light of heavens', the verb will also be singular 'breaks'. 'Breaks into' means to break into parts.

General Intelligence and Reasoning

1. Select the set in which the numbers are related in the same way as the numbers of the following set.

(NOTE: Operations should be performed on the whole number, without breaking down the number into its constituent digits. For example: 13 – Operations on 13 such as adding/subtracting/multiplying, etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is NOT allowed.)

(16, 7, 81)

(24, 16, 64)

1. (13, 7, 36)   **2.** (48, 39, 18) **3.** (37, 25, 100) **4.** (21, 19, 8)

2. In the following question, select the missing number from the given series.

67, 46, 24, 1, – 23, ?

1. – 48   **2.** – 38   **3.** – 46   **4.** – 50

3. Select the option figure in which the given figure (X) is embedded as its part (rotation is NOT allowed).

1.   **2.**

3.   **4.**

4. Select the option that is related to the fifth number in the same way as the second number is related to the first number and the fourth number is related to the third number.

68 : 19 :: 76 : 21 :: 164 : ?

1. 45   **2.** 39   **3.** 43   **4.** 41

5. In a certain code language 'COMMUNITY' is written as 'YITUNMCOM' and 'AUTHORITY' is written as 'YITORHAUT'. How will 'ISOLATION' be written in that language?

1. NIAOTLISO   **2.** NIOATILSO

3. NIOATLIOS   **4.** NIOATLISO

6. In a certain code language 'BOTTLE' is written as '148', 'SIPPER' is written as '166'. How will 'BUMPER' be written in that language?

1. 160   **2.** 170   **3.** 150   **4.** 180

7. Select the option that is related to the fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is related to the third letter-cluster.

ACCUSED : UCCASDE :: FACTORY : TCAFOYR :: DYNAMIC : ?

1. YNMICAD **2.** DNYMACI **3.** ANYDMCI **4.** DANYMIC

8. Select the figure from among the given option that can replace the question(?) in the following series.
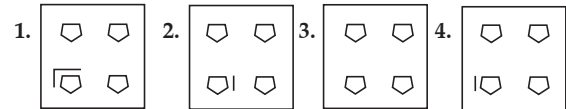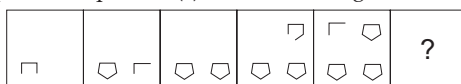
9. A # B means A is the sister of B.

A @ B means A is the son of B.

A & B means A is the father of B.

A % B means A is the mother of B.

If W & Q # T & Y @ M% K, then how is Q related to K?

1. Mother's sister   **2.** Sister

3. Father's sister   **4.** Father's mother

10. Read the given statement(s) and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts decide which of the given conclusions logically follow(s) from the statement(s).

Statements:

Some pencils are rods.

No rod is a door.

All balls are rods.

Conclusions:

I.   Some pencils being balls is a possibility.

II.   No ball is a door

III. All rods are balls

IV. No pencil is a door.

1. Only conclusions I, II and IV follow.

2. Only conclusions I and II follow.

3. Only conclusion I follows.

4. Only conclusions II and III follow.

11. Select the word-pair that best represents a similar relationship to the one expressed in the given pair of words.

(The words must be considered as meaningful English words and not be related to each other based on the number of letters/number of consonants/vowels in the word.)

Rice : Carbohydrates

1. Eggplant : Vegetable   **2.** Flesh : Chicken

3. Cottage cheese : Protein **4.** Orange : Fruit

12. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

NTR, TCE, ZLR, FUE,?

1. LMR   **2.** LDR   **3.** RNQ   **4.** RMO

13. Which of the following letter-clusters will replace the question mark (?) in the given series?

DBK, GDL, JFM, MHN,?

1. QKN   **2.** PKO   **3.** PJO   **4.** QJO

14. Select the figure that will come next in the following figure series.
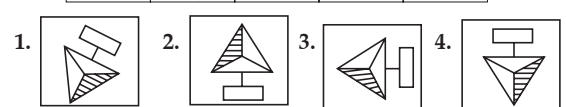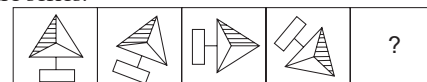
15. If A × B means that A is the brother of B, A – B means that A is the sister of B, A + B means that A is the father of B, then which of the following expressions shows that P is the father of R?
1. P + Q × R   **2.** P × Q + R **3.** P + Q ÷ R **4.** P – Q × R

16. In the following question below are given some statements followed by some conclusions based on those statements. Taking the given statements to be true even if they seem to be variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows the given statements.
Statements:
I. No A is B.   II. No C is B.
Conclusions:
I. Some C are not A.   II. Some A are B.
1. Neither conclusion follows.
2. Only conclusion II follows.
3. Only conclusion I follows.
4. Both conclusions I and II follow.

17. By interchanging the given two numbers which of the following equations will be correct?
4 and 6
1. $4 \div 2 + 3 - 6 \times 5 = -14$ **2.** $9 \div 3 + 6 \times 5 - 4 = 18$
3. $4 \times 3 + 6 - 2 \div 1 = 21$ **4.** $4 - 6 \div 2 + 3 \times 5 = 20$

18. Select the odd groups of numbe ₹ (NOTE: Operations should be performed on the whole numbers without breaking down the number into constituent digits. For example: 13–Operations on 13 such as adding/subtracting/multiplying, etc to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations in 1 and 3 is not allowed.)
1. (14 – 28 – 41)   **2.** (16 – 32 – 64)
3. (18 – 36 – 72)   **4.** (12 – 24 – 48)

**19.** Select the option that is related to the fourth term in the same way as the first term is related to the second term and the fifth term is related to the sixth term.
16 : 91 :: ? 161 :: 18 : 120
1. 22   **2.** 21   **3.** 20   **4.** 24

20. Select the correct combination of mathematical signs to sequentially replace the * signs and to balance the given equation.
50 * 10 * 20 * 5 * 105
1. ÷, ×, +, =   **2.** ×, –, +, = **3.** ÷, ×, –, =   **4.** ×, ÷, +, =

21. After arranging the given words according to dictionary order, which word will come in the 'Third' position?
1. Overwork   2. Overwrought
3. Overwhelming   4. Overweight
5. Overweening
1. Overwhelming   **2.** Overwrought
3. Overweight   **4.** Overweening

22. Which of the following interchange of numbers and mathematical signs would make the given equation correct?
28 + 7 × 10 ÷ 5 – 20 = 5
1. 10 and 20, × and +   **2.** 5 and 20, – and ÷
3. 7 and 28, × and ÷   **4.** 5 and 10, + and ÷

23. Three of the following letter-clusters are alike in some manner and hence form a group. Which letter-cluster does not belong to that group?
1. PONM   **2.** EDCB   **3.** SRQP   **4.** BYXW

24. A paper is folded and cut as shown below. How will it appear when unfolded?
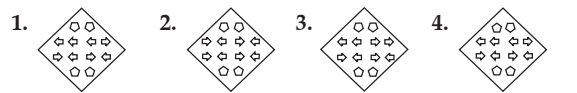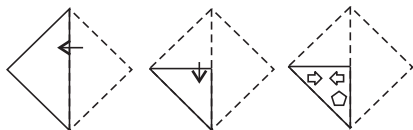
25. Select the option in which the given figure is embedded (rotation is NOT allowed.)
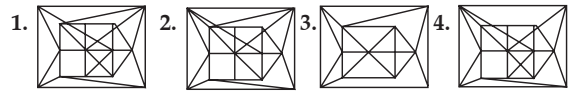
General Awareness

26. In which year was Asha Bhosle's name entered into the Guinness Book of World Records for the most studio recordings?
1. 2017   **2.** 2020   **3.** 2014   **4.** 2011

27. Which article of the Indian Constitution is related with the special provisions with respect to the State of Sikkim?
1. Article 371 C   **2.** Article 371
3. Article 371 F   **4.** Article 371 A

28. Which of the following statements is correct with respect to the Sangam literature?
I. These texts were supposed to be composed and compiled in assemblies of poets.
II. The Sangam literature compiled in assemblies of poets was in the city of Madurai.
1. Neither I nor II   **2.** Both I and II
3. Only I   **4.** Only II

29. Which of the following have mountain range young fold mountains?
1. Appalachians mountain range
2. Alps mountain range
3. Aravali mountain range
4. Ural mountain range

30. Identify a fomite from the following.
1. Drinking water   **2.** Blood
3. Saliva   **4.** Glass

31. Kullu Dussehra is a colourful festival majorly celebrated in which state/union territory?
1. Delhi   **2.** Telangana
3. Uttar Pradesh   **4.** Himachal Pradesh

32. Peat coal has _____ carbon and _____ moisture content?
1. high, low   **2.** low, high   **3.** high, high **4.** low, low

33. After the _____, Mahatma Gandhi called off the Non-Cooperation Movement.
1. Jallianwala Bagh Massacre **2.** Chauri Chaura incidence
3. Bengal partition   **4.** Round Table conferences

34. The Kashi Yatra Scheme was introduced by the government of _____.
1. Karnataka   **2.** Uttar Pradesh
3. Punjabi   **4.** Kerala

35. The national highway network connecting Delhi, Mumbai, Chennai and Kokata is called_____.
1. Diamond Quadrilateral   **2.** Diamond Polygon
3. Golden Polygon   **4.** Golden Quadrialateral

36. Synecology can be defined as which of the following?
1. A branch of science that deals with the interrelationship of individual species with its environment.
2. A branch of science that deals with the interrelationship of two species.
3. A branch of science that deals with the interrelationship of the whole biome.
4. A branch of ecology that deals with the structure, development and distribution of ecological communities.

37. 'Thaipoosam' festival is celebrated in which state of India?
    1. Bihar   2. Andhra Pradesh
    3. Tamil Nadu   4. Goa

38. The Kuchipudi dance form originated in which of the following states of India?
    1. Uttar Pradesh   2. Kerala
    3. Assam   4. Andhra Pradesh

39. The SI unit of speed is _____.
    1. m/s   2. km/s   3. km/h   4. m/h

40. On the occasion of Teacher's Day 2022, the Indian Science Technology and Engineering Facilities Map (I-STEM) launched an initiative to strengthen the efforts of scientifically inclined women. What is the name of this initiative?
    1. KUSUM   2. KALYAN   3. WEST   4. NAMASTE

41. The first English Factory in Bengal was set up on the banks of river ''Hugli'' in _____.
    1. 1671   2. 1641   3. 1661   4. 1651

42. In which of the following cities did Prime Minister Narendra Modi participate in 2019 as part of the celebration of International Day Yoga on June 21?
    1. Ranchi   2. Lucknow   3. New Delhi 4. Chandigarh

43. What should be the standard length of a tennis court according the laws of the International Tennis Federation (ITF), 2021?
    1. 23.77 m   2. 22.45 m   3. 26.41 m   4. 25.34 m

44. Article 20 of the Constitution of India deals with _____.
    1. protection of life and personal liberty
    2. protection in respect of conviction for offences
    3. abolition of untouchability
    4. right education

45. Who is the father of the modern ecology?
    1. Robert Brown   2. Charles Darwin
    3. E.P. Odum   4. Robert Hook

46. Which of the following Indian states receives rainfall during October and November due to the North-East monsoon?
    1. Uttar Pradesh   2. Maharashtra
    3. Madhya Pradesh   4. Tamil Nadu

47. Who is the Ex-officio Chairman of NITI Aayog?
    1. President   2. Prime Minister
    3. Home Minister   4. Finance Minister

48. Which of the following statements is true?
    (A) Wage bill of the government is a capital expenditure.
    (B) Disinvestment by the government in a company is a capital receipt.
    1. Only (A)   2. Neither (A) nor (B)
    3. Both (A) and (B)   4. Only (B)

49. Who has been appointed as the 37th CRPF Director General?
    1. Rajendra Kumar   2. Sujoy Lal Thaosen
    3. Anil Chauhan   4. Vijay Jasuja

50. Who among the following gave up his traditional profession and took to arms, successfully established the kingdom in Karnataka?
    1. Vasudeva Kanva
    2. Gurjara-Pratihara Harichandra
    3. Pushyamitra Shunga   4. Kadamba Mayurasharman

Quantitative Aptitude

51 $\Delta ABC \sim \Delta DEF$ and the perimeters of these triangles are 32 cm and 12 cm, respectively. If DE = 6 cm, then what will be the length of AB?
    1. 16 cm   2. 14 cm   3. 12 cm   4. 18 cm

52. The bar graph given below shows the percentage distribution of the total production of six different types of cars by a car manufacturing company over 2 years.

Percentage of Six different types of Cars manufactured by a Company over Two Years
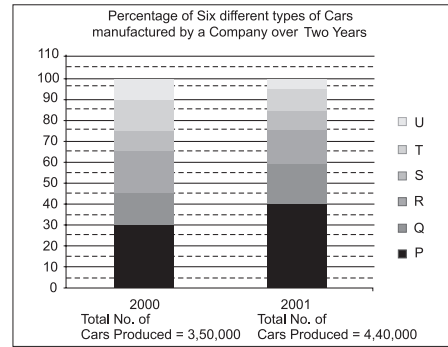
If 75% of the T type cars produced in each years were sold by the company, how many T type cars remain unsold?
    1. 23,500   2. 22,000   3. 24,125   4. 25,000

53. The table given below shows the number of working days of a company in 5 years.

Years	Working days
P	110
Q	310
R	160
S	60
T	210

What is the ratio of the number of working days in the year R to the number of working days in the year T ?
    1. 16 : 21   2. 15 : 22   3. 21 : 17   4. 21 : 16

54. The monthly income of Mr Roy is ₹ 18,000. He took a loan of ₹ 30,000 on simple interest for 3 years at the rate of 5% per annum. The amount that he will be paying as simple interest in 3 years is what per cent of his monthly salary?
    1. 30%   2. 35%   3. 20%   4. 25%

55 When $m^{12} - 1$ is divided by m + 1, the remainder is:
    1. 1   2. 2   3. 0   4. − 1

56. The table given below shows the number of salesman in five companies.

Companies	Salesman
J	45
K	20
L	40
M	15
N	25

Number of salesman in J is what per cent of the number of salesman in K?
    1. 250 per cent   2. 150 per cent
    3. 125 per cent   4. 225 per cent

57. Ramesh purchases a table and a chair for ₹ 3,900. He sells the table at a profit of 8% and the chair at a profit of 16%. He earns a profit of ₹ 540. What is the difference between the original price of the table and the chair?
    1. ₹ 2,000   2. ₹ 1,800   3. ₹ 1,900   4. ₹ 1,700

58. Which of the following statements is correct?
    I. If x = 12, y = − 2 and z = − 10, then $x^3 + y^3 + z^3 = 360$.
    II. If $x + y = 48$ and $4xy = 128$, then $4x^2 + 4y^2 = 4480$.
    1. Neither I nor II   2. Only I
    3. Both I and II   4. Only II

59. The number of units manufactured by a company A was 12,500 units in 2019 and 10,625 units in 2020. While in company B, the production fell from 34,000 units in 2019 to 30,600 units in 2020. If X and Y are the percentage decrease in the number of units manufactured by company A and B, respectively from 2019 to 2020, then what will be the ratio of X and Y ?
    1. 5 : 3   2. 3 : 4   3. 3 : 2   4. 8 : 5

60. Study the given graph and answer the following question.

Number of Lecturers recruited (in hundreds) in three different states in five different years
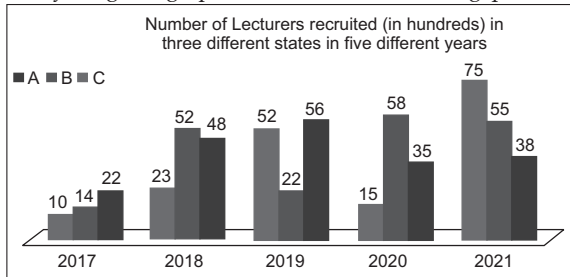
The number of lecturers recruited in state B in the years 2019 was what percentage of the number of lecturers recruited in state C in the year 2021? (correct to 2 decimal places)

1. 56.25%   **2.** 50.25%   **3.** 48.62%   **4.** 57.89%

61. The circumference of the circles is 110 cm and 330 cm, respectively. What is the difference between their radii?

1. 70 cm   **2.** 15 cm   **3.** 46 cm   **4.** 35 cm

62. If $k + \dfrac{1}{k} + 2 = 0$ and $k < 0$, then what is the value of $k^{11} + \dfrac{1}{k^4}$?

1. 0   **2.** – 2   **3.** – 1   **4.** – 17

63. If $\sec^2 A + \tan^2 A = 3$, then what is the value of $\cot A$?

1 $\dfrac{1}{\sqrt{3}}$ **2.** 0   **3.** 1   **4.** $\sqrt{3}$

64. An article costs ₹4,000 to a shopkeeper, who marks its price at ₹8,400. The shopkeeper sells it to a customer at a discount of 25%. The customer gets a further discount of 15% on the discounted price if the customer redeems a coupon issued by the store previously. What is the profit percentage (to the nearest integer) earned by the shopkeeper in this transaction?

1. 34%   **2.** 51%   **3.** 42%   **4.** 36%

65. If the numerical value of twice the curved surface area of a right circular cylinder is equal to the numerical value of its volume, then what is the numerical value of the radius of the base of the cylinder?

1. 2   **2.** 3   **3.** 5   **4.** 4

66. If $x + \dfrac{1}{x} = 6$, then find the value of $\dfrac{3x}{2x^2 - 5x + 2}$.

1. 1   **2.** $\dfrac{3}{7}$ **3.** $\dfrac{2}{3}$ **4.** 0

67. The hour hand moves through 4 hours and has a length of 6 cm. Find the area (in cm², rounded off to two decimal places) of the sector covered by the hour hand.

1. 32.69   **2.** 30.67   **3.** 37.71   **4.** 35.75

68. If θ is an acute angle and $\tan \theta + \cot \theta = 2$, then the value of $\tan^{200} \theta + \cot^{200} \theta$ is:

1. 1   **2.** 2   **3.** – 1   **4.** 0

69. In the figure, if BCDE is a square and ABC is an equilateral triangle, then ∠ ADC is:

1. 45°   **2.** 30°
3. 60°   **4.** 15°

70. The salaries of Rida and Riya are in the ratio of 3 : 5, respectively. If the salary of each one is increased by. 5,000, then the new ratio becomes 5 : 7. What is Riya's present salary?

1. ₹ 12,500   **2.** ₹ 7,500   **3.** ₹ 2,500   **4.** ₹ 10,000

71. Ram, Shyam, Rohan, Reeta and Mukesh are five members of a family who are weighed consecutively and their average weight is calculated after each member is weighed. If the average weight increases by 2 kg each time , how much heavier is Mukesh than Ram?

1. 14 kg   **2.** 18 kg   **3.** 16 kg   **4.** 12 kg

72. A is 20% more efficient than B. How much time will they working together to complete a job which A alone could have done in 29 days?

1. $\dfrac{145}{11}$ **2.** $\dfrac{116}{11}$ **3.** $\dfrac{203}{11}$ **4.** $\dfrac{174}{11}$

73. Determine the LCM of two numbers if their HCF is 9 and their ratio is 14 : 19.

1. 2,394   **2.** 3,990   **3.** 1,592   **4.** 3,192

74. In ΔPQR, ∠ Q = 90°, PQ = 8 CM and ∠ PRQ = 45°. Find the length of QR.

1. 6 cm   **2.** 3 cm   **3.** 5 cm   **4.** 8 cm

75. In a 1,000 m race, Arjun, Balaji and Charan are running. Arjun beats Balaji by 100 m, and Balaji beats Charan by 100 m. In the next 1000 m race (the speeds are the same as in the previous), Balaji gives Charan a head start of 100 m, and Arjun gives Balaji a head start of 100 m. Find the distance by which the winner is ahead of the person just behind him.

1. 100 m   **2.** 40 m   **3.** 30 m   **4.** 11.12 m

English Comprehension

76. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.

One of the students is always / late to the class; he has been warn / by the teacher many time; / but still, he keeps on being late.

1. One of the students is always
2. but still, he keeps on being late
3. by the teacher many times;
4. late to the class; he has been warn

77. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully.

The percentage of employees who called in sick and the number of employees who left their jobs within 2 years (were reflective of the level of job satisfaction).

1. are reflective of the level of job satisfaction
2. is reflective of the level of job satisfaction
3. has reflected the level of job satisfaction
4. were reflective on the level of job satisfaction

78. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to from a meaningful and coherent paragraph.

A. Omnivores get energy and nutrients from plant and animal materials by digesting carbs, protein, fat and fibre and metabolising the nutrients and energy of the sources ingested.

B. The many diverse animals categorised as omnivores can be divided into sub-categories based on their dietary habits.

C. An omnivore is an animal that can feed and thrive on both, plant and animal substances.

D. They also have the capacity to integrate food sources like algae, fungus and bacteria into their diet.

1. CABD   **2.** ACDB   **3.** CADB   **4.** DCBA

79. Select the most appropriate synonym of the underlined word in the following sentence.

Roads in villages during rainy seasons become muddy.

1. fuzzy   **2.** filthy   **3.** blurred   **4.** unsoiled

80. Select the most appropriate synonym of the underlined word.

The poet managed to paint a vivid picture of the landscape by the river through words.
1. Metaphoric
2. Evocative
3. Contemporary
4. Blurred

81. Select the option that expresses the given sentence in active voice.

I was fascinated by the novel.
1. The novel was fascinated to me.
2. The novel fascinated me.
3. The novel fascinate me.
4. The novel fascinates me.

82. Select the INCORRECTLY spelt word in the following sentence.

There lies no guarantee that the hierchical structural framework between the elite and downtrodden sections of the society is right.
1. hierchical
2. guarantee
3. structural
4. downtrodden

83. Select the sentence that contains no spelling errors.
1. Diabeties is a chronic disease.
2. Diabetes is a chronic disease.
3. Daibetes is a chronic disease
4. Diabites is a chronic disease.

84. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.

The man who / was committed / the theft last night / was caught this evening.
1. was caught this evening
2. was committed
3. The man who
4. the theft last night

85. Select the most appropriate option that can substitute the underlined segment in the given sentence.

Health club membership has grown by leaps and bounds after the pandemic.
1. slowly and gradually
2. full of speed and excitement
3. hurriedly
4. very quickly

86. Select the most appropriate meaning of the given idiom.

Steer clear of
1. Show someone how to do a job or activity
2. Be very easy.
3. Avoid someone or something because it is dangerous for you
4. Be mentally and physically exhausted

87. Select the most appropriate option that can substitute the underlined segment in the given sentence. If there is no need to substitute it, select ' No substitution'.

The student decided to surprise their teacher on her birthday.
1. their teacher at her birthday
2. there teacher on her birthday
3. her teacher on her birthday
4. No substitution

88. Select the option that expresses the given sentence in active voice.

The driver was taken to the nearest dispensary by the beggars.
1. The beggars take the driver to the nearest dispensary.
2. The beggars took the driver to dispensary.
3. The beggars took the driver to the nearest dispensary.
4. To the nearest dispensary, the beggars took the driver.

89. Select the most appropriate option that can substitute the underlined segment in the given sentence.

He was sitting besides his best friend during the event.
1. was sitting about his
2. was sitting beside his
3. were sitting besides his
4. was sitting besides her

90. Select the most appropriate synonym of the underlined word in the given sentence.

The efforts of the doctors came to a futile end with the death of the patient.
1. Fruitless
2. Enriching
3. Startling
4. Terrifying

91. Complete the following collocation.

When I got the job, I knew what _____ money really is.
1. effort-earned
2. soft-earned
3. hard-earned
4. honest-earned

92. Rearrange the parts of the sentence in correct order.

Russell Wilson, an NFL
P. about Naomi Osaka saying that her
Q. has been spectacular to watch
R. humility and dedication to others
S. player for the Seattle Seahawks, wrote
1. SPRQ
2. PRQS
3. RPQS
4. QPRS

93. Select the most appropriate collocating word to fill in the blank.

This statement of the political leader has created _____ confusion.
1. utter
2. heavy
3. weighty
4. vast

94. Select the most appropriate synonym of the underlined word.

Marcella seemed morose and downcast when she refused to have dinner.
1. Jocund
2. Excited
3. Gloomy
4. Liberal

95. Select the correct direct form of the given sentence.

Shravan said that the prisoner had slept throughout the journey.
1. Shravan said, ''The prisoner sleeps throughout the jounrney.''
2. Shravan said, ''The prisoner had been sleeping throughout the journey.''
3. Shravan says, ''The prisoner has slept throughout the journey.''
4. Shravan said, ''The prisoner had slept throughout the journey.''

Comprehension:

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

Comics have (1) ———— many superheroes. Bantul, the great was (2) ———— in the year 1965 in the backdrop of the Indo-Pak war. Indrajal comics was set up in 1964 and (3) ——— —— Aabid Surti, who gave birth to a character called Bhadur in 1976 wearing kurta and jeans. Raj comics too (4) ———— into this sphere with their (5) ———— toons Nagraj, Tiranga and Shakti together called Brahman Rakshak (protectors of the universe).

96. Select the most appropriate option to fill in blank number 1.
1. built
2. produced
3. fabricated
4. manufactured

97. Select the most appropriate option to fill in blank number 2.
1. generated
2. inspired
3. promoted
4. created

98. Select the most appropriate option to fill in blank number 3.
1. employed
2. ordered
3. contracted
4. authorised

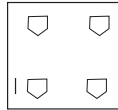**99.** Select the most appropriate option to fill in blank number 4.
1. invaded
2. penetrated
3. entered
4. pierced

100. Select the most appropriate option to fill in blank number 5.
1. noted
2. influential
3. famous
4. good

Answer Key

1. (1)	**2.** (1)	**3.** (3)	**4.** (3)	**5.** (4)	**6.** (3)	**7.** (3)	**8.** (4)	**9.** (3)	**10.** (2)	**11.** (3)	**12.** (2)	**13.** (3)	**14.** (4)
15. (1)	**16.** (1)	**17.** (1)	**18.** (1)	**19.** (2)	**20.** (1)	**21.** (1)	**22.** (4)	**23.** (4)	**24.** (2)	**25.** (3)	**26.** (4)	**27.** (3)	**28.** (2)
29. (2)	**30.** (4)	**31.** (4)	**32.** (2)	**33.** (2)	**34.** (1)	**35.** (4)	**36.** (4)	**37.** (3)	**38.** (4)	**39.** (1)	**40.** (3)	**41.** (4)	**42.** (1)
43. (1)	**44.** (2)	**45.** (3)	**46.** (4)	**47.** (2)	**48.** (4)	**49.** (2)	**50.** (4)	**51.** (1)	**52.** (3)	**53.** (1)	**54.** (4)	**55.** (3)	**56.** (4)
57. (2)	**58.** (1)	**59.** (3)	**60.** (4)	**61.** (4)	**62.** (1)	**63.** (3)	**64.** (1)	**65.** (4)	**66.** (2)	**67.** (3)	**68.** (2)	**69.** (4)	**70.** (1)
71. (3)	**72.** (4)	**73.** (1)	**74.** (4)	**75.** (1)	**76.** (4)	**77.** (1)	**78.** (3)	**79.** (2)	**80.** (2)	**81.** (2)	**82.** (1)	**83.** (2)	**84.** (2)
85. (4)	**86.** (3)	**87.** (4)	**88.** (3)	**89.** (2)	**90.** (1)	**91.** (1)	**92.** (1)	**93.** (1)	**94.** (3)	**95.** (4)	**96.** (2)	**97.** (4)	**98.** (1)
99. (3)	**100.** (3)												

Answers with Explanations

General Intelligence and Reasoning

1. Option (1) is correct.
Explanation: Given that:
(16, 7, 81)
(24, 16, 64)
Logic follows: (16, 7, 81)
$\therefore$ $(16 - 7)^2 = 81$
Similarly, (24, 16, 64)
$\therefore$ $(24 - 16)^2 = 64$
Hence,
(13, 7, 36)
$\therefore$ $(13 - 7)^2 = 36$

2. Option (1) is correct.
Explanation: Given series is as follows:
67, 46, 24, 1, –23, ?
Logic is as follows:

67	46	24	1	–23	–48
–21	–22	–23	–24	–25	

3. Option (3) is correct.
Explanation:
Find the embedded part from the options figure is as follows:

4. Option (3) is correct.
Explanation: Given that:
68 : 19 :: 76 : 21 :: 164 : ?
Logic is as follows: -
$19 \times 4 = 76 - 8 = 68$
$21 \times 4 = 84 - 8 = 76$
Similarly,
$? \times 4 - 8 = 164$
$? \times 4 = 164 + 8$
$? \times 4 = 172$
$? = 43$

5. Option (4) is correct.
Explanation: Given that:
'COMMUNITY' is written as 'YITUNMCOM'
'AUTHORITY' is written as 'YITORHAUT'
Logic is as follows:

Similarly,

Hence,

6. Option (3) is correct.
Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

Now,

B	O	T	T	L	E	2 + 15 + 20 + 20 + 12 + 5
2	15	20	20	12	5	= 74 × 2 = 148

Similarly,

S	I	P	P	E	R	19 + 9 + 16 + 16
19	9	16	16	5	18	+ 5 + 18 = 83 × 2 = 166

Hence,

B	U	M	P	E	R	2 + 21 + 13 + 16 + 5 + 18
2	21	13	16	5	18	= 75 × 2 = 150

7. Option (3) is correct.
Explanation: Given that:
ACCUSED : UCCASDE :: FACTORY : TCAFOYR :: DYNAMIC : ?
Logic is as follows: -

Similarly,

Hence,

8. Option (4) is correct.
Explanation:

Logic:
The sides in the smaller figure are increasing with every step.

9. **Option (3) is correct.**

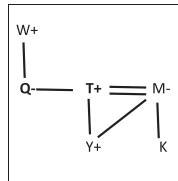**Explanation:** Given that:

A # B means 'A is the sister of B'.
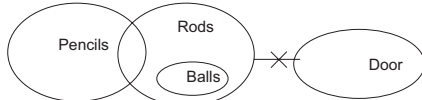
A @ B means 'A is the son of B'.

A & B means 'A is the father of B'.

A % B means 'A is the mother of B'.

W & Q # T & Y @ M % K

10. **Option (2) is correct.**

Explanation:

(1) There is no definite relation between pencils and balls. Hence, the possibility is true.

(2) It is clear that ball cannot overlap with Door. Hence, the conclusion is True.

(3) Some rods are balls but cannot say definitely about all.

(4) Some pencils are not the door but cannot say definitely about all.

Note: Only the conclusions I and II Follow.

11. **Option (3) is correct.**

Explanation: Given that:

Rice : Carbohydrates

As, rice is a source of carbohydrates.

Similarly, cottage cheese is a source of protein.

12. **Option (2) is correct.**

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

Given that: NTR, TCE, ZLR, FUE, ?

13. **Option (3) is correct.**

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

Given series is as follows:

DBK, GDL, JFM, MHN, ?

14. **Option (4) is correct.**
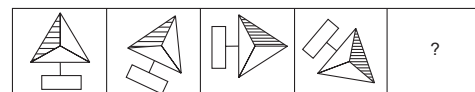
Explanation:

Logic: Each figure is rotated 45 degrees clockwise.
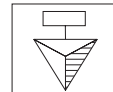
15. **Option (1) is correct.**

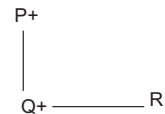**Explanation:**

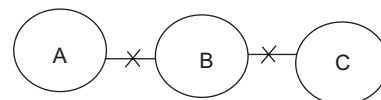If A × B means that A is the brother of B

A – B means that A is the sister of B

A + B means that A is the father of B

(1) P+Q×R

16. **Option (1) is correct.**

Explanation:

(1) There is no definite relation between C and A. Hence, there will not be any definite relation between them.

(2) Since No A is B. Hence, some A are B not follow.

17. **Option (1) is correct.**

Explanation: According to the BODMAS rule,

B	Bracket in order (), [], {}
O	Of
D	Division (÷)
M	Multiplication(×)
A	Addition (+)
S	Subtraction (–)

Interchange 4 and 6

(1) $4 \div 2 + 3 - 6 \times 5 = -14$

$6 \div 2 + 3 - 4 \times 5 = -14$

$3 + 3 - 4 \times 5 = -14$

$6 - 20 = -14$

$-14 = -14$