SSC Junior Engineer Online Exam CIVIL Engineering SOLVED PAPERS TECHNICAL & NON-TECHNICAL

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PRE EXAM

SSC Junior Engineer Civil Online Exam 2018 (CPWD/CWC/MES) [Time : 10.15 am, Exam : 22.01.2018]
SSC Junior Engineer Civil Online Exam 2018 (CPWD/CWC/MES) [Time : 3.15 pm, Exam : 22.01.2018]
SSC Junior Engineer Civil Online Exam 2018 (CPWD/CWC/MES) [Time : 10.15 am, Exam : 23.01.2018]
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SSC Junior Engineer Civil Online Exam 2019 (CPWD/CWC/MES) [Time : 3 pm, Exam : 23.09.2019]
SSC Junior Engineer Civil Online Exam 2019 (CPWD/CWC/MES) [Time : 10 am, Exam : 25.09.2019]
SSC Junior Engineer Civil Online Exam 2020 (CPWD/CWC/MES) [Time : 3-5 pm, Exam : 28.10.2020]
SSC Junior Engineer Civil Online Exam 2020 (CPWD/CWC/MES) [Time : 10-12 am, Exam : 29.10.2020]
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SSC Junior Engineer Civil Online Exam 2022 (CPWD/CWC/MES) [Time : 10-12 am, Exam : 15.11.2022] 712-738
SSC Junior Engineer Civil Online Exam 2022 (CPWD/CWC/MES) [Time : 05-07 pm, Exam : 15.11.2022]
SSC Junior Engineer Civil Online Exam 2022 (CPWD/CWC/MES) [Time : 10-12 am, Exam : 16.11.2022]
SSC Junior Engineer Civil Online Exam 2023 (CPWD/CWC/MES) [Time : 09-11 am, Exam : 09.10.2023]
SSC Junior Engineer Civil Online Exam 2023 (CPWD/CWC/MES) [Time : 09-11 am, Exam : 10.10.2023] 819-846
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SSC Junior Engineer Civil Online Exam 2024 (CPWD/CWC/MES) [Time : 09-11 am, Exam : 05.06.2024] 905-934
SSC Junior Engineer Civil Online Exam 2024 (CPWD/CWC/MES) [Time : 09-11 am, Exam : 06.06.2024]
SSC Junior Engineer Civil Online Exam 2024 (CPWD/CWC/MES) [Time : 04-06 pm, Exam : 06.06.2024]
SSC Junior Engineer Civil Online Exam 2024 (CPWD/CWC/MES) [Time : 09-11 am, Exam : 07.06.2024] 995-1024

MAINS EXAM

SSC Junior Engineer Civil Online Mains Exam 2024 (CPWD/CWC/MES) [Time : 09-11 am, Exam : 04.12.2023].....1-24

SSC Junior Engineer Paper Syllabus

CIVIL & STRUCTURAL ENGINEERING

The Examination will be conducted in two stages : A. Paper-I (Pre) (200 marks)

B. Paper-II (Mains) (300 marks)

Total Written Test (500 marks)

Written Test :

Paper	Mode of Examination	Subject	Number of Questions/Max. Marks	Duration & Timing
		(i) General Intelligence & Reasoning	50/50	
		(ii) General Awareness	50/50	
Paper-I Objective type	Computer Based Examination	(iii) General Engineering (CIVIL & Structural)	100/100	2 Hours
Paper-II Objective Type	Computer Based Examination	General Engineering (CIVIL & Structural)	100/300	2 Hours

There will be **negative marking equal to one-third (1/3) of the marks** allotted to the question for each wrong answer in Paper-I & negative marking of one mark for each wrong answer in Paper-II.

SSC JE Syllabus

Indicative Syllabus: The standard of the questions in Engineering subjects will be approximately of the level of Diploma in Engineering (Civil/Mechanical) from a recognized Institute, Board or University recognized by All India Board of Technical Education. All the questions will be set in SI units. The details of the syllabus are given below.

Paper-I (Prelims)

- <u>General Intelligence & Reasoning</u>: The Syllabus for General Intelligence would include questions of both verbal and non-verbal type. The test may include questions on analogies, similarities, differences, space visualization, problem solving, analysis, judgment, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series etc. The test will also include questions designed to test the candidate's abilities to deal with abstract ideas and symbols and their relationships, arithmetical computations and other analytical functions.
- General Awareness: Questions will be aimed at testing the candidate's general awareness of the environment around him/her and its application to society. Questions will also be designed to test knowledge of current events and of such matters of everyday 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 to History, Culture, Geography, Economic Scene, General Polity and Scientific Research, etc. These questions will be such that they do not require a special study of any discipline.

General Engineering (Civil and Structural)

- Civil Engineering : Building Materials, Estimating, Costing and Valuation, Surveying, Soil Mechanics, Hydraulics, Irrigation Engineering, Transportation Engineering, Environmental Engineering.
- **Structural Engineering :** Theory of Structures, Concrete Technology, RCC Design, Steel Design.

Paper-II (Mains) Civil & Structural Engineering

- Building Materials : Physical and Chemical properties, classification, standard tests, uses and manufacture/quarrying of materials e.g. buildings stones, silicate based materials, cement (Portland), asbestos products, timber and wood based products, laminates, bituminous materials, paints, varnishes.
- Estimating, Costing and Valuation : Estimate, glossary of technical terms, analysis of rates, methods and unit of measurement, Items of work earthwork, Brick work (Modular & Traditional bricks), RCC work, Shuttering, Timber work, Painting, Flooring, Plastering. Boundary wall, Brick building, Water Tank, Septic tank, Bar bending schedule, Centre line method, Mid-section formula, Trapezoidal formula, simpson's rule, Cost estimate of Septic tank, flexible pavements, Tube well, isolates and combined footings, Steel Truss, Piles and pile-caps. Valuation Value and cost, scrap value, salvage value, assessed value, sinking fund, depreciation and obsolescence, methods of valuation.
- **Surveying :** Principles of surveying, measurement of distance, chain surveying, working of prismatic compass, compass traversing, bearings, local attraction, plane table surveying, theodolite traversing, adjustment of theodolite, Levelling, Definition of terms used in levelling, contouring, curvature and refraction corrections, temporary and permanent adjustments of dumpy level, methods of contouring, uses of contour map, tachometric survey, curve setting, earth work calculation, advanced surveying equipment.
- Soil Mechanics : Origin of soil, phase diagram, Definitions-void ratio, porosity, degree of saturation, water content, specific gravity of soil grains, unit weights, density index and interrelationship of different parameters, Grain size distribution curves and their uses. Index properties of soils, Atterberg's limits, ISI soil classification and plasticity chart. permeability of soil, coefficient of permeability, determination of coefficient of permeability, Unconfined and confined aquifers, effective stress, quick sand, consolidation of soils, Principles of consolidation, degree of consolidation, pre-consolidation pressure, normally consolidated soil, e-log p curve, computation of ultimate settlement. Shear strength of soils, direct shear test, Vane shear test, Triaxial test. Soil compaction, Laboratory compaction test, Maximum dry density and optimum moisture content, earth pressure theories, active and passive earth pressures, Bearing capacity of soils, plate load test, standard penetration test.
- Hydraulics: Fluid properties, hydrostatics, measurements of flow, Bernoulli's theorem and its application, flow through pipes, flow in open channels, weirs, flumes, spillways, pumps and turbines.
- Irrigation Engineering : Definition, necessity, benefits, 2II effects of irrigation, types and methods of irrigation, Hydrology Measurement of rainfall, run off coefficient, rain gauge, losses from precipitation evaporation, infiltration, etc. Water requirement of crops, duty, delta and base period, Kharif and Rabi Crops, Command area, Time factor, Crop ratio, Overlap allowance, Irrigation efficiencies. Different type of canal irrigation, loss of water in canals. Canal lining types and advantages. Shallow and deep wells, yield from a well. Weir and barrage, Failure of weirs and permeable foundation, Slit and Scour, Kennedy's theory of critical velocity. Lacey's theory of uniform flow. Definition of flood, causes and effects, methods of flood control, water logging, preventive measure. Land reclamation, Characteristics of affecting fertility of soils, purposes, methods, description of land and reclamation processes. Major irrigation projects in India.
- Transportation Engineering : Highway Engineering cross sectional elements, geometric design, types of pavements, pavements materials aggregates and bitumen, different tests, Design of flexible and rigid pavements Water Bound Macadam (WBM) and Wet Mix Macadam (WMM), Gravel Road, Bituminous construction, Rigid pavement joint, pavement maintenance, Highway drainage, Railway Engineering components of permanent way sleepers, ballast, fixtures and fastening, track geometry, points and crossings, track junction, stations and yards. Traffic Engineering Different traffic survey, speed- flow-density and their interrelationships, intersections and interchanges, traffic signals, traffic operation, traffic signs and markings, road safety.
- Environmental Engineering : Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage systems, circular sewer, oval sewer, sewer appurtenances, sewage treatments. Surface water drainage. Solid waste management types, effects, engineered management system, Air pollution pollutants, causes, effects, control. Noise pollution cause, health effects, control.

Structural Engineering

- Theory of structures : Elasticity constants, types of beams determinate and indeterminate, bending moment and shear force diagrams of simply supported, cantilever and over hanging beams, Moment of area and moment of inertia for rectangular & circular sections, bending moment and shear stress for tee, channel and compound sections, chimneys, dams and retaining walls, eccentric loads, slope deflection of simply supported and cantilever beams, critical load and columns, Torsion of circular section.
- Concrete Technology : Properties, Advantages and uses of concrete, cement aggregates, importance of water quality, water cement ratio, workability, mix design, storage, batching, mixing, placement, compaction, finishing and curing of concrete, quality control of concrete, hot weather and cold weather concreting, repair and maintenance of concrete structures.
- RCC Design : RCC beams-flexural strength, shear strength, bond strength, design of singly reinforced and double reinforced beams, cantilever beams. T-beams, lintels. One way and two way slabs, isolated footings. Reinforced brick works, columns, staircases, retaining wall, water tanks (RCC design questions may be based on both Limit State and Working Stress methods).
- **Steel Design** : Steel design and construction of steel columns, beams roof trusses plate girders.

Exam. Pre/Mains	Year	Total Question (Technical)	Total Question (Non-Technical)
SSC-JE	2024 (5 June Morning)	100	100
SSC-JE	2024 (6 June Morning)	100	100
SSC-JE	2024 (6 June Evening)	100	100
SSC-JE	2024 (7 June Morning)	100	100
SSC-JE	2023 (9 October Morning)	100	100
SSC-JE	2023 (10 October Morning)	100	100
SSC-JE	2023 (10 October Evening)	100	100
SSC-JE	2023 (11 October Morning)	100	100
SSC-JE	2022 (14 November Morning)	100	100
SSC-JE	2022 (15 November Morning)	100	100
SSC-JE	2022 (15 November Evening)	100	100
SSC-JE	2022 (16 November Morning)	100	100
SSC-JE	2021 (23 March Morning)	100	100
SSC-JE	2021 (23 March Evening)	100	100
SSC-JE	2020 (28 October Evening)	100	100
SSC-JE	2020 (29 October Morning)	100	100
SSC-JE	2020 (30 October Morning)	100	100
SSC-JE	2020 (30 October Evening)	100	100
SSC-JE	2020 (11 December Evening)	100	100
SSC-JE	2019 (23 September Morning)	100	100
SSC-JE	2019 (23 September Evening)	100	100
SSC-JE	2019 (25 September Morning)	100	100
SSC-JE	2018 (22 January Morning)	100	100
SSC-JE	2018 (22 January Evening)	100	100
SSC-JE	2018 (23 January Morning)	100	100
SSC-JE	2018 (23 January Evening)	100	100
SSC-JE	2018 (24 January Morning)	100	100
SSC-JE	2018 (24 January Evening)	100	100
SSC-JE	2018 (25 January Morning)	100	100
SSC-JE	2018 (25 January Evening)	100	100
SSC-JE	2018 (27 January Morning)	100	100
SSC-JE	2018 (27 January Evening)	100	100
SSC-JE	2018 (29 January Morning)	100	100
SSC-JE	2018 (29 January Evening)	100	100
	MA	AINS	
SSC-JE	2023 (04 December) Mains	100	
	Total	3500	3400

SSC JE (Civil) Previous Papers Analysis Chart

	YEAR	SSC JE 22 Jan. 2018 (M)	SSC JE 22 Jan. 2018 (E)	SSC JE 23 Jan. 2018 (M)	SSC JE 23 Jan. 2018 (E)	SSC JE 24 Jan. 2018 (M)	SSC JE 24 Jan. 2018 (E)	SSC JE 25 Jan. 2018 (M)	SSC JE 25 Jan. 2018 (E)	SSC JE 27 Jan. 2018 (M)	SSC JE 27 Jan. 2018 (E)	SSC JE 29 Jan. 2018 (M)	SSC JE 29 Jan. 2018 (E)	SSC JE 23 Sep. 2019 (M)	SSC JE 23 Sep. 2019 (E)	SSC JE 25 Sep. 2019 (M)	SSC JE 28 Oct. 2020 (E)	SSC JE 29 Oct. 2020 (M)	SSC JE 30 Oct. 2020 (M)	SSC JE 30 Oct. 2020 (E)	SSC JE 11 Dec. 2020 (E)	SSC JE 23 March 2021 (M)	SSC JE 23 March 2021 (E)	SSC JE 14 November 2022 (M)	SSC JE 15 November 2022 (M)	SSC JE 15 November 2022 (E)	SSC JE 16 November 2022 (M)	SSC JE 9 October 2023 (M)	
	HYDRAULICS	10	10	10	11	15	12	11	10	10	10	10	11	10	7	8	11	7	10	9	9	9	9	8	9	9	9	11	I
	S.M.F.E	10	4	8	5	10	8	3	4	6	6	5	5	6	10	10	7	8	7	7	9	11	7	7	7	7	8	12	
	B.M	8	8	11	15	10	9	12	13	13	13	7	11	11	9	9	11	12	10	10	7	8	10	8	9	8	8	10	Ī
	B.C.M.E	7	5	3	0	2	0	0	2	2	4	1	3	4	1	1	2	0	2	2	0	0	0	1	0	1	0	2	Ī
6	S.O.M	5	7	2	4	3	10	7	9	7	4	4	8	7	5	4	8	6	6	8	8	4	7	8	6	6	5	5	Ī
	С.Т	14	15	16	17	15	8	15	14	15	13	17	16	4	4	4	5	4	8	4	5	7	7	6	6	6	6	3	
	SURVEYING	13	9	9	9	10	10	8	8	10	9	10	7	10	8	10	11	9	9	10	10	10	10	10	10	10	11	12	
	P.H.E	5	2	3	2	7	5	5	3	3	3	3	2	8	5	8	8	8	7	7	9	8	10	8	9	10	9	7	Ī
	R.C.T	3	10	8	13	10	11	10	11	10	8	10	11	7	10	12	7	9	6	10	10	7	7	6	10	6	9	7	
	MECHANICS	6	5	2	5	0	3	12	2	1	11	10	2	6	5	3	0	1	1	1	0	1	0	0	0	0	0	1	
	C.M.A.	2	0	3	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2	4	1	0	3	
	E.C.V	10	10	10	9	10	9	12	10	7	9	11	7	10	9	10	10	12	12	11	13	11	10	9	7	10	9	4	
	H.R.B	2	5	2	2	0	5	1	3	3	2	3	4	5	11	7	8	9	8	8	8	7	9	12	8	9	10	6	l
	D.S.M.S	2	8	11	4	7	6	1	10	11	6	7	10	4	4	4	4	5	5	3	5	8	4	6	5	9	6	5	Ī
	I.E	3	2	2	4	1	2	3	1	2	2	2	2	8	12	10	8	10	9	9	7	9	9	9	10	8	10	12	ĺ
	TOTAL	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	ĺ

SSC JE Civil Online Exam Topicwise Analysis Chart (2018-20

SMFE-SOIL MECHANICS AND FOUNDATION ENGINEERING, BM-BUILDING MATEARIAL, BCME-BUILDING CONSTRUCTIONS AND M SOM-STRENGTHS OF MATERIAL, CT-CONCRETE TECHNOLOGY, PHE-PUBLIC HEALTH, ENGINEERING, IE-IRRIGATION ENGINEERI RCC-REINFORCED CONCRETE TECHNOLOGY, CMA-CONSTRUCTION MANAGEMENT, PUBLIC WORKS ACCOUNTS AND ENTREPREN ECV-ESTIMATING, COSTING AND VALUATION, HRB-HIGHWAY RAILWAY AND BRIDGE ENGINEERING. DSMS- DESIGN OF STEEL AN

SSC Junior Engineer Online Exam 2018 CPWD/CWC/MES CIVIL Engineering

Time : 10.15 am]

[Exam Date : 22 January, 2018





21. From the given alternatives, according to - 15 14 - 18 dictionary, which word will come at LAST position? (d) L (c) (b) Justify (a) Juvenile (c) Judge (d) Justice So, the option (d) is different from the given alternative. Ans : (a) Arrangement of words according to dictionary In the following question, select the odd 17 arenumber from the given alternative. Judge (a) 2-4 (b) 3–9 Justice (c) 4-18 (d) 5-25 -Justify Ans : (c) Juvenile -Last position (a) $2^2 = 4$ (b) $3^2 = 9$ So, the word 'Juvenile' will come at last postion. (c) $4^2 \neq 18$ (d) $(5)^2 = 25$ A series is given with one term missing. Select 22. The square of 4 is equal to 16 but in the given option is the correct alternative from the given ones that equal 18. So, option (c) is the odd number from given will complete the series. alternatives. F, M, T, ?, H, O (a) B (b) C In the following question, select the odd 18. number pair from the given alternatives. (c) A (d) D (a) 76–42 (b) 92-20 Ans : (c) 13 20 1/27 8 15 (c) 73-21 (d) 93-27 M T A H O Ans: (b) (a) $76 - 42 \Rightarrow 7 \times 6 = 42$ (b) $92 - 20 = 9 \times 2 = 18 \neq 20$ +7 +7 +7 +7 **Note**- A = 1 or 1 + 26 = 27(c) $73 - 21 = 7 \times 3 = 21$ (d) $93 - 27 = 9 \times 3 = 27$ A series is given with one term missing. Select 23. the correct alternative from the given that will So, the option (b) is different from the given complete the series. alternatives. ROK, LIE, FCY, ZWS, ? 19. Arrange the given words in the sequence in (a) LAQ (b) SRV which they occur in the dictionary. (c) TQM (d) FMQ (2) Flavour (1) Flagrant Ans : (c) (3) Flatter (4) Flick (5) Flawed (a) 13254 (b) 31254 (c) 23541 (d) 32541 Ans : (a) Arrangement of the words according to the sequence in the dictionary are-So, TOM, are the correct alternatives from the given Flagrant (i) that will complete the series. Flatter (ii) 24. A series is given with one term missing. Select (iii) Flavour the correct alternative from the given ones that (iv) Flawed will complete the series. (v) Flick FAQ, LGW, RMC, ?, DYO According to dictionary, which of the following 20. (a) VIR (b) XSI word will come at THIRD position? (c) LSI (d) MIS (1) Heritage (2) Helpful Ans : (b) (3) Hectic (4) Heroic (5) Heroism >R (a) Hectic (b) Heritage 13 19 (c) Heroic (d) Helpful Ans : (b) Arrangement of words according to dictionary are-0 Hectic So, XSI are the term which is complete the series. Helpful 25. In the following question, select the missing -3^{rd} position Heritage number from the given alternatives. Heroic 14, 22, 49, 113, 238, ? Heroism (a) 386 (b) 532 So, the word 'Heritage' will come at third position. (c) 454 (d) 576

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Ans : (d) If a mirror is placed on the line MN then the answer figures of option (d) is right image of the given figure.

50. A word is represented by only set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'C' can be represented by 43, 41 etc and 'O' can be represented by 97, 78 etc. Similarly, you have to identify the set for the word 'SPAN'.

	Matrix-I आव्यूह-I										
	0	1	2	3	4						
0	Μ	Μ	Μ	1	E						
1	Α	Μ	J	1	Α						
2	F	Ι	Μ	1	Ε						
3	Ι	J	Α	L	K						
4	D	С	Α	С	L						

			N	latrix-I	I आव्यूह-	II	
			5	6	7	8	9
	5		N	V	Q	U	S
	6		R	S	Т	U	Ν
	7		S	Z	Х	0	V
	8		X	S	Р	W	Р
	9		U	Х	0	Y	Y
	(a)	66, 8	7, 33, 5	6	(b) 59	, 78, 42, 3	1
	(c)	86, 8	9, 32, 5	5	(d) 78	, 43, 22, 9	8
Ans	: (c)						
	(a)	66	87	33	56		
		S	Р	L	V	– wro	ong
	(b)	59	78	42	31		
		S	0	Α	J	– wro	ong
	(c)	86	89	32	55		
		S	Р	Α	Ν	– Ri	ght
	(d)	78	43	22	98		
		0	С	М	V	– wro	nnσ

So, the SPAN is represented by the set of number i.e. 86,89,32,55.

General Knowledge

51.	Preliminary	expenses	are	the	examples
	of				
	(a) Capital ex	penditure			
	(b) Capital ga	ain			
	(c) revenue e	xpenditure			

(d) deferred revenue expenditure

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Ans. (a) : Capital expenditure is the example of preliminary expenses. Capital expenditures are those governmental expenditure, which is helpful in making the physical and financial assets. These expenditures includes the building construction, dams, Railways, Industrial development etc. It is done irregularly. It is called the developmental expenditure. In the budget document, the gross capital expenditure has been divided into two categories–(1) Non-planned capital expenditure.

52. Which economic activity cannot be included in the tertiary sector?

- (a) Working in a call-centre
- (b) Tuition occupation
- (c) Bee-keeping
- (d) Banking

Ans. (c) : In economy, the economic sectors has been divided into three parts–

Primary sector-These includes agriculture, forestry, animal husbandry, fisheries, Bee keeping, mining and quarrying.
 Secondary sector-These includes industries like sugar, textiles etc. and the manufacturing.

(3) Tertiary sector-This is basically called the service sector. This includes mainly banking, insurance, transport, telecom, tuition occupation, working in the call centre etc. Hence the option (c) the Bee-keeping falls under primary sector.

- 53. Which of the following statement is true for the Public Sector Unit?
 - (a) Most of assets is owned by a group of people
 - (b) Most of assets is owned by big companies
 - (c) Most of assets is owned by government
 - (d) Most of assets is owned by an individual

Ans. (c) : Public sector units includes all those industrial and commercial enterprises which is owned and managed by the government or by any other agency assigned by the government. Hence the assets of public sector units are mostly in government ownership. The public sector provides basic facilities like defence, energy, iron and steel, coal, journey by air etc. It is remarkable that Pandit Jawahar Lal Nehru named the public sectors as the 'temples of modern India'.

(c)	19.35%	(d)	20.25%
(a)	17.5%	(b)	18.01%

Ans. (a) : According to the census of 2011 the total population of India is 121.5 crore which is 17.5% of world's total population. In India, states with higher population are – U.P., Maharashtra, Bihar, West Bengal, Andhra Pradesh.

55. Which of the following five year plan of India recognized human development as the core of development efforts?

- (a) Eighth five year plan
- (b) Ninth five year plan
- (c) Tenth five year plan
- (d) Eleventh five year plan

Ans. (a) : Eighth five year plan (1992-97) was based on 60. Which one of the following is not correctly the John W. Muller model of influence in the form of matched? emphasis on infrastructure. In this plan the human (a) Eighth Schedule: Languages resource development was the essence of all (b) Second Schedule: Form of Oath of office developmental efforts and the theme was 'Development (c) Fourth Schedule: Allocation of seats in Raiya of human resource'. It is important that India became a Sabha member of the W.T.O. on 1st January 1995 during this (d) Tenth Schedule: Defection related provisions plan. Ans. (b) : 56. Which of the following thinker is associated Schedule **Related Subjects** with "the concept of political sovereignty? (1) 8th Schedule Languages (a) MacIver (b) Socrates (2) 2^{nd} Schedule Provisions relating to (c) Rousseau (d) Plato President, Governor, Speaker Ans. (c) : Rousseau was a great philosopher and and Deputy Speaker of Lok thinker, who was born on 1712 A.D. in Geneva. Sabha, Chairman and Deputy Rousseau is associated with "the concept of political Chairman of Rajya Sabha, sovereignty" Rousseau says that "Man is born free, and Judges of Super Court and every where he is in chains." Rousseau's famous high Court etc. compositions are - (i) The Social Contract, 1762, (3) 4th Schedule Allocations of seat in the (2) Dialogue, (3) An Introduction to Political Economy. Rajya Sabha 1758 (4) 10th Schedule – Anti-defection law. Who said, "A good citizen makes a good state 57. Note - Form of Oaths or Affirmation has been and a bad citizen makes a bad state"? described in 3rd Schedule. (a) Plato (b) Aristotle 61. When did the Chinese traveler 'Sung Yun' (c) G. B. Shaw (d) Rousseau come to India? Ans. (b) : Aristotle's statement was that "A good citizen (a) 510 AD (b) 518 AD makes a good state and a bad citizen makes a bad state." (c) 525 AD (d) 528 AD It is important that Aristotle was a famous Greek Ans. (b) : Chinese traveler 'Sung Yun' came to India in Philosopher, a pupil of Plato and the teacher of 518 A.D. and collects many Buddhist text during their Alexander the great. Their greatest composition is 'Politics'. Aristotle has considered the family as a three year stay. natural body. It is noted that Fa-hsien, Hsuan Tsang and I-tsing were other chinese traveler who visited India. Fa-hsien came 58. Panchayat Samiti at the block level in India is in the reign of chandra gupta II Vikrmadity (375-415 a/an..... A.D.). Hsuan Tsang came in the reign of Harshvardhan (a) Advisory Body in around 629 A.D. (b) Coordinating Authority only 62. Which among the following state 'Odantpuri' (c) Supervisory Authority only education center was situated? (d) Administrative Authority (a) Bengal (b) Gujarat Ans. (d) : In India the Panchayati Raj system has three (c) Bihar (d) Tamil Nadu levels - Gram Panchavat at village level, Panchavat Ans. (c) : "Odantpuri" education center was situated in Samiti at Block level and Zila Parishad at District level. Bihar. According to some scholar the famous Budhist The Panchayat Samiti at Block level is an administrative authority. It has power of functioning of monastery of Odantpuri (Bihar) was built by Devapala all developmental works in their respective areas. It can who was a follower of Buddhism. In texts he adorned of function the works related to education, health, 'Paramsaugat'. agriculture and village industries. Who was the founder of Bahmani Kingdom? 63. 59. According to Indian Constitution, who decides (b) Firoz Shah (a) Hasan Gangu the Salary of members of Parliament? (c) Mahmud Gawan (d) Asaf Khan (a) Unions Council of Ministers Ans. (a) : In Decean (South India), the Bahmani (b) Parliament kingdom had come into existence in 1347, the later (c) Supreme Court period of Muhammad Bin Tughlaq, by an Afghan (d) President of India adventurer Gangu who assumed the title of Alauddin Ans. (b) : According to article 106, of Indian Hasan Bahaman Shah. He made Gulburga the capital of Constitution the parliament will decide the salary and newly established empire and renamed it Ahsanabad allowances of every members of parliament. It is Later in 1425 Bidar became its capital. important that to be elected as a member of parliament 64. During whose rule in India did the Khilafat one must be – a citizen of India. For the membership of movement begin? Rajya Sabha age must not be less than 30 years and 25 (a) Lord Mountbatten (b) Lord Dalhousie years in the case of Lok Sabha. (c) Lord Chelmsford (d) Lord Curzon

Ans. (c) : Khilafat and non-cooperation movement has started in the period of Lord Chelmsford (1916-21 A.D.). The other events in this period are–(i) Rowlatt act of 1919, (ii) Jaliyanwala bagh massacre in 13th April, 1919, (3) Sadler Commission in 1917 to enquire	 69. Which of the following states of India has the largest percentage of geographical area under forest as per the report of the Forest survey of India? (a) Manipur (b) Meghalaya
about Calcutta University.	(c) Mizoram (d) Nagaland
 65. Who among the following was the founder of the Arya Mahila Samaj in the early 1880s? (a) Swami Dayananda Saraswati (b) Swami Vivekananda (c) Ramabai Ranade (d) Pandita Pamahai 	Ans. (c) : India's forest survey report (IFSR) 2017 has published on 12 th Feb, 2017. According to this report the state with highest percentage cover of forest are–Lakshadeep - 90.33%, Mizoram - 86.27%, Andman & Nicobar Island - 81.73% Note –According to options available in the question the public options.
(d) i anuta Kamabai Ans (d) · Arva Mahila Samai was established by	option (c) is correct.
Pandita Ramabai in 1881 in Pune. In 1889 Ramabai established Sharda Sadan for widows. Pandita Ramabai was a famous social worker as well as a great scholar. She traslated Bible into Marathi.	 70. At which of the following towns the Alakhanda and the Bhagirathi combines to form River Ganga? (a) Haridwar (b) Rishikesh (c) Rudraprayag (d) Devprayag
 66. Dasht-e Kavir Desert is located in which country? (a) Iran (b) Saudi Arab (c) Iraq (d) Sudan Ans. (a) : Dasht-e Kavir and Dasht-e Lut both desert	Ans. (d) : Alaknanda and the Bhagirathi combines near Devprayag of Uttarakhand to form the river Ganga. Ganga river originates from the Gangotri glacier of Uttarakhand. Yamuna is the right tributaries of Ganga while the major left tributaries are–Ramganga, Gomti, Chacker Crack Makerata Hakarata
are situated in Iran. Iran is a country in west Asia. The highest peak of Iran is Mount Demavand which is situated in Elburz mountains. It is important that in Iran the major irrigation portion is covered by the Qanat canal which is made by under ground tunnels.	 (bhaghia, Gandak, Kosi and Mahahada. It is important that the delta of Ganga and Brahmaputra is the largest in the world. 71. 'Nirvana Fund' was set up by NSDC for financial help to
 67. Which of the following layers is called "Barysphere"? (a) Earth's most internal layer (b) Earth's intermediate layer (c) Earth's topmost layer 	 society (b) Displaced Kashmiri Pandits (c) Old age people having no means of livelihood (d) Ventures of selected candidates trained under PMKVY but did not get any job
(d) Lowest part of the atmosphere where climate changes occurAns. (a) : On the basis of seismic waves the earth's layer has been divided into three parts-	Ans. (d) : 'Nirvana Fund' was set up by NSDC for financial help to those unemployed candidate who is selected and skilled under PMKVY (Pradhanmantri Kaushal Vikas Yojna).
(i) Lithosphere- This is upper most part of earth's	72. 'Nakul Swasthya Patra' is a scheme by the
 surface which is also called Sial. Its thickness is observed of around 100Km. (ii) Pyrosphere– This layer is also called the mag mosphere. It contains excess of basalt. Its thickness is upto 2880 Km. (iii) Barysphere– This is the innermost part of Earth's 	 Government for which among the following purposes? (a) Wellness of animals (b) Wellness of animal owners (c) Taking care of lactating mother in the rural areas (d) Taking care of newborn babies in the rural
surface. In this layer the excess of Iron and Nickel occurs. This is situated beyond 2880 Km.	areas Ans. (a) : 'Nakul Swasthya Patra' is an animal health card scheme started by Animal and dairy board of ministry of agriculture. Cast of India. In this agrid the
 68. The Blue Nile river originasts from which of the following lakes? (a) Lake Victoria (b) Lake Tana (c) Lake Edward (d) Lake Albert 	complete record about the breed of animal, age of herds man with their name and health of animal will be registered.
Ans. (b) : Lake Tana of Ethiopia, a country in African	73. Which mine of India was in the news recently for bosoning the country's first income and mine
continent, is the largest in the country. The Blue Nile river originates from it while the Nile river originates	to have a solar plant for reducing carbon footprint?
Nile river is the longest in the world.	(a) Talchar mine (b) Koraput mine (c) Noamundi mine (d) Ratnagiri mine

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Ans. (c) : On 10^{th} July 2017 the Noamundi Mine of Tata Steel, Jamshedpur became the country's first iron- one mine to have a solar plant. Solar power plant of 3 MW has installed here which will reduce the carbon	 Ans. (b) : In June 2017 India and Portugal has signed a protocol of co-operation in the field of archive. 80. India has signed an agreement to provide USD 318 million as line of credit for developing
footprint of 3000 tons annually.74.Where will the Summer Olympics be held in 2028?(a) Sydney(b) Paris (c) Los Angeles(d) CopenhagenAns. (c) : Summer Olympics games 2020 will be held in Tokyo (Japan) while in 2024 and 2028 will be held in 	 railway sector of which of the following country? (a) Bangladesh (b) Nepal (c) China (d) Sri Lanka Ans. (d) : India has signed an agreement with Sri Lanka to provide USD 318 million as line of credit for developing railway sector. 81. Dot Matrix is a type of
Belgium. 76. "You are Unique" is written by (a) Dr. A.P.J. Abdul Kalam (b) Khushwant Singh (c) Taslima Nasrin (d) Arvind Adiga	 makes noise while printing. This printer has a matrix of multiple pins in the print hand and all dot matrix printers create characters on paper by striking an inked ribbon with a hard surface. 82. The secondary storage devices can only store data but they cannot perform
 A.P.J. Abdul Kalam. 77. The third Indian Council for Cultural Relations (ICCR) Distinguished Indologist Award for the year 2017 was awarded to Japanese professor	 (b) Logic operations (c) Fetch operations (d) All options are correct Ans. (d) : The secondary storage devices are also called Auxiliary storage devices. This is not a part of computer. It is connected to the computer separately. These devices can store data only, arithmetical, logical and fetching operations can't be done by this.
 Ans. (a) : The third indian Council for Cutular Relations (ICCR) Distinguished Indologist Award for the year 2017 was awarded to Japanese professor Hiroshi Marui. It is bestowed upon eminent Indologist working abroad who have made outstanding contribution to study, research, teaching of India's history, philosophy, thought, art, culture, literature languages, civilization, society etc. 78. Which of the following city has became first Indian city to get UNESCO's world heritage city tag? (a) Jaipur (b) Ahmedabad (c) Gandbi Nagar (d) Allababad 	 83. In the modern periodic table metals, metalloids and non metals are found in which block? (a) s-Block (b) p-block (c) d-block (d) f-block Ans. (b) : On the basis of valancy electrons in modern periodic table the elements are divided into four blocks-s,p,d,f. s-block contains the elements of group 1 & 2. p-block contains elements of group 13 to 18 i.e. metal, non metal and sub metal. d-block contains elements of group 3 to 12 and f-block contains lanthanides and actinides elements.
 (c) Gandmi Nagar (d) Allahabad Ans. (b) : In 41st session of UNESCO's world heritage summit on 8th of July 2017, Ahmedabad, the historical city of Gujarat, got the world heritage city tag. This is the first city in India to have such title. 79. In June 2017, which of the following countries have signed a protocol of co-operation in the field of archive? (a) India and Israel (b) India and Portugal (c) India and Netherland (d) India and Iran 	 84. Cinnabar is ore of which of the following? (a) Magnesium (b) Aluminium (c) Mercury (d) Iron Ans. (c) : Mercury is a chemical element with symbol Hg and atomic number 80. It is also called quick silver. It is very rare element in nature and found in independent state. Its main ore is Cinnabar. It is white in colour and very bright metal which is found in liquid state at room temperature. Like other metals it is neither malleable nor ductile. At 4.12k temperature its resistance becomes zero.

85. In which of the following mirror size of image	$-\mathbf{V}^2$
formed is always equal to the size of object?	$P = \frac{1}{R}$
(a) Convex mirror	\mathbf{K}
(b) Concave mirror	$P = 1^2 R(3)$
(c) Plane mirror	then by putting value of equ. (2) in equation (3)
(d) Both convex and concave mirror	$I - \frac{V}{V} - \dots - (4)$
Ans. (c) : Plane mirror is made polishing the surface of	R (4)
a glass of uniform thickness with a bright metal like	V^2
mercury and silver on one side. This process is called	then equ. $\Rightarrow \mathbf{P} = \frac{\mathbf{v}}{\mathbf{p}} $
silvering. After this a layer of silver nitrate is applied	
image in the plane mirror is always equal to the size of	while option (b) IR ² is not correct.
the object. The plane mirror is utilised in the form of	89. A positively charged particle projected towards
looking glass. Kaleidoscope and Periscope.	west is deflected towards north by a magnetic
86. Mass of a hydrogen atom is how many time the	field. What is the direction of magnetic field?
mass of an electron?	(a) toward south (b) toward east
(a) 1000 (b) 8000	(c) downward (d) upward
(c) 1837 (d) 5000	Ans. (d) : The region or space around a magnet through
Ans. (c) : Mass of a hydrogen atom is 1837 times mass	which any other magnet or magnetic material
of an electron. It is important that hydrogen is a gaseous	magnetic field SI unit of magnetic field is Tesla (T) A
non metal whose atomic number is 1 and atomic weight	nositively charged particle projected towards west is
is 1.008. It is also called the first element of periodic	deflected towards north by a magnetic field then
table. It contains only one proton in their nucleous and	direction of magnetic field will be upward.
an electron revolving outside of nucleolus. It is the only	90. Which of the following is NOT positively
element with zero neutron. It is most available element	charged?
in the universe.	(a) Alpha particle (b) Proton
87. Which of the following are Fabrics that may	(c) Helium nucleus (d) Electron
contain polyester?	Ans. (d) : Electron was invented by J.J. Thomson. It is
I. FOIYCOU II. Polywool	a negatively charged particle which rotates in various
III Terrycot	orbits around the nucleus. The charge of an electron is $-$
(a) Only Land II (b) Only Land III	1.6×10^{-12} C. This is a stable fundamental particle.
(c) Only II and III (d) All I II and III	while alpha particle, proton and Helium are positively
(\bullet) end if and if (\bullet) if it is a non-	
order to synthesis the polyester hydroxyle (–OH) groups	91. Which is a water soluble Vitamin?
carbonous compound chemically react with two	(a) Vitamin A (b) Vitamin C
carboxylic (-C00H) groups and ester group (-C00) is	$(c) \text{ vitamin D} \qquad (d) \text{ vitamin K}$
formed. Since in this fibre there are so many ester	Ans. (b) : Vitamin–B and Vitamin–C are soluble in
groups thus it is called polyester. It is used in the form	water while vitamin – A, D, E, K are soluble in fat. It is
of cloths, in making housepipes of fire extiunguishers.	discovered The deficiency of Vitamin–C causes
Polycot, polywood and Terrycot clothe can have	scurvey disease. The main sources of Vitamin–C are
polyester.	citrus fruits like – lemon, orange, Indian gross berry etc.
88. Which of the following term does NOT	92. Match the items given in column (A) with those
(a) $I^2 R$ (b) IR^2	in column (B).
(a) VI (b) K^{2}/R	Colume-A Colume-B
Ans (b) • Electrical circuit is a combination of various	I. Frog 1. Skin
electrical appliances and instruments in which electrical	II. Leaves 2. Stomata
energy generated by the blowing of current can be used	III. Earthworm 3. Lungs and skin
for various purposes.	(a) I-3, II-2, III-1 (b) I-1, II-2, III-3
As we know that $-P = VI - (1)$	(c) I-3, II-1, III-2 (d) I-2, II-1, III-3
where	Ans. (a) : Frogs respire through their lungs and skin. In
I = current, R = Resistance, V = Potential	the plants, the stomata's present in the leaves are
P = Electrical power	responsible for the respiration while earthworm respires
but according to ohm's $law - V = IR$ (2)	through their skin because it lacks lungs.
By putting the value of equ. (2) in eqn (1)	Hence option (a) is correct.
·	

 93. How many number of chambers are there in human heart? (a) Two (b) Three (c) Four (d) Five 	Ans. (c) : When in a certain period the demand of water exceeds to their availability or the use of water is interrupted due to poor quality then this situation represents the scarcity of water. The reason behind this
Ans. (c) : There are four chambers in the human heart. Which are divided by contum to each other. The two	is–rapid industrialisation, growing population, mismanagement of water resources.
upper chambers are small and thin called Auricle. The two lower chambers are called ventricle which are also	98. Which gas is major contributor to greenhouse effect?
of two types right ventricle and left ventricle. There is a hole between every auricle and their respective below	(a) Carbon dioxide(b) Chloroflurocarbon(c) Sulphur dioxide(d) Nitrogen dioxide
ventricle which is called Atrio-ventricle valve. These valve open towards ventricle only.	Ans. (a) : The major responsible gases for green house effects are $-$ carbon dioxide (CO ₂), chlorofluorocarbon
94. Which of the following is NOT present in a matured stomata?	(CFC), Methane (CH ₄), Nitrous oxide etc. These gases stops heat escaping from the earth into space which
(a) Plasmodesma (b) Chloroplast (c) Cell wall (d) Vacuole	atmosphere. Carbon dioxide has highest contribution in green house effect.
Ans. (a) : Stomata is a hole found mainly in the epidermis of leaves. In matured stomata chloroplast,	99. Which of the following is NOT a major problem in development of resources?
cellwall and vacuole are presents. The main function of stomata is to absorb carbon dioxide from the	(a) Depletion of resources for satisfying the greed of few individuals.
environment and to release oxygen that means the exchanges of gases. (Photosynthesis).	 (b) Accumulation of resources in few hands. (c) An equitable distribution of resources. (d) Indicariminate exploration of resources.
(a) Excessive curvature of the eye lens.	Ans. (c) : A resource is defined as a service or other
(b) Elongation of the eye ball.(c) Focal length of the eye lens is too long.(d) No option is correct.	asset used to produce goods and service of or have technology to produce that meet human needs and wants, and which is economically feasible and
Ans. (c) : The causes of Hypermetropia are-	resources are-
 (i) The sphericity of the eye lens is decreased. (ii) The focal length of the lens increases. (iii) Due to this the distance between eye lens and 	 (i) Degradation of resources by some greedy people (ii) Centralisation of resources to limited hands. (iii) Over exploitation of resources
retina decreases that means the diameter of the eyeball is reduced.	100. Which of the following is NOT man made ecosystem?
The person suffering from hypermetropia can't see the near most objects but can see the objects located at remote distances	(a) Orchards (b) Home aquarium (c) Botanical gardens (d) Grassland
96. Antibiotics are useful for which type of	Ans. (d) : Human changes their natural environment for more and more production of things of their need like
infections? (a) Only bacteria	food, goods, medicine and many other useful products. Consequently new ecosystem forms in which human
(b) Only virus	involves enough. Such type of ecosystem is called man
(c) Both bacteria and virus (d) Neither bacteria nor virus	aquarium, botanical gardens etc. Grassland is a natural
Ans. (a) : Antibiotics are also known as antimicrobial	ecosystem.
drugs. Antibiotics are used to treat or prevent infections caused by bacteria, fungi and protozoa. These	TECHNICAL : CIVIL
medicines treat infections either by killing or decreasing	101. Which of the following represent the crushing
microorganism or artificially in the laboratory. It is	are used in the construction of buildings?
important that penicillin, an antibiotic produced by the	(a) Less than 20 (b) $20 \text{ to } 60$ (c) $60 \text{ to } 80$ (d) Creater then 100
tungus, was discovered by Alexander Fleming.	Ans : (d) In the construction of building the good
for water shortage?	quality stone having crushing strength greater than 100
(a) Rapid growth of industries	withstand the disintegrating action of weather Crushing
(b) Increasing population	strength is determining with the help of compression
(d) Mismanagment of water resources	testing machine (IS-1121-1974). The load is applied gently at a rate of \pounds 14N/mm ² per minute.

102. Which of the following is examined to determine the age of timber?	107. Which of the following is commonly used as
(a) Annular ring (b) Sanwood	retarder in cement?
(c) Pith (d) Timber defects	(a) Calcium sulphate (b) Gypsum
Ans : (a) The Annular ring are furnish valuable	(c) Polassium carolide (d) Sodium chloride
information regarding the age of timber, the rapidity	Ans : (b) Gypsum is commonly used as retarder in
and the uniformity of its growth. The rings are widest at	cement. Gypsum is added $2-3\%$ at the time of grinding
the centre and narrower nearer the bark. Rapidly	cement and reduce the rate of hydration. \Box CoCl. (Colored and control of hydration) subset of hydration.
growing trees having wide annual rings produce coarse	■ CaCl ₂ (Calcium chiofide) when added up to 2% by weight of compart acts as accelerator but on
grained. wood, while those of slower growth produce	increasing the proportion it acts as retarder and
The sanwood assists in the life process of tree by	leads to flash set
storing up starch and conducting sap.	108 In the process of hydration of OPC to
103. Which of the following is determined with the	complete all chemical reaction the water
help of Le Chatelier's device?	requirement (expressed as the percentage of
(a) Abrasion resistance	cement) is
(b) Chemical resistance	(a) 5 to 8% (b) 8 to 16%
(c) Soundness (d) Strength	(c) 20 to 25% (d) 35 to 45%
(d) Stielight	Ans : (d) For the process of hydration of OPC ⁻ to
Chatelier Method or by autoclave method It is	complete all chemical reaction, the water requirement
essential that the cement concrete does not undergo	may be 35 to 45%. But due to the loss of water during
large change in volume after setting. For OPC, RHC,	hydration the water is require about 38% for general
LHC and PPC it is limited to 10mm, whereas far HAC	reaction. In which 23% of water by weight of cement is
and SSC it should not exceed 5mm. By Le-Chatelier	required for complete hydration of Portland cement and
method we can only find out presence of unburnt lime	about 15% water is required to fill the cement gel pores
CaU.	and is known as gel water.
104. The type of mortar which is used for the	109. The slump test is performed to check the
area is	(a) Presence of water in cement
(a) Cement mortar	(b) Ratio of concrete ingredients
(b) Loose mortar	(c) Temperature resistance
(c) Mortar of very low consistency	(d) Workability of concrete
(d) Mortar having high w/c ratio	Ans : (d)
Ans: (a) Construction work in waterlogged areas and	Slump test is performed to measure the workability
mortar of proportions 1 : 3 lime being eminently	of concrete as per IS–1199. In slump test the mould
hydraulic lime.	having bottom diameter = 200mm, top diameter =
105. For M-25 grade concrete, the split tensile	Fytremely low degree of workshility having slump
strength in terms of percentage of its	value in 'mm' is O
compressive strength is	 High degree of workability having slump value in
(a) 7 to 11% (b) 18 to 28%	'mm' is 100–175.
(c) $28 \text{ to } 38\%$ (d) $38 \text{ to } 48\%$	110 The reason behind the low expansion and
Ans: (a) For M-25 grade concrete, the split tensile	shrinkage of the plywood is
strength is 7 to 11%	(a) Plies are placed at the right angles with each
According to IS 456 : 2000 tensile strength of M-25	other
concrete is 0.7 X square root (25) N/mm ² . Which is	(b) They are glued under the high pressure
3.5N/mm ² .	(c) They are held in the position with the help of
106. Distempers are generally used to coat	adhesives
(a) Compound wall	(d) They are prepared with the help of veneers
(c) Interior surface which are not exposed to	Ans : (a) As Plies are placed at the right angles to each
environment	other the expansion and shrinkage are comparatively
(d) Wood works	very low.
Ans : (c) Distemper is made with base as white chalk	Plywood layers (called veneers) are glued together with
and thinner as water. They are most suitable for	adjacent plies having their grain at right angles to each
plastered surface as well as white washed surface of	other for greater strength. There are usually an odd
interior walls are not exposed to environment.	number of plies so that the sheet is balanced this
The coatings are thick and more brittle compared to	reduces warping. The most commonly used thickness range is from 0.6 in (1.6 cm) to 2.0 in (76 mm)
paints.	

111. Which one of the following method is used for the approximate estimation?	Ans : (c) Scrap value is the value of dismantled materials of a built up property at end of its utility
(a) Both central line and short wall and long wall	period and absolutely useless except for sale as scrap
method	The scrap value of a building is usually considered as
(b) Central line method	10% to the cost of construction. The scrap value is also
(c) Plinth area method	known as junk value or Demolition value. On rare
(d) Short wall and long wall method	occasions scrap value may be zero or even negative if
Ans : (c) Plinth area method are used for the	more than the scrap value
approximate estimation.	116 What is the unit of measuring cornice?
find out an approximate cost in a short time and thus	(a) Cubic metre
enable the responsible authority concern to consider the	(b) Number
financial aspect of the scheme for according sanction to	(c) Running metre
the same. The another two type of approx estimate are	(d) Square metre
unit rate method and cubical rate method.	Ans : (c)
are used to estimate the building works	■ The unit of measuring cornice, string courses drip
112 Accuracy in the measurement of the thickness	courses are in running meter.
of the slab or sectional dimension of column	• D.P.C. (Damp Proof Course) are in square meter (M^2)
and beam (in centimetre) should be	■ Door and Window shutters of different type are
(a) 0.5 (b) 1	measure in square meter (M^2) .
(c) 5 (d) 10	117. Calculate the number of bricks in 20 cubic
Ans : (a) The measurement of the thickness of the slab	metres brick works.
or sectional dimension of column and beam (cm) should	(a) 500 (b) 1000
Steel work = 1 mm	(c) 10000 (d) 100000
Wood work = 2 mm	Ans: (c) Nominal Size of briefs = 20 cm \times 10 cm \times 10 cm
Volume = 0.01 m^3	Nominal Size of blick $= 20 \text{ cm} \times 10 \text{ cm} \times 10 \text{ cm}^3$
Area = 0.01 m^2	The number of bricks in 20 cm^3 brick works.
Dimensions shall be measured to the nearest 0.01	$20m^{3}$
112 Deduction at T innetion of the well for total	Number of bricks $=\frac{2000}{0.002 \text{m}^3}=10000$
length of the central line is	$\boxed{\text{Bricks} - 10,000}$
(a) half of thickness of wall	Biteks = 10,000
(b) no deduction	118. Calculate the area (square metre) of the
(c) thickness of wall	for more required for a beam of 2 m span and cross section dimension of $400 \text{ mm} \times 200 \text{ mm}$
(d) twice of the thickness of wall	(a) 0.8 (b) 0.16
Ans : (a) Deduction at T-junction of the wall for total	(a) 0.0 (b) 0.10 (c) 1.2 (d) 2
length of central line is half of thickness of wall. Centre	Ans : (a) Formwork are the mould used to poured
sections. In this when cross walls or partitions or	concrete.
verandah walls join with main wall, the centre line	A root of formwork = $\frac{400}{2}$ × 2
length gets reduced by half of breadth for each junction.	Area of formwork – $\frac{1000}{1000} \times 2$
114. For estimation of painted area of semi	[Area of formwork = $0.8m^2$]
corrugated asbestos cement sheets, percentage	119. The cross section areas of three sections of an
increase in area above plain area is \dots	embankment at an interval of 40 m are 10
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	square metres, 15 square metres and 35 square
(c) 0.2 (d) 0.23	the embankment. Use prismoidal method.
corrugated asbestos cement sheets, percentage increase	(a) 1200 (b) 1400
in area above plain area is 0.1. and for the corrugated	(c) 1500 (d) 2400
asbestos cement sheets increase in area above plain area	Ans : (b) Prismoidal formulla \Rightarrow
18 20%	
115. Scrap value of a property may be	$\mathbf{v} = -\frac{1}{3} [\mathbf{A}_1 + \mathbf{A}\mathbf{n}] + 4(\mathbf{A}_2 + \mathbf{A}_4 + \dots) + 2(\mathbf{A}_3 + \mathbf{A}_5 + \dots)]$
(a) both negative or positive	Length (L) = 40 m
	Area $(A_1) = 10m^2$
(d) nositive	Area $(A_2) = 15m^2$
	Area $(A_3) = A_n = 33$ III

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Ans : (b) Tapes based on their accuracy– Invar tape > Steel tape > Metallic tape > Liner tape. Invar tape are made up of 36% nickel and 64% of steel. Steel tape are made up of steel or stainless steel strips.	129. Which one is the CORRECT sequence for the temporary adjustment of the theodolite?(a) Centering, elimination of parallax, leveling and setting
126. In the leveling between two points A and B on the opposite sides of a pond, the level is first set	(b) Centering, setting, elimination of parallax and leveling
up near the point A and staff reading on A and B are 2.5 m and 2.0 m respectively. Then the	(c) Setting, centering, leveling and elimination of parallax
reading on points A and B are 1.2 m and 1.7 m respectively. Calculate the difference of heights	(d) Setting, leveling, elimination of parallax and centering
between the two points A and B (in metre).	Ans : (c) Temporary adjustment are the adjustments
(a) 0 (b) 0.5 (c) 1 (d) 1.85	instrument before taking observations. Sequence for the
Ans : (b) To set at station A the elevation =	temporary adjustment of the theodolite are-
$\Rightarrow 2.5 - 2 = 0.5 \text{ m}$	\rightarrow Setting up
To set at station B the elevation = $12 - 17 = 0.5$	\rightarrow Leveling
$\Rightarrow 1.2 - 1.7 = 0.5 \text{ m}$	\rightarrow Elimination of parallax.
The difference of height (m) = $\frac{0.5 + 0.5}{2}$	Centring is done to place the vertical axis exactly over
$\frac{2}{100000000000000000000000000000000000$	the station mark. Approximate centring is done with the
Height – 0.5m	help of the tripod legs.
127. Calculate the combined correction for curvature	130. Which of the following is used for determining
(a) 0.045 (b) 0.135	the location of station occupied by the plane
(c) 0.269 (d) 3.14	(a) Both intersection and radiation
Ans : (c) Correction due to curvature = 0.0785 d^2	(b) Intersection method
'd' in kilometers.	(c) Radiation method
Correction due to refraction $=\frac{1}{2}$	(d) Two point problem
7	Ans : (d) Resection is a method of plane table
(Correction due to curvature)	surveying in which location of plane table is unknown
	and it is determined by sighting it to known points or
$=\frac{1}{7}(0.0785d^2)=0.0112d^2$	It is conducted by two field condition-
The correction due to curvature of the earth and the	(i) Three point problem
refraction can be combined into one composite	(ii) Two point problem
correction i.e. combined correction (c)	In two point problem, two points are sighted from other
$\left[\mathbf{C} = \mathbf{C}\mathbf{c} + \mathbf{C}\mathbf{r}\right]$	point corresponding to the points given in plane table
$C = 0.0785d^2 - 0.0112d^2$	sneet.
$C = 0.0673d^2$	131. Which of the following is responsible for the formation of residual soil?
For a distance of 2km the combined correction	(a) Glaciers (b) Water
$(C) = 0.0673 (2)^2$	(c) Wind (d) None of these
C = 0.269 m	Ans : (d) According to the transporting agency, soil are
128. In transit theodolite, the line of the sight can be	classified as-
reversed by revolving the telescope through	Alluvial soil \rightarrow Deposited by river water
(a) = 0.00 in heritartal rises	Lacustnine soil \rightarrow Deposited by still water like
(a) 90° in nonzontal plane (b) 90° in vertical plane	$\begin{array}{ccc} & \text{Iakes} \\ \text{Marine soil} & \rightarrow & \text{Deposited by sea water} \end{array}$
(c) 180° in horizontal plane	Aeolian soil \rightarrow Transported by wind.
(d) 180° in vertical plane	Residual soils are found at the same location. Where
Ans : (d) In transit theodolite, the line of the sight can	they have been formed. Generally, the depth of residual
be reversed by revolving the telescope through 180° in	soils varies from 5 to 20m. Residual soils comprise of a
vertical plane. It is also called as plunging or reversing.	where range of particle sizes, snapes and composition.

 132. The coefficient of gradation and the coefficient of uniformity of a given soil sample is 1.0 and 4.0 respectively. The ratio of effective size to the diameter through which 30% of the total mass is passed is	Ans : (b) Viscosity of gases increases with the increase in temperature. The viscosity of gases near room temperature are in the centipoise range, so that is a commonly used unit. Where the viscosity of liquid decreases with the increase in temperature.				
(c) 1.75 (d) 2	136. Pressure of 200 kPa is equivalent to the head of				
Ans: (d)	z metre of liquid having relative density 1.59.				
Coefficient of gradation or curvature $(C_c) = 1$	The value of z (m) is				
Coefficient of uniformity $(C_c) = 4$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$				
$\begin{bmatrix} & D_{30}^2 \end{bmatrix} \begin{bmatrix} & D_{60} \end{bmatrix}$	(c) 12.82 (d) 13.14				
$ C_{c} = \frac{1}{D_{60} \times D_{10}} , C_{u} = \frac{1}{D_{10}} $	Ans: (c) Pressure (P) = 200 kPa				
	Relative density $(P) = 1.59$.				
$\frac{D_{60}}{D} = 4 \Longrightarrow D_{60} = 4(D_{10})$	We know,				
D_{10}	$\left[P = \rho g h \right] \qquad \therefore \text{ (Density of water = 1000)}$				
$(D_{30})^2 = 1$	$200 \times 10^3 = 1.59 \times 1000 \times 9.81 \times z$				
$C_{\rm C} = \frac{1}{4(D_{10}) \times D_{10}} = 1$	200,000				
\mathbf{D}^2 \mathbf{D}	$z = \frac{1.59 \times 9.81}{1.59 \times 9.81}$				
$\left \frac{D_{30}}{D^2} = 4 \Rightarrow \left \frac{D_{30}}{D} = 2\right $	z = 12.82 m				
D_{10}^2 D_{10}					
133. Which of the following shows the CORRECT	137. Which one of the following statement is CORRECT about the center of buoyancy?				
order of increasing surface areas of the given	(a) It is the point where buoyant force act				
soil?	(b) It coincides with the centroid of volume of				
(a) $Clay < silt < sand < colloids$	water displaced				
(b) Gravel \leq silt \leq colloids \leq clay	(c) It is the point where buoyant force act and it				
(c) Sand \leq stit \leq clay \leq colloids (d) Silt \leq group \leq colloids \leq clay	coincides with the centroid of volume of				
(d) $Sill < gravel < colloids < clay$	(d) It acts sutside the hadr				
Ans: (c) Order of increasing surface area of soil– Sand \leq silt \leq Clay \leq Colloids	(d) It acts outside the body.				
Clav < 0.002 mm	Ans : (c) Center of buoyancy it is the point where buoyancy force act and it coincides with the centroid of				
Silt 0.002–0.06mm	volume of water displaced.				
Sand 0.06 – 2mm	A body immersed in a fluid experiences a vertical				
Colloids < 0.0002mm	buoyant force equal to the weight of fluid it displaces.				
Some organic materials are colloids and represent the					
smallest components in the soll. However they have a large specific area is a large surface area in relation to	====== ↑				
their weight.					
134. What is the assumption made about back of	h/2 l				
wall, in the Rankine's theory of earth pressure?	Ė _n ↓ ↓				
(a) Plane and rough	138 A longitudinal rectangular surface is hanged				
(b) Plane and smooth	into the water such that its top and bottom				
(c) Vertical and rough	points are at depth of 1.5 and 6.0 m				
(d) Vertical and smooth	respectively and his breadth is 6 meter. The				
Ans: (d) Rankine's made the following assumptions	depth of center of pressure (m) from the top surface is				
The back of the retaining wall is vertical	(a) 3.8 (b) 4.2				
The back of the vall is smooth	(c) 4.6 (d) 4.8				
■ The soil mass is homogeneous and semi-	Ans: (b)				
infinite.	$\begin{bmatrix} - & 1 & - \end{bmatrix}$ $bd^3 = 6x(45)^3$				
■ The wall movement is sufficient so that the	$\left \left \overline{h} = \frac{I_G}{A^-} + \overline{x} \right = I_G = \frac{Dd}{12} = \frac{O(1.5)}{12} = 45.56$				
condition of plastic equilibrium is fulfilled.	$ \begin{bmatrix} AX \end{bmatrix} \qquad 12 \qquad 12 \\ A = 6 \times 4.5 \text{ m}^2 $				
135. Which of the following is CORRECT about the	$A = 6 \times 4.5m$				
viscosity of gas:	$\overline{x} = 1.5 + \frac{4.5}{2} = 3.75 \text{m}$				
(a) Inversely proportional to the temperature (b) Increases with an increase in the temperature	15.56				
(c) Independent of pressure	$\overline{h} = \frac{43.30}{6.45 \times 2.55} + 3.75$				
(d) Independent of temperature	6×4.5×3.75				
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145. Method of applying water directly to the root zone of the plant is called	Ans : (c) Let the radius of wheel is 'R' and the thickness of slab is 'd'.			
(a) check flooding				
(b) drip method	Then, $-=2$, $R=2d$ (1)			
(c) furrow method	For the resisting slab of 20cm–			
(d) sprinkle irrigation	R = 2d			
Ans: (b)	$R = 2 \times 20$			
■ In drip method water is directly apply to the root	R = 40 cm			
zone of the plants by a network of plastic pipes	140 On neal housing demond what is the maximum			
(PVC Pipes) and drip nozzles called emitters or	daily consumption for the city which have			
drippers. Evaporation losses are very less in this	average daily consumption of 100.000 m ³ ?			
method. Highest water application efficiency (as	(a) 140000 (b) 170000			
high as 90%). It is not suitable for closely planted	(c) 200000 (d) 270000			
crops such as wheat rice etc.	Ans: (d)			
Sprinkler irrigation method water is applied in the	Average daily consumption = 100000 m^2			
form of spray by pipes and nozzle system. In this	Peak hourly demand = 2.7×100000			
method no land preparation is required and erosion	[Peak hourly demand = 270000 m^3]			
of soil is eliminated.	\therefore [Multiplying factor = 2.7]			
146. A field of 500 hectares is to be irrigated for a	150. For which of the following, distribution mains			
particular crop naving 100 days base period.	is designed?			
is 100 cm. Calculate the duty of the water (in	(a) Average daily demand			
hectares per cubic metre)	(b) Annual peak demand			
(a) 8.64 (b) 57.87	(c) Monthly peak demand (d) Maximum hourly demand on maximum day			
(a) 864 (d) 864	(d) Maximum nourly demand on maximum day			
(c) 00.+ (d)	Ans : (d) Distribution mains are designed for the maximum day			
Ans: (a) Base period (B) = 100 Days	Adopting the factors suggested above the multiplying			
Denth of water $(m) = 100$ cm = 1m	factor for the supply will be = $1.8 \times 1.5 = 2.7$.			
8 64B	■ Maximum daily consumption 180% of annual			
$Duty = \frac{0.04D}{\Lambda}$	average daily consumption			
A 8.64100	 Maximum hourly consumption 150% of average for 			
$Duty = \frac{6.04 \times 100}{1}$	the day.			
	151. Which of the following statements is true?			
Duty = 864 Hectares / cumec	(A) Most of the loads applied to a building are			
147. The traffic volume of a roadway is defined as	environmental load.			
the multiplication of	(B) Most of the loads are dead followed by live			
(a) speed and time headway	(a) Only A (b) Only B			
(b) speed and distance way	(c) Both A and B (d) Neither A nor B			
(c) traffic density and speed	(c) Both Fr and B (d) Former Fr nor B			
(d) time headway and distance headway	Most of the loads applied to a building are not			
Ans : (c) [Traffic Volume = Traffic density × Speed]	environmental load.			
■ Traffic volume is the number of vehicles that pass a	Most of the loads are dead followed by live loads.			
given point during specified unit of time. It is	■ Dead loads includes loads that are relatively			
expressed as vehicles/hours or vehicle/day.	constant overtime, including the weight of the			
■ Traffic density is the number of vehicles occupying	structure itself, roof is also a dead load.			
a unit length of lane of roadways at a give instant,	Live loads, or imposed loads; are temporary, of short duration or a maying load			
expressed as vehicles/kilometers.	snort duration, or a moving load.			
148. Calculate the equivalent radius (cm) of the	he he he he he he he he h			
resisting section of 20 cm slab, if the ratio of	or extreme temperatures.			
radius of wheel load distribution to the	152. How does an increase in the pitch of the roof			
thickness of the slab is 2.	affects the amount of load that can be placed			
(a) 20 (b) 35.6	on it?			
(c) 40 (d) 40.9				
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(a) It increases(b) It decreases	Ans : (d) If a system has more equations of equilibrium than number of forces, then system is statically unstable				
(c) Remains constant	or deficient system.				
(d) Depends upon case	157. Which of the following material is not used if				
Ans : (a) When increase in the pitch of the roof affects	making trusses?				
the amount of load that can be placed on it is increases.	(a) Wooden struts (b) Metal bars				
153. What will be the rain load (in psf) if d _s is 2	(c) Channel (d) Concrete				
inches and d _h is 1 inches?	Ans : (d) Concrete is not used for making a truss				
(a) 5.2 (b) 10.4	structure but wood, steel are widely used to make a				
(c) 15.6 (d) 20.8	trusses in modern era.				
Ans : (c) Equation for the Rain load–	Steel trusses have the advantages of ease of handling				
$[R = 5.2 (d_s + d_h)]$	high material and maintenance cost and low thermal				
where, d = Donth of water on the undeflocted reafun to	resistance.				
$d_s =$ Depin of water on the undeflected roof up to the inlet of secondary drainage system when	the high strength to weight ratios of timber trusses				
the primary drainage system is blocked (i.e.	permit long spans, offer greater flexibility in floor plan				
the static head) in inches (mm).	layout.				
$d_{\rm h}$ = Additional depth of water on the undeflected	Advantages of time Roof Trusses are—				
roof above the inlet of secondary drainage	Flexible and versatile, Eco-inendly, Economy				
system at its design flow (i.e., the hydraulic	freedom				
head), in inches (mm).	158 In a truss it is assumed that the members are				
R = Rain load on the undeflected root in pst.	joined by				
$ \begin{array}{l} R = 5.2 \ (2 + 1) \\ R = 5.2 \ (3) \\ \end{array} $	(a) Rough pins				
[R = 15.6 psf]	(b) Smooth pins				
Where,	(c) Either rough or smooth pins				
psf = Pounds per square foot pressure unit	(d) None of these				
1Psf = 47.8803 Pascals.	Ans : (b)				
154. Concrete is :	■ In a truss it is assumed that the members are joined				
(a) Good in compression, good in tension	by smooth pins or by frictionless pins.				
(b) Good in compression, weak in tension	 The weight of truss members may be neglected. The truss structure is loaded only at the joints 				
(d) Weak in compression, good in tension	159 What is the major difference between truss and				
Ans : (b) Concrete has relatively high compressive	beam?				
strength but much lower tensile strength. Concrete has a	(a) Beam can't transmit load in vertical direction				
very low coefficient of thermal expansion and shrinks	while truss can				
as it matures.	(b) Truss can't transmit load in vertical direction				
Concrete is ten times stronger in compression than in	while beam can				
tension.	(c) Beam can't transmit load in axial direction while trues can				
155. If in planar system, A parts/members are there with V no of forces then condition for	(d) Truss can't transmit load in axial direction				
statically determinacy is :	while beam can				
(a) $Y < 3X$	Ans : (c)				
(b) $Y > 3X$	■ The material used to make a truss is are steel, wood,				
(c) $Y = 3X$	channels but in a beam the concrete is also used.				
(d) None of these	Beam cannot transmit the load in axial direction. While transmit are seen.				
Ans : (c) If a planar system X, parts are there with Y	■ A beam is a single member whereas a truss is				
number of forces, then condition for statically determined is $[y = 2y]$	composed of many members.				
Statically determinate structure that can be analyzed	Beam supports loads in shear and bending, trusses				
using static's equations only (i.e., equilibrium in all	supports loads in tension and compression.				
directions).	160. Given that J is no. of joints. B and R are no. of				
156. If a system has more equations of equilibrium	members and no. of reactions.				
than no. of forces, then the system is:	It $B = 4$, $R = 3$ and $J = 4$, then the truss is-				
(a) Improperly constrained	(a) Statically determinate (b) Statically indeterminate and stable				
(b) Partially constrained	(b) Staticarry indeterminate and stable				
(c) Stable	(d) Unstable				
(a) None of these					

Ans : (d)	Ans : (a) Concrete is generally placed on a form work it
Number of joints $(J) = 4$	is a mould in which concrete is poured and allowed to
Number of member $(B) = 4$	set. It should be properly oiled and cleaned before
Number of reaction $(R) = 3$	pouring concrete. It can be used to cast beams, slabs,
[B = 2J - 3]	columns etc.
$B = 2 \times 4 - 3$	165. The effective width of a column strip of a flat
B=5	slab is taken as:
4 < 5	(a) One-fourth the width of the panel
So The structure is unstable truss	(b) Half the width of the panel
161 Which IS and a gives details regarding water to	(c) Half the diameter of the column
he used in concrete?	(d) The diameter of the column
(a) IS 456 (b) IS 383	(d) The diameter of the column strin of a flat
(c) IS 565 (d) IS 3012	slab is taken as one-fourth the width of the panel
(c) 15 505 (d) 16 5012	Column strin means a design strin having width of
■ IS 456 code are gives details regarding water is	$0.25L_{2}$ but not greater than $0.25L_{1}$ on each side of the
used in concrete. The water used for mixing and	column centre line
curing shall be clean and free from injurious	166 Dermanent dimension shanges due to leading
amounts of oils, acids, alkalis, salts, sugar, organic	of concrete is termed as:
materials or other substances that may be	(a) Strain (b) Extent
deleterious to concrete.	(a) Strain (b) Extent
■ Potable water is generally considered satisfactory	
for mixing concrete.	Ans: (c) Creep can be defined as the elastic and long
■ The PH value of water shall be not less than 6.	The ratio of the ultimate group strain to the electic strain
 Aggregates shall comply with the requirement of IS 	The ratio of the utilimate creep strain to the elastic strain at age of loading is termed as green coefficient
383.	
162. Which of the below is an example of plasticizer?	167. In design of R.C.C. structures, the tensile
(a) Hydroxylated carboxylic acid	strength of concrete is taken as: () $5N(-2)$ (1) $2N(-2)$
(b) Fluoro-silicate	(a) $5N/mm^2$ (b) $2N/mm^2$
(c) Gypsum	(c) 0.3N/mm ² (d) None of these
(d) Surkhi	Ans : (d) In design of R.C.C. structures the tensile
Ans : (a) Plasticizers or water reducers-Are the	strength of concrete is taken as zero, because concrete
chemical admixtures that can be added to concrete	does not take up tensile loads. But IS – 456 – 2000
mixtures to improve workability. Adding $1-2\%$	recommends the tensile strength to be calculated using $$
plasticizer per unit weight of cement is usually	$ \mathbf{F}_{t} = 0.7\sqrt{f_{ck}} \mathbf{N}/\mathbf{mm}^{2} $
sufficient. Adding an excessive amount of plasticizer	168 Flowurg strongth of concrete is determined as:
will result in excessive segregation of concrete and is	(a) Modulus of rigidity
Frample of Plasticizer	(a) Modulus of rupture
Hydroxylated carboxylic acid Benzoates Azelates	(b) Modulus of rupture
Glycols and Polyethers	(d) Modulus of plasticity
163 How many methods of batching of concrete are	(d) Modulus of elasticity
there?	Ans: (b) Flexure strength of concrete is determined as
(a) 2 (b) 3	modulus of rupture.
(a) 2 (b) 3	169. Properties of concrete can broadly be divided
(a) (b) (c)	into:
(i) Volume batching	(a) 1 (b) 4 (l) 2
(i) Weight batching	(c) 2 (d) 3
Weight batching is more accurate then the volume	Ans : (c) Properties of concrete can broadly be divided
batching. Materials accuracy of measurements % of	into two as –
batch quantity-	(1) Fresh state.
Aggregate $+ 2$ to 3%, Cement $+ 1$ to 3%	(11) Hardest state.
Water + 1 to 3%, Admixture + 3 to 5%	170. Which IS code gives specifications about
164. Concrete is generally placed on a:	cement plaster?
(a) From work (b) Stand	(a) IS 1500 (b) IS 1221
(c) Mould (d) Platform	(c) IS 1400 (d) IS 1661

Ans:(d) ■ IS 1661 code gives specification about cement	(c) Bulking of sand depends upon the fineness of grains				
plaster and cement-line. The thickness of cement	nt (d) All option are correct				
plaster is 12mm–15mm and ratio is 1:6.	Ans : (a) Workability is defined as the property of				
metallic materials.	or concrete which determines the amount of useful internation work produce full compaction.				
171. In a lime-cement plaster, ratio 1:1:6	:6 of concrete mix increase with increase in water conter				
corresponds to:	but lower the strength.				
(a) Lime : cement : sand	175. Which of the following statements is false?				
(b) Cement : Lime : sand	(a) Space between the exterior walls of a				
(c) Lime : sand : gravel	warchouse and bag piles should be 30 cm.				
(d) Cement : sand : gravel	(b) Cement bags should prefereably be piled on				
Ans : (b) In a time-cement plaster ratio 1:1:6	(c) Cement hags should be placed such that hags				
measure in bags and lime are in quantal	of one layer does not touch the bags of the				
172 On which of the following does the correct	adjacent layer				
proportion of ingredients of concrete depend	(d) None of these				
upon?	Ans : (c) Storage of cement should be done with care				
(a) Bulking of sand	cement bags are place on wooden platform of height				
(b) Water content	150 to 300mm above the floor, to avoid the direct contact between the floors and cement bags. The each				
(c) absorption and workability	stack should not consist more than 10 bags of cement.				
(d) All option are correct	The stack should not touch the walls of shed and it				
Ans: (d) Proportion of ingredients of concrete depend upon the bulking of sand water content absorption and	should be considerably 300mm to 400mm away from				
workability.	the external walls.				
The increase in the volume of a given mass of fine	176. Which of the following statements is false?				
aggregate caused by the presence of water is known as	(a) With passage of time, the strength of cement				
bulking.	(b) With passage of time, the strength of cement				
Bulking of sand $\% = \frac{\text{Wet sand volume} - \text{Dry sand volume}}{\text{Wet sand volume}}$	decreases				
Dry sand volume	(c) After a period of 24 months, the strength of				
The fluidity of concrete increases with water content.	cement reduces to 50%				
173. If X, Y and Z are fineness moduli of coarse fine	(d) The concrete made with storage deteriorated				
fine aggregates to combined aggregates is :	ध्या सीमेंट टाम नर्चाई गई कंकीर समय के साथ				
Z - X $X - Z$	यान सामर्थ्य प्राप्त करती है				
(1) $P = \frac{Z - Y}{Z - Y} \times 100$ (2) $P = \frac{Z - Y}{Z - Y} \times 100$	Ans : (a) Time of storing is also a factor that effects the				
X - Z $X + Z$	cement especially its strength. Longer the period reduce				
(3) $P = \frac{1}{7+Y} \times 100$ (4) $P = \frac{1}{7-Y} \times 100$	the strength of cement.				
(a) (1) Only (b) (2) Only	% Reduction is strength of cement storage for 3				
(c) (3) Only (d) (4) Only	month = 20% Reduction in strength of cement storage for 6				
Ans: (b)	month = 30%				
Fineness modulus of coarse aggregates = X	% Reduction in strength of 1 year storage cement				
Fineness modulus of time aggregates = Y Fineness modulus of combined aggregates = 7	=40%				
The percentage (P) of fine aggregates to combined	% Reduction in strength of 5 year storage cement -50%				
aggregates \Rightarrow	$\frac{-50\%}{177}$ For a concrete mix 1.3.6 and water compare				
$\begin{bmatrix} X - Z \\ 1 & 0 \end{bmatrix}$	ratio 0.6 both by weight, what is the quantity of				
$P = \frac{1}{Z - Y} \times 100$	water required per bag?				
Fineness modulus varies between 2.0 and 3.5 for fine a	(a) 10 kg				
fine aggregates, between 5.5 and 8.0 for coarse	(b) 12 kg				
aggregate.	(c) 14 kg				
174. Which of the following statements is false?	(d) None of these				
(a) Workability of the concrete mix decreases	Ans: (d) Weight of Water -0.6				
(b) Concrete for which proliminary tests	$\frac{1}{\text{Weight of Cement}} = 0.0$				
conducted is called controlled concrete	For one bag cement weight of water = $0.6 \times 50 = 30$ kg.				

(a) 100 III	(b) 200 m
(c) 300 m	(d) 400 m
Ans : (d) Pumped concre	ete is the concrete which is
transported to heights by	means of pumping using
concrete pumps.	
Two types of concrete pum	ps are used–
\rightarrow Direct Acting Conc	rete Pumps.
\rightarrow Squeeze type Conci The slump value for num	ned concrete is 80, 100mm
The effective numping of	distance is 300–1000ft for
horizontal, 100–300ft for v	ertically.
179. The compression in	n PSC is done by of
high-strength tendo	ns.
(a) Compression	(b) Tensioning
(c) Shearing	(d) Bending
Ans : (b) Compression in l	PSC is done by tensioning of
high strength tendons. Te	endons can be single wire,
mesh, threaded bars made f	from high tensile steels.
180. In which beam te	ension capacity of steel is
greater than comb	oined compression of steel
and concrete?	(b) Under reinferred
(a) Over-reinforced	(b) Under-reinforced
(c) Singly relinorce	d (d) Doubly reminiced
Ans: (a) In doubly re	than combined compression
of steel and concrete	than combined compression
Doubly reinforced beams	is to ensure safety against
DOUDLY TOURDED DEGILS	
reversal of stresses in the	structure due to wind forces,
reversal of stresses in the seismic forces and tempera	structure due to wind forces, ture stresses.
reversal of stresses in the seismic forces and tempera 181. If W is total load po	structure due to wind forces, ture stresses. er unit area on a panel, D is
reversal of stresses in the seismic forces and tempera 181. If W is total load po the diameter of the	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span
 reversal of stresses in the seismic forces and tempera 181. If W is total load pot the diameter of the in two directions 	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the
 If W is total load period If W is total load period the diameter of the in two directions maximum positive 	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and
 If W is total load performance of the diameter of the in two directions maximum positive average of the neg the design of the second sec	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for
 If W is total load performance of the diameter of the diameter of the in two directions maximum positive average of the neg the design of the should not be less the design of the should n	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab, nan
 If W is total load period If W is total load period the diameter of the diameter of the diameter of the diameter of the neg the design of the neg the design of the second not be less the well (200)² 	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab, nan $WL (2D)^2$
reversal of stresses in the seismic forces and tempera 181. If W is total load pot the diameter of the in two directions maximum positive average of the neg the design of the s should not be less the $(1) \frac{WL}{12} \left(L - \frac{2D}{2}\right)^2$	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab, han $(2) \frac{WL}{10} \left(L + \frac{2D}{2} \right)^2$
reversal of stresses in the seismic forces and tempera 181. If W is total load pot the diameter of the in two directions maximum positive average of the neg the design of the es should not be less th $(1) \frac{WL}{12} \left(L - \frac{2D}{3}\right)^2$	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab, nan (2) $\frac{WL}{10} \left(L + \frac{2D}{3} \right)^2$
reversal of stresses in the seismic forces and tempera 181. If W is total load pot the diameter of the in two directions maximum positive average of the neg the design of the s should not be less th $(1) \frac{WL}{12} \left(L - \frac{2D}{3}\right)^2$ $(3) WL \left(L - \frac{2D}{3}\right)^2$	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab, tan (2) $\frac{WL}{10} \left(L + \frac{2D}{3} \right)^2$
reversal of stresses in the seismic forces and tempera 181. If W is total load potthe diameter of the in two directions maximum positive average of the neg the design of the essentiate (1) $\frac{WL}{12}\left(L-\frac{2D}{3}\right)^2$ (3) $\frac{WL}{10}\left(L-\frac{2D}{3}\right)^2$	structure due to wind forces, <u>ture stresses.</u> er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab, han (2) $\frac{WL}{10} \left(L + \frac{2D}{3} \right)^2$ (4) $\frac{WL}{12} \left(L - \frac{D}{3} \right)^2$
reversal of stresses in the seismic forces and tempera 181. If W is total load pot the diameter of the in two directions maximum positive average of the neg the design of the s should not be less th (1) $\frac{WL}{12}\left(L-\frac{2D}{3}\right)^2$ (3) $\frac{WL}{10}\left(L-\frac{2D}{3}\right)^2$ (a) 1 Only	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab nan (2) $\frac{WL}{10} \left(L + \frac{2D}{3} \right)^2$ (4) $\frac{WL}{12} \left(L - \frac{D}{3} \right)^2$ (b) 2 Only
reversal of stresses in the seismic forces and tempera 181. If W is total load pot the diameter of the in two directions maximum positive average of the neg the design of the s should not be less th (1) $\frac{WL}{12}\left(L-\frac{2D}{3}\right)^2$ (3) $\frac{WL}{10}\left(L-\frac{2D}{3}\right)^2$ (a) 1 Only (c) 3 Only	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab tan (2) $\frac{WL}{10} \left(L + \frac{2D}{3} \right)^2$ (4) $\frac{WL}{12} \left(L - \frac{D}{3} \right)^2$ (b) 2 Only (d) 4 Only
reversal of stresses in the seismic forces and tempera 181. If W is total load por the diameter of the in two directions maximum positive average of the neg the design of the set should not be less th (1) $\frac{WL}{12} \left(L - \frac{2D}{3}\right)^2$ (3) $\frac{WL}{10} \left(L - \frac{2D}{3}\right)^2$ (a) 1 Only (c) 3 Only Ans : (c)	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab, tan (2) $\frac{WL}{10} \left(L + \frac{2D}{3} \right)^2$ (4) $\frac{WL}{12} \left(L - \frac{D}{3} \right)^2$ (b) 2 Only (c) 4 Only
reversal of stresses in the seismic forces and tempera 181. If W is total load potthe diameter of the in two directions maximum positive average of the neg the design of the es should not be less th (1) $\frac{WL}{12}\left(L-\frac{2D}{3}\right)^2$ (3) $\frac{WL}{10}\left(L-\frac{2D}{3}\right)^2$ (a) 1 Only (c) 3 Only Ans : (c) Total load per unit area = V	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab, than (2) $\frac{WL}{10} \left(L + \frac{2D}{3} \right)^2$ (4) $\frac{WL}{12} \left(L - \frac{D}{3} \right)^2$ (b) 2 Only (c) 4 Only
reversal of stresses in the seismic forces and tempera 181. If W is total load pot the diameter of the in two directions maximum positive average of the neg the design of the s should not be less th (1) $\frac{WL}{12}\left(L-\frac{2D}{3}\right)^2$ (3) $\frac{WL}{10}\left(L-\frac{2D}{3}\right)^2$ (3) $\frac{WL}{10}\left(L-\frac{2D}{3}\right)^2$ (a) 1 Only (c) 3 Only Ans : (c) Total load per unit area = W Diameter of column head =	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab. Ian (2) $\frac{WL}{10} \left(L + \frac{2D}{3} \right)^2$ (4) $\frac{WL}{12} \left(L - \frac{D}{3} \right)^2$ (b) 2 Only (d) 4 Only
reversal of stresses in the seismic forces and tempera 181. If W is total load por the diameter of the in two directions maximum positive average of the neg the design of the se should not be less the (1) $\frac{WL}{12}\left(L-\frac{2D}{3}\right)^2$ (3) $\frac{WL}{10}\left(L-\frac{2D}{3}\right)^2$ (a) 1 Only (c) 3 Only Ans : (c) Total load per unit area = W Diameter of column head = L is span is two direction	structure due to wind forces, ture stresses. er unit area on a panel, D is column head, L is the span , then the sum of the e bending moment and gative bending moment for span of a square flat slab, nan (2) $\frac{WL}{10} \left(L + \frac{2D}{3} \right)^2$ (4) $\frac{WL}{12} \left(L - \frac{D}{3} \right)^2$ (b) 2 Only (d) 4 Only

Design of the span of square flat slab should not be less than $\left[\frac{WL}{10}\left(L-\frac{2D}{3}\right)^2\right]$ for sum of max^m positive bending moment and average of the negative bending moment.

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For a circular slab carrying a uniformly distributed load, the ratio of the maximum negative to maximum positive radial moment is.
 (a) 1
 (b) 2

(d) 4

For the circular slab maximum negative radial moment $=\frac{2WR^2}{16}$

Maximum positive radial moment = $\frac{WR^2}{16}$

$$= \frac{\text{Max}^{\text{m}} \text{ radial moment}}{\text{Min}^{\text{m}} \text{ radial moment}} = \frac{2\text{WR}^{2}}{16} \times \frac{\text{L6}}{\text{WR}^{2}}$$
$$\left[\frac{\text{Max}^{\text{m}} \text{ radial moment}}{\text{Min}^{\text{m}} \text{ radial moment}} = 2\right]$$

183. If the permissible compressive stress in concrete is 50 kg/cm², tensile stress in steel is 1400 kg/cm² and modular ratio is 18, the depth of the beam is :

(1)
$$d = \sqrt{\frac{0.11765 \text{xB.M.}}{\text{breadth}}}$$

(2)
$$d = \sqrt{\frac{0.22765 \text{xB.M.}}{\text{breadth}}}$$

(3)
$$d = \sqrt{\frac{0.33765 \text{xB.M.}}{\text{breadth}}}$$

(4)
$$d = \sqrt{\frac{0.44765 \text{xB.M.}}{\text{breadth}}}$$

Ans: (a) $\sigma_{cbc} = 50 \text{ kg/cm}^2 = 5.0 \text{ N/mm}^2$ $\sigma_{st} = 1400 \text{ kg/cm}^2 = 140 \text{ N/mm}^2$ m = 18 $x_c = \frac{m\sigma_{cbc}}{m\sigma_{cbc} + \sigma_{st}} = \frac{18 \times 50}{18 \times 5 + 1400} = \frac{900}{1490} = 0.39$

$$J = \left(1 - \frac{x_c}{3}\right) = \left(1 - \frac{0.39}{3}\right) = 0.87$$
$$Q = \frac{1}{2} J.x_c.\sigma_{cbc}$$
$$= \frac{1}{2} \times 0.87 \times 0.39 \times 50$$
$$Q = 8.48$$
$$BM = Qbd^2$$
$$d = \sqrt{\frac{BM}{2}} = \sqrt{\frac{BM}{2}}$$

$$\sqrt{Q.b} = \sqrt{\frac{8.48 \times b}{8.48 \times b}}$$
$$d = \sqrt{\frac{0.11765B.M.}{b}}$$

 184. The breath of a ribbed slab containing two bars must be between. (a) 6 cm to 7.5 cm (b) 8 cm to 10 cm (c) 10 cm to 12 cm (d) None of these Ans : (b) Two-way ribbed slabs are sometimes called waffle slabs. It is used in large span construction. Ribbed slab is special type of 'grid floor' in which the 'slab' called topping is very thin. (50-100mm) and beams called ribs are very slender and closely spaced (less than 1.5m apart). The ribs have a thickness of not less than 65mm. The breath of ribbed slab containing two bars must be between 8cm to 10cm. 	 189. Maximum shear stress theory for the failure of a material at the elastic limit is known as: (a) Guest's or Trecas' theory (b) St. Venant's theory (c) Rankines theory (d) Haig's theory Ans : (a) Maximum shear stress theory for the failure of a material at the elastic limit is known as – Gues't or trecas' theory Maximum shear stress should be less than or equal to maximum shear stress under uniaxial loading. Maximum principal stress theory Rankine theory, lam'e theory
185. A foundation rests on which of the following?	190. A simply supported beam carries a varying
(a) base of the foundation	load from zero at one end and w at the other
(b) sub grade (a) foundation sail	end. If the length of the beam is a, the
(c) foundation soil (d) both sub-grade and foundation soil	maximum bending moment win be.
(d) both sub grade and roundation soli $Ans \cdot (d)$ A foundation is rests of both sub grade and	(1) $\frac{wa}{27}$ (2) $\frac{wa}{27}$
foundation soil. If the depth of foundation is equal or	27 27
less then the breadth is called shallow foundations. If	(3) $\frac{w^2 a}{\overline{a}}$ (4) $\frac{wa^2}{\overline{a}}$
the depth of foundation is more then breadth called deep	$\sqrt{27}$ $9\sqrt{3}$
foundations.	(a) 1 Only (b) 2 Only
186. Which of the following statements is true?	(c) 3 Only (d) 4 Only
(a) To ensure uniform pressure distribution, the	Ans : (d)
throughout	$\frac{1}{4} \times w \times a \times \frac{a}{4}$
(b) To ensure uniform pressure distribution, the	$R_{A} = \frac{2}{3}$
thickness of the foundation is increased	a 2
gradually towards the edge	$R_{A} = \frac{Wa^{2}}{G} = \frac{Wa}{G}$
(c) To ensure uniform pressure distribution, the	6a 6
thickness of the foundation is decreased	$R_{\rm B} = \frac{wa}{2}$
(d) To ensure uniform pressure distribution the	5
thickness of the foundation is kept zero at the	
edge	
Ans : (c) To ensure uniform pressure distribution, the	
thickness of the foundation is decreased gradually	
towards the edge.	
187. The weight of a foundation is assumed as which	
of the following?	
(a) 5% of wall weight	$A \checkmark \psi \psi \psi \psi \psi \psi \psi \psi \psi B$
(c) 10% of wall weight	1 a
(d) 12% of wall weight	
Ans : (c) Weight of a foundation is assumed as 10% of	
wall weight. The factor of safety for foundation is taken	
as 3.	
188. If the width of the foundation for two equal columns is restricted, the shape of the footing generally adopted is:	
(a) Square (b) Rectangular	A \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow B \downarrow Vx
(c) Trapezoidal (d) Triangular	₹ <u></u> x₹
Ans : (c) If the width of the foundation for two equal	$R_s = \frac{wa}{6}$ $R_B = \frac{wa}{2}$
columns is restricted the shape of footing generally	For the maximum handing moment
adopted is Trapezoidal.	ror the maximum bending moment.



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Time : 3.15 pm]

[Exam Date : 22 January, 2018 Evening



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7. In the following question	n, select the related	Ans: (d)
12 · 50 · · 18 · 9	ernauves.	
(2) 40 (1)) 70	
(a) + 0 (c) 80 (c)) 60	-3 -3 -3 -3
(c) bb (c)	() 00	
Ans. (c) Just as $(12 \times 5) = 10$ =	560 - 10 = 50	19 16 13 7 4 26
$(12 \times 3) = 10, =$	00 - 10 - 50	(c) (c)
$(18 \times 5) - 10. =$	90 - 10 = 80	
8. In the following question	n, select the related	So GDZ are the odd letters from the given alternatives.
number from the given al	ernatives.	14. In the following question, select the odd letters
11 : 121 :: 15 : ?		from the given alternatives.
(a) 289 (b) 343	(a) LO (b) HS
(c) 225 (d) 217	(c) IR (d) CY
Ans:(c)		Ans : (d) The letters LO, SH and RI are reversed to
Just as $(11)^2 = 121$		each other. whereas CY is not reverse letter to each
Similarly $(15)^2 = 225$		other.
9. In the following questio	n, select the related	15. In the following question, select the odd letters
number from the given al	ernatives.	from the given alternatives.
49:56:81:?		(a) XSNI (b) OJEY
(a) 92 (b) 88	(c) UPKF (d) EZUP
(c) 76 (c)	l) 84	Ans: (b)
Ans: (b)		X S N I O I F Y
Just as $49 + 7 = 56$		
Similarly $81 + 7 = 88$		
So $? \Rightarrow 88$		
10. In the following question	select the odd word	21 16 11 6 5 26 21 16
from the given alternative	S.	(c) U P K F (d) E Z U P
(a) Hand (b)) Legs	
(c) Lungs (c)	l) Ear	-5 -5 -5 -5 -5 -5
Ans: (c) The hand, legs, Ear the	external parts of body	So, OJEY are different from the given alternatives.
where as the lungs is the internal	part of body. So, lungs	16. In the following question, select the odd
is different from other alternatives		number from the given alternatives. (a) $10 - 101$ (b) $12 - 145$
11. In the following question	select the odd word	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
from the given alternative	S.	(c) 24 - 377 $(d) 20 - 075$
(a) Lizard (b) Rabbit	Ans: (d) $(10)^2 + 1 \rightarrow 100 + 1 - 101$
(c) Snake (c	l) Crocodile	$(10)^{+}1 \rightarrow 100^{+}1 = 101^{-}$ $(12)^{2} + 1 \rightarrow 144 + 1 = 145^{-}$
Ans : (b) The lizard, snake a	nd crocodile are the	$(12) + 1 \implies 144 + 1 = 145$ $(24)^2 + 1 \implies 576 + 1 = 577$
reptiles where as rabbit are the n	ammals. So, rabbit is	$(26)^2 + 1 \implies 676 + 1 \neq 675$
the odd word from given alternativ	/es.	So, 675 are different from the given alternatives.
12. In the following question	select the odd word	17. In the following question, select the odd
from the given alternative	S.	number from the given alternatives.
(a) Car (b) Bus	(a) 23 (b) 37
(c) Truck (c	l) Transport	(c) 41 (d) 51
Ans: (d) Car, Bus and Truck a	re all come under the	Ans : (d) The number 23, 37 and 41 are indivisible
transportation. So, transport is the	e odd word from the	where as 51 are divisible number. So, 51 are the odd
given alternatives.		number from the given alternatives.
13. In the following question,	select the odd letters	18. In the following question, select the odd
from the given alternative	S.	number from the given alternatives.
(a) IFC (t) LIF	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
(c) SPM (c)	I) GDZ	(0) 13 - 20 (0) 18 - 33
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- 39. Two motorcycle riders start from the same point. Rider A goes 15 km North then turns to his right and rides for another 8 km. Rider B goes 9 km West, then turns North and rides for 4 km and then turns to his right and rides 17 km. Where is rider A with respect to rider B?
 - (a) 11 km South (b) 11 km North



So, the rider A is (15 - 4) = 11 km North with respect to rider B.

40. In the question two statements are given, followed by two conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given conclusions, if any follows from the given statements.

> Statement I : No students are scholars Statement II : No students are teachers

Conclusion I : Some teachers are scholars

- Conclusion II : All scholars are teachrs
- (a) Only conclusion I follows(b) Only conclusion II follows
- (c) Both conclusions I and II follows
- (d) Neither conclusion I nor conclusion II follows



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known facts. You have to decide which of the given conclusions, if any, follows from the given statements.

Statement I : All cotton is cloth

Statement II : All cotton is shirts

Statement III : Some cotton is woven

- Conclusion I : Some woven is shirts
- Conclusion II : Some cloth is woven

Conclusion III : All cloth is shirts

- (a) Only conclusion I follows
- (b) Only conclusion II follows
- (c) Only conclusions I and II follow
- (d) All conclusions I, II and III follow





Conclusion I : Some women is shirts $(\sqrt{})$ Conclusion II : Some cloth is women $(\sqrt{})$ Conclusion III : All cloth is shirts (\times) So, only conclusion I and II follow.

42. Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?







47. From the given answer figures, select the one in which the question figure is hidden/embedded.



Ans : (a) The question figure is embedded/hidden in the answer figure of option (a).

48. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.



Ans : (b) According to the question when a piece of paper is folded and punched and the open it will appear as like answer figure in option (b).

49. If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?







50. A word is represented by only set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example 'K' can be represented by 32, 01 etc and 'R' can be represented by 79, 99 etc. Similarly, you have to identify the set for the word 'GLUE'.

Matrix-I					
	0	1	2	3	4
0	F	K	D	Α	С
1	Н	D	Α	Ι	Н
2	L	А	L	G	F
3	G	Н	K	D	L
4	Е	Е	С	Μ	K

	5	(
	U	6	7	8	9
5	X	Ν	U	0	Q
6	V	Х	Р	Z	X
7	Р	N	Ν	X	R
8	X	S	Q	X	V
9	U	0	S	Z	R

Ans: (c)	GLUE				
 From 	matrix	I, G can b	e coded	las	
(a)	30	33	78	43	
	G	D	Х	Μ	-Wrong
(b)	21	67	98	32	
	А	Р	Ζ	Κ	– Wrong
(c)	23	34	57	40	
	G	L	U	Е	– Right
(d)	33	87	12	67	-
	D	Q	А	Р	– Wrong

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General Knowledge	55. The percentage of decadal growth of population of India during 2001-2011 as per
51. Income and Expenditure Account is	census 2011 is (a) 15.89 (b) 17.64 (c) 10.21 (d) 21.54
(c) Nominal Account (d) Capital Account	(c) 19.21 $(d) 21.54$
Ans : (c) Basically there are three types of accounts used for exchange. These are–(i) Personal Account, (ii) Real Account, (iii) Nominal Account. Nominal Accounts are related with income, expenditure and losses. These accounts includes the Salary, Commission, Rent, Insurance, Income and Expenditure,	Ans : (b) The percentage of decadal growth of population of India during $2001-2011$ as per census 2011 is 17.64%. According to this census the total population is 1,21,05,69,573 in which the male population is 62,31,21,843 (51.47%) and the female population is 58,74,47,730 (48.48%). The sex ratio in India is 943 i.e. 943 females per 1000 males. Population
Bonus etc.	density is 382 person/km ² .
52. Commodity or product differentiation is found	56. The concept of Constitution first originated in
(a) Perfect competition Market(b) Monopoly Market	(a) Italy (b) China (c) Britain (d) France
 (c) Imperfect Competition Market (d) No option is correct 	Ans : (c) The Constitution defines the basic structure of the political system of any country by which the peoples are ruled. The concept of constitution first originated in
Ans : (c) Imperfect competition market is the intermediary between the perfect competition market and the monopolistic market. In imperfect competition market the number of producers are not very much and goods are also not symmetric. In this situation there are differentiation between goods and their prices	the Britain in 1215 A.D. It is important that constitution is divides into two groups – written constitution and unwritten constitution. Countries with written constitution are – India, Australia, USA etc. While the countries with unwritten constitution are – Britain, Israel, New Zealand
periodically.	57. The Parliament has been given power to make
55. the economist who for the first time scientifically determined National Income in	laws ragarding citizenship under which article
(a) Jagdish Bhagwati (b) V. K. R. V. Rao	(a) Article 5 (b) Article 7 (c) Article 9 (d) Article 11
 (c) Kaushik Basu (d) Manmohan Singh Ans : (b) The economist who for the first time scientifically determined National Income in India was Vijendra Kasturi Ranga Vardraj Rao (V.K.R.V. Rao). ⇒ Jagdish N. Bhagwati is an Indian economist who is known for their contribution in research of international trade. The Government of India awarded him with 'Padm Vibhushan' in 2000. ⇒ Amrtya Sen is the first Asian to win nobel prize in the field of economics in 1998. He demonstrated the concept of public welfare economics. He has also been awarded with the 'Bharat Ratna' in 1999. 	 Ans : (d) The Constitution of India deals with the citizenship from Articles 5 – 11 under part–2. Under Article 11, parliament shall have the power to make any provision with respect to the citizenship. That means parliament can make any provision with respect to the acquisition and termination of citizenship and all other matters relating to citizenship. Like Canada Indian Constitution provides for only a single citizenship. 58. Which one of the following cannot be the ground for proclamation of Emergency under the Constitution of India? (a) War (b) Armed rebellion
54. Which of the following is not a part of the non-	(c) External aggression
plan expenditure of central government?(a) Interest payment(b) Grants to states(c) electrification(d) subsidy	(d) Internal disturbance Ans : (d) The emergency provisions are contained in part-18 of the Indian Constitution, from Articles 352 to 260 The Constitution stimulates three times of
Ans : (c) In the Budget document the gross revenue expenditure has divided into planned expenditure and non-planned expenditure. Non-planned expenditure includes – Payment of debts, Defence Services, Economic aid, Administrative services. While planned expenditure includes the aid provides for the execution of schemes sponsered by centre, state and union territories like – Agriculture, Rural development, Electrification, Irrigation, Flood control etc.	 (i) National emergency due to war, external aggression or armed rebellion (Article 352) (ii) President's rule due to the failure of the constitutional machinery in the state. (Article 356) (iii) Financial emergency due to a threat to the financial stability or credit of India (Article 360). Emergency can't be proclaimed on the basis of Internal disturbances.

59. The 100th amendment in Indian Constitution	63. Which one of the following was the capital of the cultanets during the raise of Ututmich?
(a) Protection of livelihood and regulation of	(a) Agra (b) Labore
(a) Frotection of inventiood and regulation of	(a) Agia (b) Labore (c) Badaun (d) Delhi
(b) Acquiring of territories by India and transfer	(c) Buddan (d) Bonn Ans (d) Iltutmish (1210, 1226, A, D.) mode the conital
(b) Acquiring of territories by India and transfer	Alls. (a) Intumisti (1210-1250 A.D.) indue the capital of sultanate to Delhi in place of Labore Being an Ilbari
(a) Employments Allowences and Privileges to	turk he was the real founder of Delhi Sultanate He
(c) Emoluments, Anowances and Privileges to	strengthened the position of sultanate by defeating their
(d) Decreasization of state of Andhra Dradach	rivalries of throne like Valdoz and Oubacha
(d) Reorganisation of state of Andria Pradesn	Safeguarded the North-Western frontier from Mongols
Ans : (b) The 100 ^m amendment 2015, in Indian	by not allowing the Khwarizm prince Ialauddin
Constitution proposed to amends the First Schedule of	Mankbarni to enter beyond Indus valley. He laid the
Constitution by which a national transfer of 111 Indian	foundation of absolute monarchy of the tanka in
enclaves to Bangladesh in return of 51 enclaves to India	Northern India. He created an entirely new and
established in West Bengal, Assam, Tripura and	important class of officers called chalisa (Chehalgan) or
Meghalaya.	`the forty'. He also secured a letter of investiture from
Hence option (b) is correct.	the Abbasid Caliph of Baghdad which also established
60. Which one of the following is not a	him as the 'Sultan of Hindustan'. Being an orthodox
constitutional body?	sunni his view towards other was harsh but not cruel.
(a) The Election Commission of India	He had desecrated the magnificent Hindu temples of
(b) The Finance Commission	Bhilsa and Ujjain. He also introduced a purely arabic
(c) The Official Language Commission	currencies of gold and silver and two very important
(d) The National Commission for Women	measures of the time the Silver Tanka and Copper's
Ans : (d) Constitutional bodies are those described in	Jital. He was a great patron of art and learning. Also
the Constitution of India. Constitutional bodies are -	completed the construction of Qutubminar.
Election Commission, Finance Commission, Union	64. The ideas of non-coperation movement during
Public Service Commission, State Public Service	freedom struggle did not envisage on
Commission, Commission for official language,	(a) the bycott of civil services
Comptroller and Auditor General of India, Attorney	(b) the bycott of foreign goods
General of India, Advocate General of the states,	(c) Common riots (violence)
National Commission for SCs, STs etc. While The	(d) the surrender of British titles
National Commission for women is a statutory body	Ans : (c) The non-cooperation movement was launched
established in 1992.	formally on 1 August 1920. On 9 June 1920, the
61. Which Buddhist scripture describes about 16	Khilafat Committee at Allahabad unanimously accepted
Mahajanapadas?	the suggestion of non-cooperation and asked Gandhiji
(a) Digha Nikava (b) Sutta Pitaka	to lead the movement. There were two main propaganda
(c) Anguttara Nikaya (d) Vinaya Pitaka	of movement in which one was by the constructive
Ans · (c) Buddhist scripture Anguttara Nikaya describes	works like setting up of National Schools, Colleges,
about 16 Mahajannadas. While sutta Pitaka describes	Panchayats for settling disputes, hand spinning and
about the lataka stories the stories of previous births of	weaving was to be encouraged, Hindu-Muslim unity,
Buddha and the collection of Buddhist teachings	give up untouchability, non-violence etc. and second
Vinava Pitaka describes about rules and regulation and	was negative work like surrender of titles and honours,
daily life for monks and mins Abhidhamma Pitaka	boycott of government affiliated schools and colleges,
describes about Buddhist philosophy which is in the	law courts, foreign cloth, resignation from government
form of Oue, and Ans	services, mass civil disobedience, non-payment of taxes
62 The Chinese Pilgrim who visited India in the	While the common rists were not the part of movement
early 6th contury was	but happened accidentally in Chauri-Chaura in
(a) Hiuen Tsang (b) Fa-hien	Gorakhnur District of UP on 5 Feb 1922 which
(c) Sung Yun (d) Leteing	resulted the end of the movement unfortunately
(c) Sung Fun (u) Fung	65 Who among the following nextininated in the
the early 6 th century A.D. Desides this Equipine arms to	Salt Satyagarba of Candhiii?
India in the raign of Chandragunta II Vikromeditus	(a) Sarojini Naidu
While Hiven Teang came in the roign of	(h) Raikumari Amrit Kaur
While Hugh Lising came to India in the later 7^{th}	(c) Kamladevi Chattonadhvava
contury A D	(d) All options are correct
century A.D.	

Ans : (d) Gandhiji, alongwith the selected 78 members of the Sabarmati Ashram, belonging to every region and religion of India, marched on 12 March 1930 from Ahmedabad to the coast of Dandi and on 6 April 1930 by picking up a handful of salt break the salt law and inaugurated the civil disobedience movement and hence defiance of salt law started all over the country by various leaders or groups. In different regions of the country it was in different forms like in eastern India-no tax campaign, defiance of forest law in Maharashtra, Karnataka and the central provinces, in Assam against 'Cunningham circular' etc. Gandhiji specially asked the women to play a leading role in this movement on the advice of Kamladevi Chattopadhyaya. Sarojini Naydu, Satyavati Devi, Kamala Nehru, Rajkumari Amrit Kaur, Kasturba Gandhi, Vijaylaxmi Pandit etc. were the leading women in this movement.	 69. Which of the following Indian state does not share boundary with Myanmar? (a) Assam (b) Manipur (c) Nagaland (d) Arunachal Pradesh Ans : (a) The Indian states bordering with Myanmar is Arunachal Pradesh, Nagaland, Mizoram and Manipur. While Assam boundaries with Bangladesh. Other states sharing boundaries with Bangladesh are West Bengal, Meghalaya, Tripura, Mizoram. 70. Bhavanisagar Dam or Lower Bhavani Dam, is located in which state? (a) Tripura (b) Bihar (c) Tamil Nadu (d) Telangana Ans : (c) The Bhavanisagar Dam or Lower Bhavani river between batter is located on the Bhavani river between
66. Which among the following is not the result of	Mettupalayam and Sathyamangalam in Erode district,
underground water action?	higgest earthen dams in the country. Other important
(a) Fiords (b) Sink holes	dams are – Idukki dam on Periyar river in Kerala,
(c) Stalactite (d) Stalagmite	Bhima project in Telangana on Pavna river, Kosi
surface seeps through the ground and accumulated	Project in Bihar on Kosi river etc.
under the ground surface is called ground water which	71. Which of the following is a scheme of
gushes out in the form of springs. The land forms	Government of India for providing online
created by the actions of groundwater are sink hole,	(a) SAHAI (b) SARAI
\Rightarrow Fiords are formed when the lower end of the trough	(c) BHIM (d) DIGI DHAN
is drowned by the sea and forms a deep steep-side inlet.	Ans : (a) Union Government has launched Sahai
These are formed mainly on Norwegian and South	Scheme for online booking of LPG cylinders. It was
 67. In which of the following countries the Great Victorian Desert is located? 	launched by Union Minister for Petroleum and Natural gas on 30 August 2015. A unified web portal www.mylpg.in is available in 13 languages for
(a) South Africa (b) South America (c) Australia (d) China	booking. Initially, the scheme has been launched in 12
Ans: (c) Australia is the smallest continent of the world	cities across the country. New system would be
by land area as well as by population. It is situated in	available on the websites of each oil company and the
southern hemisphere and the tropic of Capricorn divides	government's LPG portal Pahal.
it into equal parts. The major deserts in Australia are –	72. Which one of the following schemes is aimed at
→ Deserts found in Africa are Sahara Kalahari	an-round development of addrescent girls in the
Namib etc.	reliant?
\Rightarrow Deserts found in South America are – Atacama,	(a) RGSEAG (b) IGMSY
Patagonian etc.	(c) NMEW (d) RMK
\Rightarrow Deserts found in China are – Takla Makan	Ans : (a) The Rajiv Gandhi Scheme for Empowerment
68. Which of the following is a typical feature of river erosion in youthful stage?	of Adolescent Girls Sabla is a centrally sponsored
(a) George (b) Cut-bank	program of government of India initiated on April 1,
(c) Ox-bow lake (d) Natural Levee	2011 under ministry of women and child development.
Ans : (a) The features found in youthful stage of a river	development and empowerment of adolescent girls
are all formed by the process of Erosion. The main	improvement in their health and nutrition status, spread
Potholes etc. The river erodes downwards in its	awareness about health, hygiene adolescent
youthful stage, called vertical erosion. The result of	reproductive and sexual health, family and child care.
such erosion is a valley with steep sides and very	Also upgrading their home based skills, life skills and
narrow floors which looks like a "V". But when it meets	vocational skills. A Kishori Card" will be given to
it flows around them and forms a George like shape	The program would cover adolescent sirls (orly cut)
\Rightarrow Ox-bow lake. Natural levees formed in old age	of school) 11-18 years old under all integrated child
stage while cut-banks are found in matured stage.	development services projects.

 73. Bharatnet Project is related to which of the following? (a) free wifi to students in rural area (b) High speed internet to farmers (c) Broadband connectivity to gram panchayats (d) A project connecting rural area with urban area Ans : (c) Bharat Net project is the new brand name of National optical Fibre network (NOEN), which was 	 77. Who among the following has received Arjuna Award in August 2017? (a) Harmanpreet Kaur (b) Sardar Singh (c) Bhupender Singh (d) P.A. Raphel Ans : (a) In August 2017 total 17 sportsperson has been awarded by Arjun award. It is India's 2nd highest sporting award bestowed upon sportsperson for available to the dimension of the sportsperson for available to the dimensional sportsperson sportsperson for available to the dimensional sportsperson for available to the dimensional sportsperson sportsperson for available to the dimensional sportsperson sportsperson for available to the dimensional sportsperson sportsperson sportsperson sportsperson for available to the dimensional sportsperson sportspectrum sportspectr
launched in October, 2011 to provide broadband connectivity to all 2.5 lakh Gram Panchayats. It was renamed Bharat net in 2015. The objective of this scheme is to provide high-speed broadband of 100 mbps to all the panchayats in the country by March 2019. The project is being funded by the universal	Harmanpreet Kaur is an Indian cricketer awarded with this. Some other recipients are Cheteshwar Pujara (cricket), Khusbir Kaur (Atheletics), Mariyappan (Para- atheletics) etc. 78. Which of the following is the 14 th Intangible
 service obligation fund (USOF) which was established to improve telecom services in the remote and rural areas of India. The project is to be implemented in three phases. 74. Which of the following countries will host the Commonwealth Games in 2018? 	Cultural Heritage from India to be listed in UNESCO's list of Intangible Cultural Heritage of Humanity? (a) Ramlila (b) Mudiyett (c) Kumbh Mela (d) Sankirtana
 (a) Sri Lanka (b) Indonesia (c) Australia (d) Britain Ans: (c) The 2018 common wealth games, officially known as the 21st common wealth games were held on the `Gold coast', Queensland, Australia between 4 to 15 April, 2018. Australia topped with highest number of medal (198). India ranked third in the game with 66 medal (26 gold). 22 nd common wealth game will be held in 2022 in Birmingham, Britain. 75. In December 2017, who won the World Rapid Chess Championship Title 2017 held in Riyadh, Saudi Arabia? (a) Magnus Carlsen (b) Visuanathan Anand 	Ans : (c) The intergovernmental committee for safeguarding of intangible cultural heritage under UNESCO has inscribed 'Kumbh Mela' the 14 th UNESCO's Representative list of intangible cultural Heritage of Humanity during its 12 th session of committee held on 4-9 December 2017 at Jeju, South Korea. total 33 elements are included in this list. 'Kumbh Mela' is held every third year at one of four places by rotation. Haridwar, Allahabad, Nashik, Ujjain and thus it is held at each of these places every twelfth year. Other sites are – Ramlila, Sonkirtana, Chhau dance etc.
 (c) Vladimir Fedoseev (d) Ian Nepomniachtchi Ans : (b) In December 2017, the Indian grandmaster Vishwanathan Anand won the world rapid chess championship title 2017 held in Riyadh, Saudi Arabia. He was the first recipient of the Rajiv Gandhi Khel Ratna award in 1991-92. He was also awarded the 	 79. The Union Finance Ministry's Revenue Department has imposed a five year anti-dumping duty on Sodium nitrite imports from which of the following country? (a) Japan (b) China (c) United States of America (d) Russia
Padma Vibhushan, the first sports person to receive the award. 76. "Gandhi in champaran" is written by (a) Arundhati Roy (b) Fatima Bhutto (c) Dinanath Gopal Tendulkar (d) Harper Lee	 Ans : (b) The Union Finance Ministry's Revenue department has imposed a five year antidumping duty on Sodium Nitrite imports from China. For this purpose the petition was filed by Deepak Nitrite Ltd. and supported by Punjab Chemical and Crop Protection Ltd. 80. Which neighbouring country of India
 Ans : (c) 'Gandhi in champaran' is written by Dinanath Gopal Tendulkar. He is famous for writing of an eight volume biography of Mahatma Gandhi. ⇒ Arundhati Roy's 'the God of small things' won the man booker prize in 1997 for fiction. ⇒ Fatima Bhutto is a Pakistani writer known for her notable work in non fiction about her family – 'Songs of blood and sword' ⇒ Harper Lee is an American novelist known for her notable work – 'To kill a Mochingbird, Go set a watchman. 	celebrates its Independence Day on March 26?(a) Bangladesh(b) Pakistan(c) Nepal(d) Sri LankaAns : (a) Bangladesh, The neighbouring country ofIndia, celebrates its independence day on March 26. Itcommemorates the country's declaration ofindependence from Pakistan in the late hours of 25March 1971. While Pakistan and Sri Lanka celebratesits independence day on 14 August and 4 Februaryrespectively.

81. Which of the following is NOT an operating	85. In Modern Periodic Table, while moving left to
system?	right across a period, the metallic
(a) UNIX (b) Ubuntu (a) MS DOS (d) MS Erroal	(a) increases
(c) MS-DOS (d) MS-Excel	(b) decreases
Ans : (d) Operating system is a system software that	(c) remain same
manages computer hardware and software resources	(d) first increases then decreases
and provides common services for computer programs.	Ans : (b) Dmitri Mendeleev was the first scientist to
For hardware functions such as input and output and	explain this. According to him the physical and
memory allocation the operating system acts as an	chemical properties of elements are periodic function of
intermediary b/w software and hardware. Examples are	their atomic number. In modern periodic table while
– Unix, Linux, Ubuntu, M.S. Windows, Mac OS, MS-	moving left to right the metallic character decreases and
Dos etc.	non-metallic increases. In periodic table the horizontal
\Rightarrow MS-Excel is a spreadsheet developed by microsoft	lines are called periods and vertical lines are called
for calculation, graphing tools, pivot tables etc.	86. How many moles are present in 36 gm of water?
62. Instructions to computer are given through	(a) 1 (b) 2
(a) Input unit (b) AIII	(c) 4 (d) 8
(a) Input unit (b) ALC	Ans : (b) The mole is the unit of measurement for
(c) Interiors to computer are given through	amount of substance in the SI units which is defined as
input unit. To interpret these instructions, the computer	the amount or sample of chemical substance that
uses an operating system or software that is also	contains as many constitutive particles, e.g., atoms,
programmed by a human to translate the user	Circuites, ions etc.
commands Examples of input devices are – Keyboard	No. of moles = $\frac{\text{Given mass}}{M_{\text{H}}}$
Mouse Joysticks Trackhall Light pen Bar-code	Molar mass
reader Scanner etc	since mass of water (given) = 36
83 Which of the following is slaked lime?	molar mass of water = 18
(a) $Ca(OH)_2$ (b) CaO	Hence No. of moles = $\frac{36}{12}$ = 2 mole.
(c) $CaCO_3$ (d) $CaCl_2$	18
Ans : (a) Calcium hydroxide $(Ca(oH)_2)$ is also called	87. In which mirror, image formed is virtual, erect
the slaked lime. It is obtained when calcium oxide is	(a) Plane (b) Convey
mixed, or slaked with water. Aqueous solutions of	(a) France (b) Convex (c) Concave (d) No option is correct
$ca(oH)_2$ are called lime water and it turns milky in the	Ans : (b) A convex mirror or diverging mirror or fish
presence of CO ₂ due to formation of Calcium	eve mirror is a curved mirror in which the reflective
Carbonate. This is used in whitening of walls. Other	surface bulges towards the light source. A parallel beam
uses are in the making of Bleaching Powder, Caustic	of light diverges after reflection from a convex mirror.
Soda, Sodium Carbonate, Cement, Drugs etc. for	The image formed in convex mirror is behind the mirror
reducing the acidity of land it can be used.	between the pole and the focus and the image formed is
84. Among the following respiration is which type	smaller than the object and it is erect and virtual. These
of process?	mirrors are utilized in motor cars, trucks etc. as a rear
(a) Exothermic process only	View mirror.
(b) Endothermic process only	88. Which of the following affects the resistance of the wine?
(c) Both exothermic and endothermic	(a) Resistivity
(d) Neither exothermic nor endothermic	(a) Resistivity (b) Length of wire
Ans : (a) Reactions in which energy is released called	(c) Area of cross section of wire
exothermic reaction. All combustion reactions are	(d) All options are correct
exothermic. Respiration is an exothermic process	Ans : (d) The electrical resistance of an electrical
because in this CO ₂ presents in food breaks down to	conductor is a measure of the difficulty to pass an
form glucose and this glucose combines with oxygen in	electric current through it and it depends upon
the cells of our body and releases high amount of	resistivety of conductor, length, area of cross section of
energy. Photosynthesis and other microprocess are	wire, temperature. The SI unit of electrical resistance is
other example.	ohm (Ω).

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89. Which of the following statements are	Ans : (b) The blood vessels which bring back the blood
CORRECT?	from various organs of the body to the heart are called
I. Force applied on the conductor depends on	veins. Through veins only impure blood flows, but
magnitude of current.	through pulmonary veins only pure blood flows from
II. Force applied on the conductor depends	lungs to hearts. The blood vessels which transport the
on magnitude of magnetic field strength.	blood from the heart to various organs of the body
111. Force applied on the conductor depends on the direction of current	called arteries.
(a) Only L and II (b) Only L and III	94. Which of the following is an example of
(a) Only I and II (b) Only I and III (c) Only II and III (d) All are correct	unicellular organism?
Ans : (a) Force applied on the conductor depends on	I. Euglena
magnitude of current and magnetic field strength An	II. Amoeda III. Doromosium
electrical conductor is an object or type of material that	(a) Only Land II (b) Only Land III
allows the flow of electrical current in one or more	(a) Only I and II (b) Only I and III (c) Only II and III (d) All ontion are correct
directions. e.g. Silver, Mercury, Acidic water, aqueous	(c) Only II and III (d) All option are contect
solution of salts, body of livings etc.	falls into two categories – prokaryotic and eukaryotic
90. The direction of heat flow between two body	eg hacteria archaea protozoa algae fungi etc. These
depends on which of the following?	are though to be the oldest form of life. Unicellular
(a) Their specific heat	organism moves by means of cilia, flagella or
(b) Their latent heat	pseudopodia while respires through diffusion. Examples
(c) Their temperatures	are–Amoeba, Euglena, Paramecium, Plasmodium etc.
(d) Their area of contact	95. Which of the following controls the size of
Ans: (c) Heat is a type of energy which has ability to	pupil in human eye?
do various type of works. The direction of flow of heat	(a) Cornea (b) Iris
between two bodies depends on their temperature and	(c) Aqueous humour (d) Retina
temperature. It is important that after some time the	Ans : (b) In the human eye, behind the cornea a colour
temperature of both the bodies becomes equal and heat	opaque membrane is located which is called Iris. In the
transfer stops this situation is called thermal	middle of the Iris there is a sharp hole, which is called
equilibrium	pupil. Iris controls the amount of light which enters the
91 Which disease is caused by deficiency of	eye. When more light comes into in, then automatically
Vitamin A?	iris compresses itself and in dark or insufficient light
(a) Beri-Beri (b) Night blindness	Iris automatically expands.
(c) Rickets (d) Pellagra	96. Which of the following disease is generally
Ans : (b) Vitamin - Diseases caused by	(a) Dangue favor (b) Turbaid
(1) B_1 (Thymine) - Beri-Beri	(a) Deligue level (b) Typiola (c) Cholera (d) Tuberculosis
(2) A (Retinal) - Night blindness	Ans : (a) The diseases caused by viruses are Dengue
(3) D (Calciferol) - Rickets	fever – Dengue virus Aids – HIV virus Hydrophobia
$(4) B_5 (Niacin) - Pellagra$	Polio Encenhalitis Mumps Measles small pox etc.
92. Air enters the body of cockroaches	while Typhoid. Cholera and Tuberculosis Leprosy.
through	Whooping cough etc. are bacterial diseases.
(a) lungs (b) gills	97. Which of the following diseases are NOT
(c) spiracles (d) skin	caused by smog?
Ans : (c) The scientific name of cockroaches is	(a) Rickets (b) Throat cancer
periploneta. This is the animal of Phylum Arthopoda.	(c) Skin cancer (d) Breathing problem
Like other insects, cockroacnes breather through a system of tubes called traches which are attached to	Ans : (a) Throat cancer, skin cancer and breathing
openings called spiracles on all body segments. The	problems may caused by smog while Rickets is disease
excretory organ of cockroach is the malnighian tubules	in children caused by the deficiency of Vitamin 'D' in
It has 13 chambers in their hearts. It has open blood	which bone pain, bone tenderness, chostochondral
circulatory system with lack of hemoglobin It is a	swelling, soft skull, short height and low weight are
nocturnal and omnivorous animal.	very common symptoms.
93. Which of the following carry the blood from all	98. Which of the following gas is the second most
parts of body back to the heart?	abundant gas by volume in atmosphere?
(a) Arteries (b) Veins	(a) Nitrogen (b) Ozone
(c) White Blood Cells (d) Platelets	(c) Oxygen (d) Carbon dioxide

 Ans : (c) The atmosphere is the layer of gases surrounds the planet earth and is retained by earth's gravity. By volume dry air contains 78.09% nitrogen, 20.95% oxygen, 0.93% argon, 0.03% carbon dioxide etc. Hence option (c) is correct. 99. With respect to humans, why is carbon monoxide a pollutant? (a) It reacts with nitrogen dixide (b) It reacts with sulphur dixide (c) It reacts with haemoglobin 	 Ans : (c) Flash and fire point test is conducted on bitumen to know the safe mixing and application temperature values of particular bitumen grade. With the help of Pensky-Morters closed tester. Softening points test is conducted by using Ring and Ball apparatus. Ductility test on bitumen measures the distance in centimeters to which it elongates before breaking when a briquette specimen of the materials is pulled at a specified speed and at specified temperature
(d) It makes hervous system macrive	103. The defect in timber that arises due to the
Ans: (c) Carbon mono oxide is a coloriess, odoriess and tasteless gas that is slightly less dense than air. It is toxic to Remoglobic animals, including humans. It is also called flue gas. Through respiration it reaches in the body and combines with hemoglobin to produce carboxy hemoglobin, which usurps the space in	 swelling caused by growth of layers of sap wood over the wounds after branch is cut off is called as (a) Checks (b) Knots (c) Shakes (d) Rind gall
hemoglobin that normally carries oxygen, but is in effective for delivering oxygen which causes death. Carbon monoxide reacts with hemoglobin 10 times higher than oxygen. 100. Oil spills is seen in which ecosystem? (a) Desert ecosystem (b) Grassland ecosystem	 Ans: (b) Rind gall is characterised by swelling caused by the growth of layers of sapwood over wounds after the branch has been cut-off in an irregular manner. Checks is a longitudinal crack which is usually normal to the annual rings. These adversely affect the durability of timber.
 (c) Forest ecosystem (d) Marine ecosystem (d) Oil spills is seen in marine ecosystem. Oil spills may be due to release of crude oil from tankers, offshore platforms, drilling rigs and wells etc. This may cause the destruction of marine ecosystem like death of animals, fishes, flora and fauna etc. Marine ecosystem 	 Shakes are longitudinal separations in the wood between the annual rings. Knots are dark, hard pieces occurring as signs of branches broken or cut off. Pin knot–Not more than 6.5mm Small knot–12–20mm Large knot–More than 40mm
is very rich in biodiversity. TECHNICAL : CIVIL	 104. Which of the following is the measure of ease with which the wood may split? (a) Cleavability (b) Shearing strength (c) Stiffness (d) Toughness
 101. The defect that is caused by falling of rain water on the hot surfaces of the bricks is known as (a) Bloating (b) Chuffs (c) Cracks (d) Lamination Ans : (b) The deformation of shape of bricks caused by the rain water falling on hot bricks is known as chuffs. Bloating is the defect observed as spongy swollen mass over the surface to the presence of excess carbonaceous matter and sulpher in brick-clay. 	 Ans: (a) Cleavability is the measure of the ease with which wood may split. Most hardwoods split more easily along radial planes than along tangential surface. A wood which has a large capacity to resist shock or blows is called tough. Wood has low shearing strength of 6.5–14.5N/mm² along the fibres. 105. The gel space ratio of a concrete sample is given as 0.589. What is the theoretical strength (N/mm²) of that concrete sample?
 Cracks is a defect may be because of lumps of lime or excess of water. Laminations are caused by the entrapped air in the voids of clay. 	(a) 49.04 (b) 65.71 (c) 104.03 (d) 116.8 Ans : (a) The theoretical strength (N/mm ²) of concrete sample-
 102. Which of the following property of bitumen is related to the pensky-Marten test? (a) Ductility (b) Softening point (c) Flash and fire point (d) Viscosity 	$= 1.5 \times 95 \times x^{2}$ = 1.5 × 95 × (0.589) ² = 49.436 $\simeq 49.4 \text{ N/mm}^{2}$ $\simeq 49.04 \text{ N/mm}^{2}$

106. Which of the following represents the CORRECT expression for maturity (M) of the concrete sample? (a) $M = \sum [Time \times Temperature]$ (b) $M = \sum \left(\frac{Time}{Tempertaure}\right)$ (c) $M = \sum \left(\sqrt{\frac{Time}{Tempertaure}}\right)$	 Ans : (d) Varnish is a nearly homogeneous solution of resin in oil, alcohol or turpentine. The commonly used resins are copal, lac or shellac and resin. Varnishing a surface are to protect painted surface from atmospheric actions. Distemper is made with base as white chalk and thinner as water. Some colouring pigments and glue are added
(d) $M = \sum (Time + Tempertaure)$ Ans: (a) The maturity (M) of the concrete sample is- $M = \sum (Time \times Temprature)$	 Enamels consists of bases like zinc oxide, etc. found in varnish. Enamel can be used for internal as well as external works and are generally recommended for application on wood work
Concrete maturity indicates how far curing has progressed. 107. The aggregate which is obtained from the seashore or rivers and produces minimum	 110. In the softening point test of the bitumen with the help of ring and ball apparatus, what is the diametre (cm) of the steel ball? (a) 0.35 (b) 0.65
 voids in the concrete is known as (a) Angular aggregates (b) Flaky aggregates (c) Irregular aggregates (d) Rounded aggregates 	(c) 0.95 (d) 1.25 Ans : (c) The ring and ball softening point test is extensively used to evaluate the consistency of bituminous binders. The diameter of steel ball is 9.5mm.
 Ans: (d) Rounded aggregate with rounded shape has the minimum percentage of voids ranging from 32 to 33%. It gives good workability for the given amount of water and hence needs less cement for a given water cement ratio. Angular aggregate with angular shape has the maximum percentage of void ranging from 38 to 45%. 	 111. Which of the following is the CORRECT statement for length of the short wall, as one move from earthwork to brick work in super structure in long and short wall method? (a) Its value decreases (b) Its value depends upon the length of the wall (c) Its value increases (d) Its value remains same
 The aggregate is said to be flaky when its least dimension is less the 3/5th (or 60%) of its mean dimension. 	from earth work to brick work in super structure while the short wall increases. These lengths are multiplied by breadth and depth to get quantities.
108. The detachment of the paint film from the surface is known as (a) Chalking (b) Cracking (c) Flaking (d) Wrinkling	(a) Bags (b) Cubic meter (c) Numbers (d) Quintal
 Ans: (c) Flaking is detachment of paint film from the surface. It causes due to the moisture penetrates through the cracks on the coatings and the bond between surface and paint film is lost. Flaking is cure with use plastic emulsion paints. In chalking the paint film becomes powder due to insufficient oil in primer. The surface of the paint which wrinkles and gathers together is called wrinkling. It forms a layer like undulating waves on the painted surface. 109. Which of the following is the homogeneous solution of resins in the alcohol? (a) Distemper (b) Enamel paint 	 Ans : (c) The unit of measurement for rivers is in numbers. But the bolts, washers, nuts etc. are measure in quintals. Rolling shutters, steel doors and windows etc. are measure unit in square metre. Wire fencing and lightening conductors are measure in running metre. 113. Which of the following statement is CORRECT for units of measurement? (a) Bands of specified width are measured in running meter (b) Work consists of the linear measurement and is measured in square meter (c) Single units are measured in meter (d) Work consists of areal surface and is measured in square meter
(c) Plastic paint (d) Varnish SSC JE Online Civil 2018 (Ex. date 22 Jan., 2018, 3.15 pm) 4	9

 Ans: (a) Works consists linear measurements involve length like cornice, fencing, hand rail, band of specified width etc. are expressed in running metres (RM). Work consists area/surface measurements involve like plastering, white washing etc. are expressed in square meters (m²) Single units work like doors, windows, trusses etc. are measured in numbers. Work consists cubical contents like earth work, cement concrete etc. are measured in cubic metres 	 117. Calculate the cost (Rs.) of 100 mm thick brick lining of a septic tank of size 5 m × 3 m × 1.5 m, if the rate of lining is Rs 200 per square meter. (a) 4500 (b) 4800 (c) 5400 (d) 7800 Ans: (d) Cost of lining of septic tank. Area × Rate [2×5×1.5+2×3×1.5+5×3] × 200 39×200 = 7800 Rs. [Total Cost = 7800 Rupee] 118. Calculate the annual percentage depreciation
(m^3) .	of a machine using the constant percentage
114. Which of the following area is NOT included in	method, if purchasing cost is Rs. 12,000 and
the plinth area of the building?	scrap value is Rs. 3,000 and the life of the
(a) Area of the lofts (b) Area of Barsati at terrace level	(a) 9.37 (b) 16
(c) Area of walls at floor level	(c) 26.67 (d) 33.33
(d) Porches of non-cantilever type	Ans : (b) The annual percentage depreciation of a
Ans: (a)	machine-
 Areas which are not to include plinth area of the building are— (i) Area of lofts (ii) Unenclosed balconies (iii) Architectural bands corpices etc. 	$\begin{bmatrix} P = \left[1 - \left[\frac{S}{C} \right]^{\frac{1}{n}} \right] \times 100 \end{bmatrix}$
 (iii) Architectural bands, connects etc. (iv) Domes, towers projecting above terrace level. Area include the plinth area of building- (i) Area of walls at floor level. 	$P = \left[1 - \left(\frac{3000}{12000}\right)^{\frac{1}{8}}\right] \times 100$
(ii) Porches of non cantilever type.	P = 15.91%
(iii) Area of Barsati at terrace level.	$P \simeq 16\%$
(iv) Internal shafts of sanitary installations not exceeding 2.0m^2 lifts air conditioning ducts	119. The number of the bricks delivered by an
etc.	unskilled labour to a distance of 10 m in a
115. Which of the following multiplying factor is	working day is approximately
used for the estimation of lead for Cartze	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\frac{\text{tracks?}}{(1)}$	(c) 4200 (d) 5500
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Amount of work done by a mazdoor helper per day
Ans : (c) The multiplying factor is used for the	in deliver bricks-
estimation of lead for-	\rightarrow 4000 number to a distance of 15m per
(i) Cartze tracks $-$ Lead $\times 1.1$	mazdoor
(ii) Metal tracks $-$ Lead $\times 1.0$	Amount of work done by a mazdoor helper per day
(iii) Sandy tracks $-$ Lead $\times 1.4$	in mix-
116. Threading in the iron is measured in(a) Centimeter(b) Kilogram(c) Number(d) Square centimeter	 Amount of work done by a mazdoor helper per day in Deliver mortar-
 Ans: (a) ■ Threading in the iron is measured in centimeter (cm). 	 → 5.5 cum per mazdoor. Number of bricks laid by mason in 600 bricks per mason brick work upto a height of 3m.
■ Cast iron Bracket, Grating, Frames, Pulley, Grills	120. Calculate the quantity (cubic meter) of fine
etc. are measured in quintals.	aggregate required for construction of a
 Barbed wire are measure in Kg (Kilogram). Wire fencing are measure in running meter 	circular water tank of 3.5 m diameter and 5 m
 Expanded metal wire netting etc. are measured in 	$\begin{array}{c cccc} neight, n \ w \ 25 \ cement \ concrete \ is \ used. \\ (a) \ 12 \ (b) \ 18 \ 5 \end{array}$
square meter.	$\begin{array}{cccccccccccccccccccccccccccccccccccc$