

Booklet Sr. No. _____



Question Booklet
Set

Candidate's Name _____

Father's Name _____

Date of Birth :
D D M M Y Y Y Y

C

OMR Response Sheet No. _____ Roll No. _____

Candidate's Signature : _____
(Please sign in the box)

Total Questions : 120
Time Allowed : 2 Hours

INSTRUCTIONS

1. The candidate shall NOT open this booklet till the time he/she is told to do so by the Invigilation Staff. However, in the meantime, the candidate can read these instructions carefully and subsequently fill the appropriate columns given above in CAPITAL letters. The candidate may also fill the relevant boxes out of 1 to 9 of the Optical Mark Reader (OMR) response sheet, supplied separately.
2. Use only blue or black ball point pen to fill the relevant columns on this page as well as in the OMR sheet. Use of ink pen or any other pen is not allowed.
3. The candidate shall be liable for any adverse effect if the information given above is wrong or illegible or incomplete.
4. Each candidate is required to attempt 120 questions in 120 minutes, except for orthopedically/visually impaired candidates, who would be given 40 extra minutes, by marking correct responses on the OMR sheet.
5. The candidates, when allowed to open the question paper booklet, must first check the entire booklet to confirm that the booklet has complete number of pages, the pages printed correctly and there are no blank pages. In case there is any such error in the question paper booklet then the candidate should IMMEDIATELY bring this fact to the notice of the Invigilation Staff and obtain a new booklet of the same series as given earlier.
6. The serial number of the new Question booklet if issued for some reason should be entered in the relevant column of the OMR. The Invigilation Staff must make necessary corrections in their record regarding the change in the serial no. of Question booklet.
7. The question paper booklet has 16 pages.
8. The paper consists of total 300 marks. Each question shall carry 2.5 marks. There are four options for each question and the candidate has to mark the MOST APPROPRIATE answer on the OMR response sheet.
9. There is negative marking (0.5 marks for each question) for questions wrongly answered by the candidate.
10. The candidate **MUST READ INSTRUCTIONS BEHIND THE OMR SHEET** before they start answering the questions and check that two carbon copies attached to the OMR sheet are intact.

SECTION-A

1. If a solid shaft and a hollow shaft have same material, weight and length,
 - (a) both will have same strength and stiffness.
 - (b) hollow shaft will have higher strength and stiffness than solid shaft.
 - (c) solid shaft will have higher strength and stiffness than hollow shaft.
 - (d) solid shaft will have higher strength but lower stiffness than hollow shaft.
2. A cantilever beam has
 - (a) more than two supports.
 - (b) both ends fixed.
 - (c) both ends hinged.
 - (d) one end fixed and other end free.
3. For a simply supported beam of span L carrying concentrated load W at mid-span, the maximum shear stress will be
 - (a) $WL^2/4$
 - (b) $W/4$
 - (c) $WL^2/2$
 - (d) $W/2$
4. The influence line for any force response function in a structure is given by the deflected shape of the structure resulting from a unit displacement corresponding to the force under consideration. This principle is known as
 - (a) Hamilton's principle.
 - (b) D'Alembert's principle.
 - (c) Müller-Breslau's principle.
 - (d) Euler's principle.
5. The ratio of modulus of elasticity of steel to modulus of elasticity of concrete in RCC is termed as
 - (a) Young's modulus.
 - (b) Bulk modulus.
 - (c) Modular ratio.
 - (d) Mix ratio.
6. It is the maximum intensity of loading which the foundation can safely carry without risk of shear failure of soil irrespective of any settlement that may occur :
 - (a) Safe Bearing Capacity
 - (b) Allowable Bearing Capacity
 - (c) Ultimate Bearing Capacity
 - (d) Factor of Safety
7. A rectangular beam of 350 mm width and 600 mm depth is reinforced on both sides. The limiting stresses in concrete and steel are 7 N/mm^2 and 230 N/mm^2 respectively. Centres of the steel are 50 mm from both edges. If modular ratio $m = 13.33$, the steel area of beam to carry maximum bending moment of 140 kN-m will be
 - (a) 12.2247 mm^2
 - (b) 122.247 mm^2
 - (c) 1222.47 mm^2
 - (d) 12.2247 m^2
8. The quality of timber does **not** depend on
 - (a) height of tree.
 - (b) nature of soil.
 - (c) maturity of tree.
 - (d) time of felling.
9. In this system, the shutter has the top and the bottom supports and rotates about a vertical axis passing through them.
 - (a) Fork system
 - (b) L-type hinge system
 - (c) Pivot system
 - (d) Clamp-type hinge system
10. Moody equation is valid for
 - (a) $Re < 4 \times 10^3$
 - (b) $Re > 1 \times 10^7$
 - (c) $Re = 1000$
 - (d) $4 \times 10^3 \leq Re \leq 1 \times 10^7$

11. A hydraulic ram pump is useful where the water source flows constantly and the usable fall from the water source to the pump location is
- zero.
 - at least 1 m.
 - less than 1 m.
 - 0.25 m to 0.5 m.
12. The Upflow Anaerobic Sludge Blanket (UASB) process consists of the following stages :
- Hydrolysis
 - Acidogenesis
 - Acetogenesis
- Only 1
 - Only 2
 - Only 3
 - 1, 2 and 3
13. Secondary treatment of water can reduce about
- 35% of BOD and 60% of suspended solid waste.
 - 90% of BOD and 90% of suspended solid waste.
 - 60% of BOD and 35% of suspended solid waste.
 - 60% of BOD and 60% of suspended solid waste.
14. The length of the offset is 15 m and the scale of the plan 10 m to 1 cm. If the offset is laid out 3° from its true direction, the displacement of the plotted point on the paper perpendicular to the chain line is
- 0.001 cm
 - 0.002 cm
 - 0.003 cm
 - 0.004 cm
15. The fore bearings of the lines AB, BC, CD and DE are $45^\circ 30'$, $120^\circ 15'$, $200^\circ 30'$ and $280^\circ 45'$ respectively. $\angle B$ and $\angle C$ will be
- exterior $\angle B = 260^\circ 15'$ and exterior $\angle C = 99^\circ 45'$
 - exterior $\angle B = 99^\circ 45'$ and exterior $\angle C = 260^\circ 15'$
 - interior $\angle B = 99^\circ 45'$ and interior $\angle C = 105^\circ 15'$
 - interior $\angle B = 105^\circ 15'$ and interior $\angle C = 99^\circ 45'$
16. For a linear induction motor, synchronous speed is given by
- $2 \times (\text{width of one pole-pitch}) - (\text{supply frequency})$
 - $2 \times (\text{width of one pole-pitch}) + (\text{supply frequency})$
 - $2 \times (\text{width of one pole-pitch}) / (\text{supply frequency})$
 - $2 \times (\text{width of one pole-pitch}) \times (\text{supply frequency})$
17. A single-acting reciprocating pump has a 15 cm piston with a crank of radius 15 cm. The delivery pipe has 10 cm diameter. At a speed of 60 rpm, 310 litres/min of water is lifted to a total height of 15 m. The coefficient of discharge will be
- 1.5
 - 1
 - 0.975
 - 0.778
18. A centrifugal pump has an impeller of outer diameter of 20 cm and inner diameter of 10 cm. If the manometric head is 4 m, what is the minimum speed at which the pump commences to work ?
- 97 rpm
 - 977 rpm
 - 927 rpm
 - 92 rpm

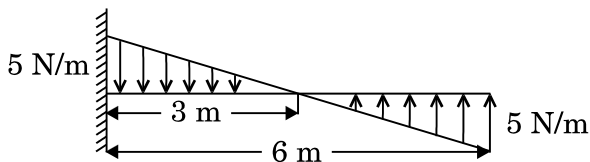
19. Speed ratio K_u of centrifugal pumps varies from
- 0.1 to 0.25
 - 0.25 to 0.5
 - 0.5 to 0.95
 - 0.95 to 1.25
20. The advantages of air vessels on suction side in reciprocating pump are :
- it reduces cavitation possibility.
 - it enables the suction pipe length to be increased.
 - it causes savings in power due to reduction of friction loss.
- 1 and 2
 - 1 and 3
 - 2 and 3
 - 1, 2 and 3
21. A centrifugal pump discharges $0.25 \text{ m}^3/\text{s}$ of water at a head of 25 m when running at a speed of 1450 rpm. The manometric efficiency is 82%. If the impeller has an outer diameter of 30 cm and width of 5 cm, the vane angle at the outlet will be
- 14.80°
 - 28.80°
 - 30.80°
 - 34.80°
22. The basic current–voltage characteristic of the solar cell can be derived by solving the
- Semiconductor equation.
 - Equilibrium-carrier equation.
 - Minority-carrier diffusion equation.
 - Poisson's equation.
23. In these systems, the optimum operating voltage is derived from measured currents, voltages or the power of the PV generator. Therefore, they are able to react to changes in the generator's performance.
- Linear charge controllers
 - Indirect MPP trackers
 - Switching controllers
 - Direct MPP trackers
24. In a closed or dense air refrigeration cycle, reduction in operating pressure ratio results in
- zero Coefficient of Performance.
 - lower Coefficient of Performance.
 - higher Coefficient of Performance.
 - equal Coefficient of Performance.
25. A cold storage is to be maintained at -5°C while the surroundings are at 35°C . The heat leakage from the surroundings into the cold storage is estimated to be 29 kW. The actual COP of the refrigeration plant is one-third of an ideal plant working between the same temperatures. What will be the power required to drive the plant ?
- 12.987 kW
 - 129.87 kW
 - 15.987 kW
 - 159.87 kW
26. A conference room of 60 seating capacity is to be air-conditioned for comfort conditions of 22°C dry bulb temperature and 55% relative humidity. The outdoor conditions are 32°C dry bulb temperature and 22°C wet bulb temperature. The quantity of air supplied is $0.5 \text{ m}^3/\text{min}/\text{person}$. The comfort conditions are achieved first by chemical dehumidification and then by cooling coil. The capacity of dehumidifier will be
- 7.968 kg/min
 - 7.968 kg/s
 - 7.968 kg/h
 - 79.68 kg/min

- 27.** The degree of warmth or cold felt by human body depends on :
1. dry bulb temperature
 2. relative humidity
 3. air velocity
- (a) Only 1
 (b) Only 2
 (c) Only 3
 (d) 1, 2 and 3
- 28.** If a project costs ₹ 12.5 Cr. to implement and has annual net cash inflows of ₹ 2.5 Cr., then the payback period will be
- (a) 5 years
 (b) $\sqrt{12.5}$ years
 (c) 2.5 years
 (d) 12.5 years
- 29.** Which of the following is also referred to as the Net Present Value (NPV) method ?
- (a) Payback period
 (b) Discounted cash flow
 (c) Profitability index
 (d) Internal rate of return
- 30.** Which of the following is/are the characteristic/characteristics of critical path ?
1. It is the longest path (time-wise) connecting the initial and final events.
 2. It may not run through dummy activity/activities.
 3. It is possible that a network may have more than one critical path.
- (a) Only 1
 (b) Only 2
 (c) 1 and 3
 (d) 2 and 3
- 31.** The Profitability Index (PI) is the ratio of
- (a) present value of cash inflows and initial cash outflow.
 (b) future value of cash inflows and initial cash outflow.
 (c) present value of cash inflows and initial cash inflows.
 (d) future value of cash inflows and initial cash inflows.
- 32.** As per EOQ cost model, the minimum total cost and optimal order is obtained when
- (a) slope of ordering cost curve is zero.
 (b) slope of carrying cost curve is zero.
 (c) slope of total cost curve is zero.
 (d) carrying cost is zero.
- 33.** It is a temporary loan meant for tying up the capital cost of a project.
- (a) Internal accrual
 (b) Unsecured loan
 (c) Term loan
 (d) Bridge finance
- 34.** The power input to a 500 V, 50 Hz, 6-pole, 3-phase induction motor running at 975 rpm is 40 kW. The stator losses are 1 kW and the friction and windage losses total 2 kW. The shaft power and the efficiency will be
- (a) 36 kW and 90% respectively
 (b) 90 kW and 36% respectively
 (c) 36 kW and 36% respectively
 (d) 90 kW and 90% respectively

- 35.** Hydraulic jump is used for
- increasing the depth of flow.
 - reducing the energy of flow.
 - decreasing the velocity of flow.
 - increasing turbulence.
- 36.** A hyetograph is a plot of
- cumulative rainfall vs. time.
 - rainfall intensity vs. time.
 - rainfall depth vs. duration.
 - discharge vs. time.
- 37.** A triangular notch is preferred to a rectangular notch because
- only one reading is required.
 - it gives more accurate results for low discharges.
 - it measures a wide range of flows accurately.
 - All of the above
- 38.** A body floating in a liquid is said to be in neutral equilibrium, if its metacentre
- coincides with its centre of gravity.
 - lies above its centre of gravity.
 - lies below its centre of gravity.
 - lies between the centre of buoyancy and the centre of gravity.
- 39.** The power transmitted through the pipe is maximum when the head lost due to friction is equal to
- one-fourth of the total supply head.
 - one-third of the total supply head.
 - one-half of the total supply head.
 - two-third of the total supply head.
- 40.** If a beam is subjected to a constant bending moment along its length, then the shear force will
- also have a constant value everywhere along its length.
 - be zero at all sections along the beam.
 - be maximum at the centre and zero at the ends.
 - be zero at the centre and maximum at the ends.
- 41.** The number of independent elastic constants required to express the stress-strain relationship for an elastic isotropic material is
- one.
 - two.
 - three.
 - four.
- 42.** At the points of contraflexure the
- stress is zero.
 - shear force is zero.
 - bending moment is zero.
 - slope is zero.
- 43.** Efflorescence in cement is caused due to an excess of
- iron oxide.
 - alkalis.
 - magnesium oxide.
 - silica.
- 44.** The degree of saturation of zero void line is
- 0%
 - 25%
 - 50%
 - 100%
- 45.** If the sand in situ is in its densest state, the relative density of sand is
- zero.
 - 1.
 - between 0 and 1.
 - greater than 1.

46. Quicksand is a
- type of sand.
 - flow condition occurring in cohesive soils.
 - flow condition occurring in cohesionless soils.
 - flow condition occurring in both cohesive and cohesionless soils.
47. For a given discharge, the efficiency of sedimentation tank can be increased by
- increasing the depth of tank.
 - decreasing the depth of tank.
 - increasing the surface area of tank.
 - decreasing the surface area of tank.
48. For a wastewater, the 5-day BOD at 20°C is found to be 200 mg/L. For the same wastewater, 5-day BOD at 30°C will be
- less than 200 mg/L.
 - more than 200 mg/L.
 - 200 mg/L.
 - zero, as all bacteria will die.
49. Bottom-most layer of pavement is known as
- wearing course.
 - base course.
 - sub-base course.
 - sub-grade.
50. Which of the following is associated with "limiting gradient" on highways ?
- Requirement of maximum tractive effort for a short distance
 - Requirement of minimum tractive effort on the whole gradient
 - Efficient drainage condition
 - Alignment design in general
51. For starting a DC motor, a starter is required because
- it limits the speed of the motor.
 - it limits the starting current to a safe value.
 - it starts the motor.
 - None of the above
52. By looking at which part of the motor, can it be easily confirmed that a particular motor is a DC motor ?
- Frame
 - Shaft
 - Commutator
 - Stator
53. In a pressure enthalpy chart, the space to the left of the saturated liquid line represents
- wet vapour region.
 - subcooled liquid region.
 - superheated vapour region.
 - None of the above
54. For better COP of refrigerator, the pressure range corresponding to temperature in evaporator and condenser must be
- high.
 - small.
 - equal.
 - anything.
55. For ammonia refrigerating systems, the tubes of a shell and tube condenser are made of
- copper.
 - steel.
 - aluminum.
 - brass.
56. The difference between the total float and free float is called
- duration.
 - interfering float.
 - critical activity.
 - None of the above

57. The most important purpose of frog in a brick is to
- emboss manufacturer's name.
 - reduce the weight of brick.
 - form keyed joint between brick and mortar.
 - improve insulation by providing hollows.
58. Which one of the following is the nominal size of standard modular brick ?
- 25 cm × 13 cm × 8 cm
 - 25 cm × 10 cm × 8 cm
 - 20 cm × 10 cm × 10 cm
 - 20 cm × 15 cm × 10 cm
59. 'Red Shortness' is the defect, related to
- timber
 - brick
 - limestone
 - steel
60. Which of the following tests is conducted to determine the strength of hardened existing concrete ?
- Bullet test
 - Kelly ball test
 - Rebound hammer test
 - Cone penetrometer
61. A cantilever beam of 6 m span is subjected to a uniformly varying load as shown. The bending moment at the middle of the beam is



- 27.5 Nm
- 15.0 Nm
- 22.0 Nm
- 18.7 Nm

62. A circular shaft was subjected to torsion initially and then subjected to a bending moment. If the maximum bending stress and maximum torsional shear stress had same value, then the ratio of torque applied to bending moment is
- 1/2
 - 3/4
 - 3/2
 - 2
63. Which of the following cross-sections has the highest shape factor ?
- Rectangle
 - Diamond
 - Triangle
 - Circle
64. Permissible bending tensile stress in high yield strength deformed bars of grade 415 in a beam is
- 190 N/mm²
 - 230 N/mm²
 - 140 N/mm²
 - None of the above
65. The economic spacing of a roof truss depends upon the
- cost of purlins and cost of roof covering.
 - cost of roof covering and dead loads.
 - dead loads and live loads.
 - live loads and cost of purlins.
66. Factor of Safety (FoS) adopted for concrete and steel as per working stress method of design is
- 3 and 1.15
 - 1.5 and 1.15
 - 1.5 and 1.78
 - 3 and 1.78

67. Lateral ties in RC columns are provided to resist
- bending moment.
 - shear.
 - buckling of longitudinal steel bars.
 - both bending moment and shear.
68. What is the anchorage value of a standard hook of a reinforcement bar of diameter D ?
- 4D
 - 8D
 - 12D
 - 16D
69. If 'B' is the width of formation, d is the height of the embankment, side slope S : 1, for a highway with no transverse slope, the area of the cross-section is
- $B/d \times Sd$
 - $Bd + Sd^{1/2}$
 - $Bd + Sd^2$
 - $1/2(Bd + Sd^2)$
70. The probability distribution taken to represent the completion time in Program Evaluation and Review Technique (PERT) analysis is
- gamma distribution.
 - normal distribution.
 - beta distribution.
 - log-normal distribution.
71. The moisture tension of soil is 8 atm. The soil is then at
- permanent wilting point.
 - field capacity.
 - optimum moisture content.
 - equivalent moisture.
72. If ρ is the specific gravity of the material used in the design of a masonry dam of triangular section, then the ratio between the height and base width of the dam for structural safety and stability is equal to
- $\sqrt{2\rho}$
 - $\sqrt{\rho}$
 - $1/\rho$
 - $1/\sqrt{\rho}$
73. MPN index is a measure of which one of the following ?
- Coliform bacteria
 - BOD₅
 - Dissolved oxygen content
 - Hardness
74. Flocculation is a process
- that removes algae from stabilization pond effluent.
 - that promotes the aggregation of small particles into larger particles to enhance their removal by gravity.
 - that mixes the coagulant in water.
 - None of the above
75. As per IS : 4954 – 1964; an acceptable noise level for residential and business urban areas is
- 40 – 50 dB
 - 30 – 40 dB
 - 15 – 25 dB
 - 50 – 60 dB
76. SO_x in atmosphere is measured by
- non-dispersive infrared analyzer.
 - West-Gaeke method.
 - sodium arsenate method.
 - gas chromatography.
77. Black cotton soil exhibits large swelling and shrinkage due to the presence of the following clay mineral :
- Kaolinite
 - Illite
 - Montmorillonite
 - Halloysite
78. A 12-hr unit hydrograph of a catchment is triangular in shape with a base width of 144 hours and a peak discharge value 23 m³/s. This unit hydrograph refers to a catchment area
- 756 km²
 - 596 km²
 - 576 km²
 - None of the above
79. In case the conditions for maximum power for a DC motor are established, the efficiency of the motor will be
- 100%.
 - around 90%.
 - anywhere between 75% and 90%.
 - less than 50%.

80. Which motor should **not** be started on no-load ?
- Series motor
 - Shunt motor
 - Cumulatively compounded motor
 - Differentially compounded motor
81. The efficiency of a centrifugal pump is maximum when its blades are
- straight.
 - bent forward.
 - bent backward.
 - bent forward first and then backward.
82. In a single casing, multistage pump running at constant speed, the capacity rating is to be slightly lowered. It can be done by
- designing a new impeller.
 - trimming the impeller size to the required size by machining.
 - not possible.
 - some other alterations in the impeller.
83. The optimum value of vane exit angle for a centrifugal pump impeller is
- 10 – 15°
 - 20 – 25°
 - 30 – 40°
 - 50 – 60°
84. Operating a motor-driven centrifugal pump for an extended period of time under no flow conditions will cause
- pump failure from overspeed.
 - pump failure from overheating.
 - motor failure from overspeed.
 - motor failure from overheating.
85. Which one of the following actions will correct a cavitating centrifugal pump ?
- Increasing the pump speed
 - Lowering the pump suction pressure
 - Lowering the pump suction temperature
 - Cycling the pump off and on a few times
86. Which of the following should **not** be the characteristic of the solar cell material ?
- High absorption
 - High conductivity
 - High energy band
 - High availability
87. Which of the following cycles uses air as the refrigerant ?
- Ericsson
 - Stirling
 - Carnot
 - Bell-Coleman
88. The relative Coefficient of Performance is
- actual COP/theoretical COP.
 - theoretical COP/actual COP.
 - actual COP × theoretical COP.
 - 1 – actual COP × theoretical COP.
89. One of the purposes of sub-cooling the liquid refrigerant is to
- reduce compressor overheating.
 - reduce compressor discharge temperature.
 - increase cooling effect.
 - ensure that only liquid and not the vapour enters the expansion (throttling) valve.
90. The leaks in a refrigeration system using freon are detected by
- halide torch, which on detection, produces greenish flame lighting.
 - sulphur sticks, which on detection, give white smoke.
 - using reagents.
 - smelling.
91. The Coefficient of Performance (COP) of a refrigeration cycle with increase in evaporator temperature, keeping condenser temperature constant, will
- increase.
 - decrease.
 - remain unaffected.
 - increase or decrease depending on the type of refrigerant used.

- 92.** The earliest start time rule
- compares the activities starting time for an activity successor.
 - compares the activities end time for an activity predecessor.
 - directs when a project can start.
 - regulates when a project must begin.
- 93.** Activities A, B, and C are the immediate predecessors for Y activity. If the earliest finish times for the three activities are 12, 15, and 10, then the earliest start time for Y will be
- 10
 - 15
 - 12
 - 13
- 94.** Unlike the commonly used methods for aligning a pair of sequences, the Bayesian method _____ using a particular scoring matrix or designated gap penalties.
- does not depend on
 - depends on
 - is based on
 - involves
- 95.** The horizontal demand curve parallel to x-axis implies that the elasticity of demand is
- zero.
 - infinite.
 - equal to one.
 - greater than zero but less than infinity.
- 96.** Performance Management is
- the activity where a line manager sets objectives for his/her staff.
 - to develop punitive steps to address poor performance.
 - to ensure all stakeholder requirements will be met.
 - to comply with the requirements of HR.
- 97.** Preferable range of slump for the concrete to be used in heavily reinforced sections in slabs, beams, walls and columns should be
- 25 mm to 50 mm
 - 50 mm to 100 mm
 - 100 mm to 125 mm
 - 125 mm to 150 mm
- 98.** The state of plane strain at a point is represented by the strain components $\epsilon_x = -400(10^{-6})$, $\epsilon_y = 200(10^{-6})$ and $\gamma_{xy} = -150(10^{-6})$; the maximum in-plane shear strain will be
- $200(10^{-6})$
 - $-350(10^{-6})$
 - $-318(10^{-6})$
 - $618(10^{-6})$
- 99.** Two principal stresses at a point in a bar are 200 N/mm^2 (tensile) and 100 N/mm^2 (compressive). The resultant stress on a plane inclined at 60° to the axis of the major principal stress will be
- 180.27 N/mm^2
 - 280.27 N/mm^2
 - 140.87 N/mm^2
 - 240.87 N/mm^2
- 100.** When a material is subjected to the shearing stresses and the direct stress in one direction, the major principal stresses are
- of opposite nature.
 - positive.
 - equal.
 - zero.

SECTION-B

101. Who among the following is the Chief Justice of India ?

- (a) Justice S.A. Bobde
- (b) Justice N.V. Ramana
- (c) Justice Sanjiv Khanna
- (d) Justice Ranjan Gogoi

102. Who among the following wrote 'Ajj Aakhaan Waris Shah Nu' ?

- (a) Amrita Pritam
- (b) Nanak Singh
- (c) Shiv Kumar Batalvi
- (d) Dalip Kaur Tiwana

103. Consider the following pairs :

<i>Protected areas</i>	<i>Well known for</i>
1. Manas	: One-horned Rhinoceros
2. Ranthambore	: Tiger
3. Periyar	: Elephant

Which of the above pairs is/are correctly matched ?

- (a) Only 1
- (b) Only 2 and 3
- (c) Only 1 and 3
- (d) 1, 2 and 3

104. Hybridoma technology is a new biotechnological approach for commercial production of

- (a) Monoclonal antibodies.
- (b) Interferon.
- (c) Antibiotics.
- (d) Alcohol.

105. Which of the following Schedules of the Constitution of India contains provision regarding Anti Defection Act ?

- (a) 10th Schedule
- (b) 11th Schedule
- (c) 12th Schedule
- (d) 9th Schedule

106. Consider the following pairs :

<i>Pair</i>	<i>Rivers</i>	<i>Dams</i>
1.	Sutlej	: Bhakra Dam
2.	Beas	: Pond Dam
3.	Ravi	: Ranjit Sagar Dam

Which of the pairs given above are correctly matched ?

- (a) Only 1 and 2
- (b) Only 2 and 3
- (c) Only 1 and 3
- (d) 1, 2 and 3

107. In a class of 45 students, a boy is ranked 20th. When two boys joined, his rank was dropped by one. What is his new rank from the end ?

- (a) 24th
- (b) 25th
- (c) 27st
- (d) 29th

108. The four children in the Baxi family are Reena, Ramesh, Shagun, and Sahana. The ages of the two teenagers are 13 and 15. The ages of the younger children are 5 and 7. From the following clues, determine the age of Reena.

1. Reena is older than Ramesh.
 2. Sahana is younger than Shagun.
 3. Sahana is 2 years older than Ramesh.
 4. Shagun is older than Reena.
- (a) 5
 - (b) 7
 - (c) 13
 - (d) 15

Directions : (Questions no. 109 to 113) :
Read the following information and answer the questions using this information.

In a conference room, six employees of a company are attending a meeting in a circular sitting arrangement. All employees are facing the centre of the circle.

- Purnima is sitting between Sahil and Manoj.
- Sahil and Kabir are sitting opposite to each other.
- Sneha is sitting between Kabir and Raman.

109. Who is just right to Manoj ?

- (a) Sahil
- (b) Kabir
- (c) Purnima
- (d) Raman

110. Who are neighbours of Kabir ?

- (a) Sneha and Manoj
- (b) Sneha and Sahil
- (c) Purnima and Sahil
- (d) Raman and Manoj

111. Who is sitting just right to Sahil ?

- (a) Manoj
- (b) Sneha
- (c) Kabir
- (d) Raman

112. Who is sitting opposite to Raman ?

- (a) Sahil
- (b) Manoj
- (c) Purnima
- (d) Kabir

113. Which two employees are sitting next to each other ?

- (a) Sahil and Manoj
- (b) Purnima and Sneha
- (c) Manoj and Raman
- (d) Sahil and Raman

114. Which two words given below are the most opposite in meaning ?
wealth, equity, revenue, bias, empathy, profit
(a) wealth and equity
(b) equity and bias
(c) revenue and profit
(d) empathy and bias
115. Blueberries cost more than strawberries. Blueberries cost less than raspberries. Raspberries cost more than strawberries and blueberries. If the first two statements are true, the third statement is
(a) true.
(b) false.
(c) uncertain.
(d) not clear.
116. Four friends studying in an Engineering College are from different cities and they are in one of the two departments — Electronics and Civil. Tinku is from Kolkata. One of the Electronics students is from Bhopal. Pinku belongs to Electronics but is not from Hyderabad. Chinku is not from Chennai and is not in Electronics. Minku and Tinku belong to the same Department. If Pinku is not from Bhopal, then which of the following is true ?
(a) Pinku is from Chennai.
(b) Chinku is from Hyderabad.
(c) Minku is from Bhopal.
(d) All of the above
117. The Senkaku Islands dispute or the Diaoyu Islands dispute is a territorial dispute over a group of uninhabited islands between which of the following Asian countries ?
(a) China and Vietnam
(b) China and Myanmar
(c) China and Cambodia
(d) China and Japan
118. Which of the following traditional songs of Punjab is **not** related to Marriage ?
(a) Suhaag
(b) Alhanian
(c) Ghorian
(d) Sithanian
119. The following have served as Chief Ministers of the State of Punjab after independence. Arrange them in a chronological order :
1. Pratap Singh Kairon
2. Bhim Sen Sachar
3. Gopi Chand Bhargava
4. Beant Singh
(a) 3, 2, 1, 4
(b) 1, 2, 3, 4
(c) 2, 3, 4, 1
(d) 4, 1, 2, 3
120. Which one of the following islands is **not** a part of Andaman and Nicobar Islands ?
(a) Long Island
(b) Narcondam
(c) Kavaratti
(d) Havelock

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