

DO NOT BREAK THE SEAL OF THE BOOKLET UNTIL YOU ARE TOLD TO DO SO

SERIES : I

QUESTION BOOKLET

Subjects : General English, General Knowledge and Civil Engineering

Full Marks : 300

Time Allowed : 2½ Hours

Read the following instructions carefully before you begin to answer the questions.

INSTRUCTIONS TO CANDIDATES

1. This Booklet contains **150 questions** to be answered in a separate OMR Answer Sheet using Black Ballpoint Pen in the following three Parts :

Part—A : General English	: 25 questions
Part—B : General Knowledge	: 25 questions
Part—C : Civil Engineering	: 100 questions

2. All questions are compulsory.
3. You will be supplied the Answer Sheet separately by the Invigilator. You must complete the details of particulars asked for.
4. Answer must be shown by completely blackening the corresponding circle in the Answer Sheet against the relevant question number by Black Ballpoint Pen. OMR Answer Sheet without marking Series shall not be evaluated.

Example :

Suppose the following question is asked :

The Capital of Meghalaya is

- (A) Guwahati
(B) Kohima
(C) Shillong
(D) Delhi

You will have four alternatives in the Answer Sheet for your response corresponding to each question of the Question Booklet as below :

(A) (B) (C) (D)

In the above illustration, if your chosen response is alternative (C), i.e., Shillong, then the same should be marked on the Answer Sheet by blackening the relevant circle with a Black Ballpoint Pen only as below :

(A) (B) (C) (D)

The example shown above is the only correct method of answering.

5. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any one question.
6. There will NOT be any negative marking for wrong answers.
7. The Answer Sheet must be handed over to the Invigilator before you leave the Examination Hall.
8. No Rough Work is to be done on the Answer Sheet. Space for Rough Work has been provided in the Question Booklet.

PART—A : GENERAL ENGLISH

(Marks : 50)

Each question carries 2 marks

Directions (Q. Nos. 1-5) :

Read the following passage and answer the questions by selecting the answer choice from the alternatives given. Mark the correct answer in your answer sheet.

The Titanic was a huge ship with six different parts separated by steel doors. It was also fitted with wireless, a wonder of the time. The night of the 14th of April 1912 was very cold. There was no moon and hardly any wind. The Titanic was in the part of the Atlantic in which icebergs cause trouble. Icebergs come from the North when the ice breaks up and they move on the water towards the South. Ice is hard enough to cut holes in steel and cannot easily be seen at night.

The Wireless Officer of the Titanic had received several signals telling him that ice was not away and he knew very well that icebergs can send big ships to the bottom of the sea. Most of these signals were passed on to the Officers, but one was not. It was a signal from another ship, the Mesaba, reporting icebergs in front of the Titanic. He was so busy that he did not report the ice immediately. The signal lay on his table, half-forgotten. The two men who were watching for icebergs suddenly saw something dark just in front of the ship.

They immediately rang the ship's bell and Lee telephoned the Officer of the watch to report the iceberg. The necessary orders were given at once though it was impossible to stop a great ship immediately, especially when it was

moving at about twenty-five miles an hour. But the Officer did his best. The ship was turned away from its straight course. But it was all too late.

Too late! The ship struck the iceberg with its side while it was still moving forward. In a few minutes, six great holes were made in the steel. Water rushed in, not in one place but in separate places covering three hundred feet. The Titanic began to sink. The impossible happened.

1. What type of ship was the Titanic?
 - (A) A cargo ship
 - (B) A luxury liner
 - (C) A fishing boat
 - (D) A warship
2. What was the weather like on the night of the Titanic's sinking?
 - (A) Warm and sunny
 - (B) Cold and windy
 - (C) Cold and calm
 - (D) Hot and humid
3. What was the cause of the Titanic's sinking?
 - (A) A fire on board
 - (B) A storm
 - (C) A collision with an iceberg
 - (D) A mechanical failure

4. What was the name of the ship that sent a signal warning the Titanic of nearby icebergs?

- (A) The Mesaba
- (B) The Carpathia
- (C) The Britannic
- (D) The Lusitania

5. How fast was the Titanic moving when it struck the iceberg?

- (A) 15 miles per hour
- (B) 20 miles per hour
- (C) 25 miles per hour
- (D) 30 miles per hour

Directions (Q. Nos. 6-8) :

From the given underlined idioms, choose the best alternative which expresses the closest meaning of the idiom. Mark the correct answer in your answer sheet.

6. I do not see eye to eye with you in this matter.

- (A) To have the same eyesight
- (B) To give the correct decision
- (C) To have the same opinion
- (D) To obtain suitable punishment

7. His argument does not hold water.

- (A) To influence
- (B) To have effect
- (C) Have sound logical fact
- (D) To check the flow of water

8. The effort to trace the culprit was a wild goose chase.

- (A) Fruitful hunting
- (B) Futile search
- (C) Ideal seeking
- (D) Genuine effort

Directions (Q. Nos. 9-11) :

In the following questions, substitute each expression with a single word from among the given alternatives. Mark the correct answer in your answer sheet.

9. One who eats too much

- (A) Foodie
- (B) Glutton
- (C) Eater
- (D) Cook

10. A vain boasting fellow

- (A) Loudmouth
- (B) Liar
- (C) Rascal
- (D) Braggart

11. The science of plants

- (A) Astronomy
- (B) Zoology
- (C) Botany
- (D) Biology

Directions (Q. Nos. 12-14) :

In the following questions, choose a word that is opposite in meaning with the given word from among the given alternatives. Mark the correct answer in your answer sheet.

12. Eradicate

- (A) Preserve
- (B) Remove
- (C) Alleviate
- (D) Obstinate

13. Fair

- (A) Untrue
- (B) Unjust
- (C) Coarse
- (D) Harsh

14. Liberty

- (A) Freedom
- (B) Liberation
- (C) Bonded
- (D) Crowded

Directions (Q. Nos. 15-17) :

In the following questions, choose a word that is most similar in meaning with the given word from among the given alternatives. Mark the correct answer in your answer sheet.

15. Flung

- (A) Threw
- (B) Caught
- (C) Cast
- (D) Spat

16. Redeem

- (A) Punish
- (B) Save
- (C) Forget
- (D) Forgive

17. Annoy

- (A) Review
- (B) Revoke
- (C) Lazy
- (D) Offend

Directions (Q. Nos. 18-21) :

In the following questions, some sentences have errors and some do not. The underlined words are the key words where you can identify whether the sentence is erroneous or not. From the given set of choices, choose the correct alternative for the identified errors. Where there is no error, choose the specified option (D). Mark the correct answer in your answer sheet.

18. After the summer break, school will open after two weeks.

- (A) begin
- (B) reopen
- (C) start
- (D) No error

19. The stream flowed gently under the bridge.

- (A) above
- (B) across
- (C) on
- (D) No error

20. The train from Chennai arrived right in schedule.

- (A) on
- (B) by
- (C) over
- (D) No error

21. The speeding driver is finally caught over the police.

- (A) up
- (B) under
- (C) by
- (D) No error

Directions (Q. Nos. 22-25) :

In the following cloze passage, there are blank spaces which are numbered. Against each number, choose the most appropriate choice in meaning from the set of given alternatives. Mark the correct answer in your answer sheet.

Broadly speaking, letters may be said to 22 into two classes, the formal and informal letters. Formal letters are 23 to official or business matters and are send to

an employer, officials of a department or institution. Letters to the 24 of a newspaper also belong to this class. On the other hand, informal letters are of a more 25 nature and addressed to known acquaintances like friends and family.

22. (A) fall

(B) rise

(C) describe

(D) explain

23. (A) deal

(B) contain

(C) related

(D) consist

24. (A) publisher

(B) printer

(C) salesman

(D) editor

25. (A) formal

(B) personal

(C) prescribed

(D) proper

PART—B : GENERAL KNOWLEDGE

(Marks : 50)

Each question carries 2 marks

26. Which of the following materials was used in making the Harappan seals?
- (A) Sandstone
(B) Jasper
(C) Lapis lazuli
(D) Steatite
27. Who among the following introduced a resolution in 1882 which is also called as the Magna Carta of Local Self-Government in India?
- (A) Lord Canning
(B) Lord Ripon
(C) Lord William Bentinck
(D) Lord Macaulay
28. Which of the following is also called Dry Ice in its solid form?
- (A) CaO
(B) Na_2CO_3
(C) CO_2
(D) SiO_2
29. In how many generations can a computer be classified?
- (A) 5
(B) 4
(C) 3
(D) 6
30. Which one of the following latitudes will experience a minimum angle of the Sun's rays when it is summer solstice in the Northern Hemisphere?
- (A) Tropic of Cancer
(B) Equator
(C) Tropic of Capricorn
(D) Arctic Circle
31. Mahendragiri, the highest peak of the Eastern Ghats, is in which of the following States?
- (A) Karnataka
(B) Odisha
(C) Andhra Pradesh
(D) Telangana

32. Which one of the following is formed when volcanic ash is carried by running water and is deposited as a sedimentary layer?

- (A) Lapilli
- (B) Basalt
- (C) Slate
- (D) Tuff

33. Vitamin B₁ is also known as

- (A) Riboflavin
- (B) Thiamin
- (C) Retinol
- (D) Tocopherol

34. Which one of the following is a non-conventional source of energy?

- (A) Petroleum
- (B) Natural gas
- (C) Tidal energy
- (D) Coal

35. 'La Liga' title is associated with which sport?

- (A) Hockey
- (B) Football
- (C) Cricket
- (D) Sailing

36. Which among the following is a landlocked water body?

- (A) Caspian Sea
- (B) Black Sea
- (C) Red Sea
- (D) Mediterranean Sea

37. Lira was the former currency of which country?

- (A) Portugal
- (B) Nigeria
- (C) Sri Lanka
- (D) Italy

38. National Youth Day is celebrated on which date in India?

- (A) 12th January
- (B) 28th February
- (C) 14th April
- (D) 17th January

39. The Chinese traveller Hiuen Tsang came to India during the reign of

- (A) Ashoka
- (B) Harshavardhana
- (C) Samudragupta
- (D) Chandragupta Vikramaditya

40. Bronze is an alloy of

- (A) zinc and iron
- (B) copper and tin
- (C) tin and zinc
- (D) iron and mercury

41. Who is awarded the Orange Cap in the Indian Premier League (IPL)?

- (A) The player with the most runs in the tournament
- (B) The player with the most wickets in the tournament
- (C) The player with the most catches in the tournament
- (D) The player with the highest batting average in the tournament

42. What is the official language of the State of Nagaland?

- (A) Nagamese
- (B) Angami
- (C) English
- (D) None of the above

43. Which of the following States has/have bicameral legislature?

- (i) Andhra Pradesh
- (ii) Bihar
- (iii) Telangana
- (iv) Uttar Pradesh

- (A) (i) only
- (B) (i), (ii) and (iii) only
- (C) (i) and (iii) only
- (D) (i), (ii), (iii) and (iv)

44. The rain shadow effect is associated with

- (A) orographic rainfall
- (B) cyclonic rainfall
- (C) frontal rainfall
- (D) convectional rainfall

45. Who among the following leaders started the Indian Home Rule League?

- (A) Gopal Krishna Gokhale
- (B) Mahatma Gandhi
- (C) Bal Gangadhar Tilak
- (D) Lala Lajpat Rai

46. The word 'Love' is associated with which of the sports given below?

- (A) Chess
- (B) Lawn Tennis
- (C) Basketball
- (D) Ice Hockey

47. The author of the famous novel, *The Da Vinci Code* is

- (A) Salman Rushdie
- (B) John Grisham
- (C) Dan Brown
- (D) Michael Crichton

48. Who among the following was the first female from India to receive the Nobel Peace Prize?

- (A) Mother Teresa
- (B) Nargis Dutt
- (C) Indira Gandhi
- (D) Sarojini Naidu

49. Article 21A of the Constitution of India provides Right to

- (A) Privacy
- (B) Equality
- (C) Education
- (D) Work

50. 'Kathak' is a classical dance form from which region of India?

- (A) Uttar Pradesh
- (B) Kerala
- (C) Karnataka
- (D) Odisha

PART—C : CIVIL ENGINEERING

(Marks : 200)

Each question carries 2 marks

51. A body weighing 300 N is resting on a rough horizontal table. A pull of 100 N applied at an angle of 15° with the horizontal just causes the body to slide over the table. The value of normal reaction is
(A) 274.12 N (B) 96.59 N
(C) 77.65 N (D) 80.38 N
52. A rolled steel joist girder of symmetrical I section has flange thickness a cm, width $6a$ cm; web thickness a cm, depth $8a$ cm. The moment of inertia of web about the x -axis is
(A) $122a^4 \text{ cm}^4$
(B) $42.67a^4 \text{ cm}^4$
(C) $286.67a^4 \text{ cm}^4$
(D) $213.33a^4 \text{ cm}^4$
53. A right circular cone is of 20 cm height, base 23 cm wide. A cone of 8 cm height is removed from the top. Determine the distance of CG of the frustum from the base.
(A) 14 cm (B) 10.33 cm
(C) 13 cm (D) 12.67 cm
54. A particle starting from rest moves in a straight line whose equation of motion is given by $s = t^3 - 2t^2 + 3$. The acceleration of the particle after 5 seconds is
(A) 55 m/s (B) 78 m/s²
(C) 26 m/s² (D) 55 m/s²
55. In belt and rope drive, when a forward motion of the driver occurs without carrying a belt with it, the phenomenon is known as
(A) slip of belt and follower
(B) cross slip
(C) slack slip
(D) slip of belt
56. A simply supported beam ACDB of 6 m span is loaded with a udl of 6 t/m over 2 m span AC from left support A, and 4 t/m over 2 m span BD from right support B. The value of shear force at C is
(A) -0.67 t (B) -3.33 t
(C) 8 t (D) -12 t
57. A steel wire of 5 mm diameter is bent into a circular shape of 5 m radius. Take $E = 2.0 \times 10^6 \text{ kg/cm}^2$. The maximum stress induced in the wire is
(A) 2000 kg/cm²
(B) 1000 kg/cm²
(C) 500 kg/cm²
(D) 735 kg/cm²
58. A simply supported beam of span 10 m is carrying a point load of 10 kN at a distance of 6 m from the left end. If $E = 200 \text{ GN/m}^2$ and $I = 1000 \times 10^6 \text{ mm}^4$, the slope at the left end is
(A) 0.00018 rad
(B) 0.00020 rad
(C) 0.00023 rad
(D) 0.00028 rad

59. A rectangular column 20 cm wide and 15 cm thick is carrying a vertical load of 1000 kg at an eccentricity of 5 cm in a plane bisecting the thickness. The maximum intensity of stress in the section is
- (A) 3.33 kg/cm²
 (B) 5.33 kg/cm²
 (C) 8.33 kg/cm²
 (D) 6.33 kg/cm²
60. A concrete dam of trapezoidal section having water on the vertical face is 16 m high. The base of the dam is 8 m wide and top 3 m wide. The total pressure of water per metre length is
- (A) 1255.7 kN (B) 2200 kN
 (C) 2533 kN (D) 2641 kN
61. The effective length of a fillet weld designed to transmit loading should not be less than
- (A) 5 times throat size
 (B) 5 times weld size
 (C) 4 times throat size
 (D) 4 times weld size
62. In the design of the lap joint for two plates of size 100 mm × 8 mm and 100 mm × 12 mm, the permissible stresses for plate in tension and weld are 150 MPa and 108 MPa. The full strength of the thinner plate is
- (A) 86.4 kN (B) 172.8 kN
 (C) 240 kN (D) 120 kN
63. A member of a roof truss consists of two angle irons 80 mm × 50 mm × 6 mm placed back to back on both sides of an 8 mm thick gusset plate. It carries a direct load of 71 kN. The strength of the rivets in double shear is
- (A) 37.8 kN (B) 43.3 kN
 (C) 75.6 kN (D) 86.6 kN
64. The principle of surveying to prevent accumulation of errors and to localize minor errors within the framework of control points is carried out by the method of
- (A) point location by measurement from two control points
 (B) working from the whole to the part
 (C) distance measurements
 (D) angular measurements
65. The area of a field is 45000 sq. m. The length and breadth of the field on the map are 9 cm and 8 cm. The representative fraction is
- (A) 1 : 45000 (B) 1 : 62500
 (C) 1 : 3000 (D) 1 : 2500
66. The angle of inclination between the longitudinal axis of the magnetic needle and the horizontal plane through its pivot is known as
- (A) dip (B) syncline
 (C) anticline (D) isocline
67. The whole circle bearing of the bearing 210° 30' is
- (A) S 59° 30' W (B) S 210° 30' W
 (C) S 210° 30' E (D) S 30° 30' W

68. The levelling operation carried out to determine the elevations of the points at known distances apart and also other salient features is known as
 (A) differential levelling
 (B) profile levelling
 (C) compound levelling
 (D) precision levelling
69. The effect of refraction on the observed readings is
 (A) opposite to that of curvature
 (B) along the bubbles on the spirit level
 (C) along the curvature
 (D) opposite to the reflection
70. A contour when drawn closer, it depicts
 (A) gentle slope
 (B) uniform slope
 (C) ridges
 (D) steep slope
71. The soundness of cement also gets improved by addition of
 (A) alumina (B) fly ash
 (C) magnesia (D) gypsum
72. The standard sand shall pass through IS 850 micron sieve and not more than 10% by mass
 (A) shall pass through IS 600 micron sieve
 (B) shall retain in IS 600 micron sieve
 (C) shall retain in IS 425 micron sieve
 (D) shall pass through IS 425 micron sieve
73. For high-strength Portland cement, the minimum compressive strength at the end of one day is
 (A) 11 MPa (B) 13 MPa
 (C) 23 MPa (D) 33 MPa
74. The aggregates having minimum voids ranging from 32% to 33% is characterized by which of the following shapes?
 (A) Angular (B) Mixed
 (C) Irregular (D) Rounded
75. For concrete having a slump value of 60 mm, its corresponding value for Vee-Bee test in seconds is
 (A) 4 to 5 (B) 3 to 4.5
 (C) 2 to 2.5 (D) 1 to 2
76. To determine the concrete's flexural tensile strength, it is necessary to know the load at which the concrete may
 (A) fail in bending
 (B) fail in compression
 (C) pull apart
 (D) crack
77. The concrete is affected by dissolving and removing part of the set cement due to
 (A) sulphate attack
 (B) acid attack
 (C) nitrite attack
 (D) efflorescence action

78. A value of 2.5 km/s was recorded for concrete when tested by ultrasonic pulse velocity method. This indicates the quality of concrete as
 (A) excellent (B) good
 (C) medium (D) poor
79. For cold work deformed bars of yield strength f_y , the partial safety factor of 1.15 is applied from
 (A) $0.80 f_y$ to f_y
 (B) $0.75 f_y$ to f_y
 (C) $0.85 f_y$ to f_y
 (D) $0.75 f_y$ to $0.90 f_y$
80. For curing in concrete work, which is protected from the sun and relative humidity is kept greater than 80%, such a degree of curing is termed as
 (A) poor (B) medium
 (C) excellent (D) good
81. The quantity of water available from the well per unit time is termed as
 (A) discharge (B) yield
 (C) flow (D) supply
82. Tuberculation that occurs inside the surface of water supply pipe is due to
 (A) bacterial action
 (B) high acid content
 (C) high oxide content
 (D) high alkaline content
83. Infiltration galleries are wells constructed
 (A) in vertical position relative to the river
 (B) in horizontal position relative to the river
 (C) along the river
 (D) at the river surface
84. Turbid water may protect pathogens from the effect of
 (A) oxidation (B) fluoride
 (C) cadmium (D) chlorination
85. The amount of alum in gm/litre generally used in water treatment varies from
 (A) 0.03 to 0.13
 (B) 0.60 to 1.20
 (C) 0.90 to 1.50
 (D) 0.30 to 0.60
86. For rapid sand filter, the thickness of coarse sand is
 (A) 0.25 m to 0.40 m
 (B) 0.35 m to 0.60 m
 (C) 0.60 m to 0.70 m
 (D) 0.80 m to 0.95 m

87. During the process of chlorination for water treatment, the step for producing the free available chlorine is due to the formation of

- (A) hypochloric acid
- (B) hypochlorous acid
- (C) nitrous acid
- (D) nitrites

88. The flow pattern for water supply layout in ring system is similar to

- (A) grid iron system
- (B) radial system
- (C) dead end system
- (D) None of the above

89. When the sewage is distributed over a ploughed and level area enclosed by dykes, it is known as

- (A) surface irrigation
- (B) surface spreading
- (C) furrow method
- (D) flooding

90. In oxidation pond, the sewage is retained for certain period to

- (A) make it non-putrescible
- (B) reduce oxide
- (C) reduce acidity
- (D) increase alkalinity

91. The dimension written as $[L^2T^{-1}]$ refers to

- (A) dynamic viscosity
- (B) shear stress
- (C) shear stress per unit mass
- (D) kinematic viscosity

92. The fluid which is non-viscous and incompressible is termed as

- (A) Newtonian fluid
- (B) ideal fluid
- (C) incompressible fluid
- (D) thixotropic fluid

93. Local atmospheric pressure – absolute pressure is known as

- (A) negative pressure
- (B) gauge pressure
- (C) barometric pressure
- (D) standard atmospheric pressure

94. The hoop tension inside a water supply pipe is due to the action of

- (A) velocity head
- (B) internal pressure
- (C) hydrostatic head
- (D) momentum

95. In the fluid, if the flow characteristics such as density, velocity, pressure, acceleration, etc., at a point do not change with time, the flow is said to be
(A) irrotational (B) uniform
(C) steady (D) laminar
96. When the total energy line is horizontal, it shows that the fluid flow is for
(A) uniform flow
(B) steady flow
(C) homogeneous flow
(D) ideal fluid
97. If we want to measure the position of hydraulic grade line without knowing the magnitudes of pressure and velocity at different locations, it is usually done by
(A) pitot tube
(B) Bourdon gauge
(C) orifice meter
(D) None of the above
98. In a turbine, when the flow is parallel to the turbine axis, such turbine is known as
(A) axial flow turbine
(B) mixed flow turbine
(C) radial flow turbine
(D) high-head turbine
99. Some activities in the network over which the management has no control, are known as
(A) dummies (B) events
(C) floats (D) constraints
100. When the normal time of an activity is reduced and when the cost of this activity will increase, this cost is known as
(A) crash cost
(B) inflation cost
(C) indirect cost
(D) abnormal cost
101. For moving the earth downhill for a short haul, it is suitable to use
(A) bulldozer
(B) tractor
(C) power shovel
(D) dragline
102. In Cashbook writing for PWD accounts, on receipt of imprest account, the unspent amount received back is shown on receipt side with red ink in the column
(A) 2 (B) 3
(C) 4 (D) 5
103. The road constructions, which were used in ancient time with large stone dressed blocks in lime mortar of 10 cm to 15 cm thick, are known as
(A) Telford roads
(B) Tresaguet roads
(C) Metcalf roads
(D) Roman roads

104. The Central Road Fund was set up under the recommendation of the
- (A) Nagpur Road Plan
 - (B) Indian Road Congress
 - (C) Jayakar Committee
 - (D) Bombay Road Plan
105. Lateral stability for granular base course and pavement is provided by
- (A) submerged kerb
 - (B) mountable kerb
 - (C) horizontal kerb
 - (D) transverse kerb
106. For safety in driving at more than design speed, if superelevation and lateral friction jointly cannot counteract the centrifugal force fully, then it is required to
- (A) reduce speed
 - (B) reduce radius of curve
 - (C) increase brake efficiency
 - (D) increase width of road
107. The maximum length of rising gradient, which a loaded truck can climb without causing any reduction in its speed, is known as
- (A) critical length of the gradient
 - (B) minimum gradient
 - (C) floating gradient
 - (D) limiting gradient
108. In highway, at a place of freezing temperature, frost action takes place due to the presence of water in
- (A) side slopes
 - (B) road surface
 - (C) side berms
 - (D) subgrade
109. A curve in a hill road going round a spur having upward convexity is known as
- (A) salient curve
 - (B) re-entrant curve
 - (C) hairpin bend curve
 - (D) aligned curve
110. The average speed of a vehicle in a certain road length is known as
- (A) average speed
 - (B) running speed
 - (C) time mean speed
 - (D) space mean speed
111. Flashing beacons when used in road are employed for the purpose of
- (A) pedestrian signals
 - (B) informatory signals
 - (C) aggregating signals
 - (D) separating signals

- 112.** To avoid damage to the inside edge of the rail due to wheel movement in railway track
- (A) double-headed rail is provided
 - (B) flat-footed rail is provided
 - (C) thick flange is adopted
 - (D) coning of wheel is provided
- 113.** When the rails are pushed off the track on the backward direction by the driving wheels of the locomotive and the remaining wheels of the locomotive push the rail in the direction of travel, this is contributed to creep due to
- (A) wave theory
 - (B) drag theory
 - (C) percussion theory
 - (D) forward push drag
- 114.** Composite sleeper index is related to
- (A) steel sleeper
 - (B) timber sleeper
 - (C) cast iron sleeper
 - (D) all types of sleeper
- 115.** In airport, blast pads are usually provided
- (A) at apron
 - (B) along full runway
 - (C) at the centre of runway
 - (D) at take-off ends of runway
- 116.** Calm period is the absence of appreciable wind which is
- (A) less than 4 kmph
 - (B) less than 6 kmph
 - (C) between 8 kmph to 10 kmph
 - (D) between 10 kmph to 12 kmph
- 117.** The simple type of timber trestle bridge is
- (A) single-pile, single-column type
 - (B) 2-legged type
 - (C) 3-legged type
 - (D) 4-legged type
- 118.** High-level causeway is characterized by
- (A) resting on higher level
 - (B) having larger vent
 - (C) higher vent height
 - (D) consisting of number of openings
- 119.** For building stone, the toughness index value to be termed as moderately tough is
- (A) less than 13
 - (B) between 13 and 19
 - (C) more than 19
 - (D) between 19 and 24
- 120.** The slaking of eminently hydraulic lime is
- (A) hardly noticeable
 - (B) very slow
 - (C) slow
 - (D) fast

121. The defect of timber caused by the rupture of tissue in circular direction is known as
 (A) heart shakes
 (B) ring shakes
 (C) radial shakes
 (D) cup shakes
122. The inert materials in plastic which increase strength and reduce brittleness of plastic are known as
 (A) powder fillers
 (B) fibrous fillers
 (C) laminated fillers
 (D) plasticizers
123. The varnish which gives sticky effect in warm weather is
 (A) spar varnish
 (B) flat varnish
 (C) oil varnish
 (D) asphalt varnish
124. When bitumen is blended with volatile solvent, the compound is known as
 (A) asphalt
 (B) bitumen emulsion
 (C) cutback bitumen
 (D) straight run bitumen
125. Herringbone bond in brick masonry belongs to
 (A) diagonal bond
 (B) zig-zag bond
 (C) raking bond
 (D) Dutch bond
126. The vertical member running through the middle part of the shutter of the door is known as
 (A) muntin (B) mullion
 (C) stile (D) reveal
127. The line joining the intersection of the face of each riser and top of each tread is known as
 (A) pitch (B) nosing line
 (C) walking line (D) pitch line
128. Porosity and void ratio are related by
 (A) $1 - e = n$
 (B) $n = \frac{e}{1 - e}$
 (C) $e = \frac{n}{1 - n}$
 (D) $\frac{1 + n}{n} = e - 1$
129. Placing of rooms adjacent to each other with respect to their relative utility is termed as
 (A) privacy
 (B) mass composition
 (C) aspect
 (D) grouping
130. As per IS 456 : 2000, the minimum percentage of tension reinforcement required in reinforced concrete beams of rectangular cross-section using steel of Fe 500 grade is
 (A) 0.12 (B) 0.15
 (C) 0.17 (D) 0.19

131. According to IS 456 : 2000, which one of the following statements about the depth of neutral axis $x_{u,bal}$ for a balanced reinforced concrete section is correct?
- $x_{u,bal}$ depends on the grade of steel only.
 - $x_{u,bal}$ depends on the grade of concrete only.
 - $x_{u,bal}$ depends both on the grade of concrete and steel.
 - $x_{u,bal}$ does not depend on the grade of concrete and steel.
132. For limit state of collapse, the partial safety factors recommended by IS 456 : 2000 for estimating the design strength of concrete and reinforcing steel are respectively
- 1.15 and 1.5
 - 1.0 and 1.0
 - 1.5 and 1.0
 - 1.5 and 1.15
133. The permissible bending tensile stress in high yield strength deformed bars for grade 415 N/mm² in beam is
- 140 N/mm²
 - 190 N/mm²
 - 230 N/mm²
 - None of the above
134. A singly reinforced rectangular concrete beam of width 300 mm and effective depth 400 mm is to be designed using M25 grade concrete and Fe 500 grade reinforcing steel. For the beam to be under-reinforced, the maximum number of 16 mm diameter reinforcing bars that can be provided is
- 6
 - 5
 - 4
 - 3
135. The soils that occur in the flood plain of river Brahmaputra are termed as
- laterite
 - alluvial
 - peat
 - black cotton
136. If the volume of soil mass is 68 cc, the volume of voids is 21 cc and the volume of water is 12 cc, the percentage of air voids is
- 13.3%
 - 8.2%
 - 1.51%
 - 15%
137. The coefficient of curvature for a well-graded soil is
- 0.6
 - 2.4
 - 3.6
 - 4.1
138. In a soil, the natural water content is equal to the water content at plastic limit. The consistency index of the soil is
- 0
 - <1
 - 1
 - >1
139. As per HRB classification of soil, the group index value for a soil that falls on the group A-2-5 is
- 0
 - max 2
 - max 4
 - max 8
140. Compaction by sheep's foot roller is suitable for
- sandy soil
 - clayey soil
 - gravelly soil
 - sandy gravel soil
141. The value of coefficient of the earth pressure at rest for dense sand is
- 0.4
 - 0.5
 - 0.6
 - 0.8

142. An infinite slope is inclined at an angle i° to the horizontal, the unit weight of the soil is $x \text{ kN/m}^3$ and the depth of the failure plane below surface is $l \text{ m}$. the normal stress component σ is
 (A) $lx \cos^2 i$ (B) $lx \cos i \sin i$
 (C) $lx \cos i$ (D) $lx \sin i$
143. Under-reamed pile is considered suitable to be used as foundation for
 (A) soil near the river
 (B) soil under the water
 (C) partially submerged soil
 (D) expansive soil
144. In a well foundation, curb
 (A) helps in dredging
 (B) facilitates sinking
 (C) acts as a stem
 (D) facilitates plugging
145. Which of the following is **not** a means of linear surveying method?
 (A) Theodolite
 (B) EDM
 (C) Tape
 (D) Chain
146. The ratio of yield of crop to the total amount of water used in the field is
 (A) field water use efficiency
 (B) water use efficiency
 (C) crop water use efficiency
 (D) water yield efficiency
147. The method considered to be most accurate for arriving at mean rainfall over an area is
 (A) arithmetic mean method
 (B) Thiessen's polygon method
 (C) geometric progression method
 (D) isohyetal method
148. For computing the runoff from daily runoff data, the condition required for the transition of the catchment from damp to wet is
 (A) 10 mm rainfall in the previous day
 (B) 5 mm rainfall in the previous day
 (C) 10 mm rainfall in the previous two days
 (D) 25 mm rainfall in the previous five days
149. In irrigation, the infiltration tanks are used in areas for
 (A) surface irrigation
 (B) subsurface irrigation
 (C) recharging aquifers
 (D) reducing canal losses
150. The accumulation of subsoil dissolved salts at the ground surface is due to
 (A) waterlogging
 (B) overflowing water from nearby river
 (C) transportation during normal precipitation
 (D) None of the above