1. The bottom edge of a roof surface is known as:

A. Eave
B. Verge

C. Span
D. Ridge

2. Amount of Silica in a good clay brick may vary from

A. 50-60 percent
B. 10-15 percent

C. 20 - 30 percent
D. 65-75 percent

3. Safe bearing pressure of soils can be improved by, (Pick the correct option)

(i) Increasing the depth of foundation

(ii) Vibroflotation.

A. Both option (i) and (ii) are false
B. Option (ii) alone is true

C. Both option (i) and (ii) are true
D. Option (i) alone is true

4. The Pigment Volume Concentration Number (PVCN) range of paint for prime coat on metals is

A. 55-60
B. 10-15

C. 25-40
D. 4. 50-70

5. A long sawn timber piece with parallel sides, having its thickness less than 50 mm and width more than 50mm are called

A. Boards
B. Plank

C. End
D. Scantling

6. Tarefelts were made

A. By impregnating vegetable or animal fibre mat with bitumen

B. By impregnating glass fibre mat with bentonite

C. By impregnating vegetable or animal fibre mat with clay

D. By impregnating steel fibre mat with bitumen

7. The main role of di-calcium silicate compound in cement

A. To provide colour effect in cement.

B. Flash set

C. To provide ultimate strength at the latter age.

D. To retard the flash setting of cement.

8. As per IS 4031-1988, the heat of hydration of low heat Portland cement for 7 days is

A. Should not be more than 120 calories per gram

B. Should not be more than 65 calories per gram

C. Should not be more than 100 calories per gram

D. Should not be more than 90 calories per gram

9. Timber can be made fire resistant by_____

A. Quenching

B. Charring

C. Hot and open tank treatment

D. Dipping and steeping process

10. Which concrete is characterized by high-flow ability?

A. Ferro cement

B. Fibre reinforced concrete

C. Shotcrete

D. Self-compacting concrete

11. As per IS 1786 :2008, what is the percentage of elongation failure of a Fe 415 HYSD bar?

A. 14.5

B. 12

C. 10

D. 23

12. A mortar for which both cement and lime are mixed is called

A. Cement mortar

B. Gauged mortar

C. Lime mortar

D. Light weight mortar

13. The cement-mortar mix normally adopted for plastering of R.C.C works is

A. 1:3 to 1:4

B. 1:1 to 1:2

C. 1:8 to 1:9

D. 1:5 to 1:5.5

14. As per IS 4031-1988, the heat of hydration of low heat Portland cement for 7 days :

A. Should not be more than 90 calories per gram

B. Should not be more than 65 calories per gram

C. Should not be more than 100 calories per gram

D. Should not be more than 120 calories per gram

15. Which of the following are correct steps in the making of brick earth ?

a. Digging

b. Weathering

c. Tempering

d. Blending

e. Unsoiling

A. e, a, c, b, d

B. e, a, b, d, c

C. a, e, b, d, c

D. e, a, d, b, c

16. The thermal coefficient of concrete is

A. $10 \times 10^{-6} / {}^\circ C$

B. $2.5 \times 10^{-6} / {}^\circ C$

C. $1 \times 10^{-6} / {}^\circ C$

D. $20 \times 10^{-6} / {}^\circ C$

17. Bull's trench kiln is used in the manufacturing of

A. Cement

B. Lime

C. Bricks

D. M-sand

18. Fineness of cement can be found by

A. Le – Chatelier apparatus

B. Vicat mould

C. Blaine's air permeability method.

D. Autoclave test

19. A splitting tensile test is performed on a cylinder of diameter 'D' and length 'L'. if the ultimate load is 'P' then the splitting tensile strength of concrete is given by

A. $\dfrac{P}{\pi DL}$

B. $\dfrac{2P}{\pi DL}$

C. $\dfrac{2PD}{\pi L^3}$

D. $\dfrac{4PD}{\pi D^3}$

20. Group I gives a list of test methods and test apparatus for evaluating some of the properties of Ordinary Portland Cement (OPC) and concrete.

Group II gives the list of these properties. The correct match of the items in Group I with the items in Group II is :

Group I	Group II
P. Le-Chatelier test	1. Soundness of OPC
Q. Vee-Bee set	2. Consistency and setting time of OPC
R. Blaine air permeability test	3. Consistency or Workability of concrete
S. Vicat Apparatus	4. Fineness of OPC

A. P-4, Q-2, R-4, S-1

B. P-1, Q-4, R-2, S-3

C. P-2, Q-3, R-1, S-4

D. P-1, Q-3, R-4, S-2

21. An instrument, shaped like watch and is carried in a pocket or attached to one leg is called

A. Chaining

B. Odometer

C. Passometer

D. Pedometer

22. A property fetches a net annual income of Rs. 900 deducting all outgoings. Workout the capitalized value of the property if the rate of interest is 5 percent per annum.

A. 12,000

B. 18,000

C. 15,000

D. 10,000

23. An old building has been purchased by a person at a cost of Rs.50,000/- excluding the cost of the land. Calculate the total amount of sinking fund accumulated assuming the future life of the building as 20 years and the scrap value of the building as 10 percent of the cost of purchase.

A. ₹ 22500

B. ₹ 90000

C. ₹ 60000

D. ₹ 45000

24. A light house is visible just above the horizon at a certain station above the sea level. The distance between the station and the light house is 50 km. find the height of the light house?

A. 168.20 m

B. 156 m

C. 122.50 m

D. 175 m

25. In a road, the subgrade shall be consolidated and compacted each with a camber of

A. 1 in 20

B. 1 in 60

C. 1 in 30

D. 1 in 10

26. As per IS 456: 2000, the design depth of concrete cover to all steel reinforcements, including links, is known as

A. Clear cover

B. Nominal cover

C. Effective cover

D. Normal cover

27. What will be the additional length of a bar if the bent up angle is 30°?

A. 0.27D

B. 0.42D

C. 0.1D

D. 0.58D

28. Of the following, which is the equipment not used in chain surveying?

A. Measuring tape

B. Leveling staff

C. Plumb bob

D. Offset rods

29. A type of estimate which is prepared when additional works or when further developments are required during the progress of work is called

A. Detailed estimate

B. Supplementary estimate

C. Annual repair estimate

D. Abstract estimate

30. _____ are the rights and privileges which a owner of a property enjoys through or over the property of another

A. Leasehold property

B. Mortgage

C. Freehold property

D. Easement

31. The length, breadth and depth of a excavated earthwork is 6m x 0.8 m and 0.9 m. calculate the total amount required for excavation if the rate of excavation per cubic metre is Rs. 300.

A. Rs.1472

B. Rs.1296

C. Rs. 1100

D. Rs. 1491

32. An integral part of the theodolite mounted on a spindle is

A. Vertical circle

B. Horizontal axis

C. A frame

D. Index frame

33. Unit of measurement of rock excavation is

A. Sq. m

B. Cu.m

C. Sq.ft

D. cm

34. According to standard specifications for First class brickwork, bricks shall have minimum crushing strength of

A. 35 kg per sq cm

B. 150 kg per sq cm

C. 65 kg per sq cm

D. 105 kg per sq cm

35. Estimate the quantity of brickwork required in a wall of 4 m long, 3 m high and 30 cm thick

A. 8.3 cu.m

B. 3.6 cu.m

C. 7.2 cu.m

D. 5.6 cu.m

36. _____ is the floor area of verandahs, passages, corridors, balconies, etc., which are used for the movements of persons using the building.

A. Plinth area

B. Floor area

C. Circulation area

D. Garden area

37. Find the area of permanent land required for a state highway for one kilometer length, the width of permanent land being 30 metre.

A. 1 hectare

B. 8 hectare

C. 3 hectare

D. 12 hectare

38. The unit of measurement for pile driving or sinking is

A. Metre

B. Quintal

C. Number

D. Point

39. _____ is a type of contract in which all the materials for construction are arranged and supplied at the site of work by the department or owner.

    A. Lump sum contract

    B. Labour engaged through contractors

    C. Cost plus percentage contract

    D. Labour contract

40. A type of contract system where the contractor undertakes the execution of a specific work with all its contingencies is

    A. Lump sum contract

    B. Schedule contract

    C. Item rate contract

    D. Manpower contract

41. A data model which divides the entire area into rectangular grid cells is called

    A. Information set model

    B. Vector data model

    C. Numerical data model

    D. Raster data model

42. A surveyor measured the distance between two points on the plane drawn to a scale of 1cm = 40 m and the result was 480 m. Later, however he discovered that he used a scale of 1cm =20m. Find the true distance between the two points?

    A. 725 m.

    B. 810 m.

    C. 960 m.

    D. 877m.

43. Compute the maximum capillary tension for a tube 0.007 mm in diameter?

    A. $8.32 kN/m^3$

    B. $6.05 kN/m^3$

    C. $4.32 kN/m^3$

    D. $1.83 kN/m^3$

44. Determine the value of critical hydraulic gradient for a loose deposit of sand having void ratio of 0.67 and specific gravity of 2.67

    A. 5

    B. 20

    C. 10

    D. 1

45. Beginning of the curve where the alignment changes from a tangent to a curve is

    A. Point of tangency

    B. Intersection angle

    C. Back tangent

    D. Point of curve

46. Pick the correct statement

a. The sum of the measured interior angles should be equal (2N-4) right angles.

b. If the exterior angles are measured, their sum should be equal to (2N+4) right angle.

Where N is the number of sides of the traverse.

    A. Statement (a) alone is true

    B. Statement (b) lone is true

    C. Both the statements are false

    D. Both statements (a) and (b) are true

47. The distance from the instrument and the target is called as

    A. Azimuth

    B. Slope distance

    C. Vertical angle

    D. Horizontal angle

48. The type of survey used for determining different strata in the earth's crust is

    A. Archaeological survey

    B. Military survey

    C. Mine survey

    D. Geological survey

49. Find the error of the reading in a level staff if the observed reading is 4.0 m at the point sighted, the staff being 10 cm off the vertical through the bottom.

A. 3 m

B. 3.4 m

C. 4 m

D. 3.5 m

50. The length of a line measured with a 20 metre chain was found to be 250 metres. Calculate the true length of the line if the chain was 10 cm too long.

A. 382.93 m

B. 12.42 m

C. 251.25 m

D. 98.6 m

51. The process of turning the telescope in vertical plane through 180º about the trunnion axis is known as

A. The horizontal axis

B. Changing face

C. Transiting

D. Telescope normal

52. The relationship between the length l and radius r of an ideal transition curve is stated as :

A. $1 \propto r$

B. $1 \propto \dfrac{1}{r}$

C. $1 \propto r^2$

D. $1 \propto \dfrac{1}{r^2}$

53. The scale of an aerial photograph is 1 cm = 100 m. The photograph size is 20 cm × 20 cm. Determine the number of photographs required to cover an area of 8 km ×12.5 km, if the longitudinal lap is 60 percent and the side lap is 30 percent

A. 150

B. 119

C. 26

D. 85

54. A soil has a bulk density of 22 kN/m^3 and water content 10%. The dry density of soil is

A. 30 kN/m^3

B. 15 kN/m^3

C. 10 kN/m^3

D. 20 kN/m^3

55. Bulk unit weight is the

A. Weight of solids per unit of its total volume of the soil mass.

B. Unit weight of soil solids per unit volume of solids.

C. Mass of solids per unit of total volume of the soil mass.

D. The total weight of a soil mass per unit of its total volume

56. Work out theoretical maximum dry density for a soil sample having a specific gravity of 2.7 and optimum moisture content of 19 percent.

A. 6.43 g/cm^3

B. 1.7845 g/cm^3

C. 3.48 g/cm^3

D. 0.558 g/cm^3

57. The value of the smallest division of circle of a repeating theodolite is 10 minutes. what is the suitable vernier to read up to 10 seconds.

A. 60

B. 30

C. 90

D. 110

58. The fore bearing of a line AB is found to be 12º 24′. Find the back bearing?

    A. 167°36′   B. 347°36′

    C. 192°24′   D. 4.77°6′

59. A soil sample has a porosity of 30 percent. Calculate the voids ratio?

    A. 0.11   B. 1.3

    C. 0.947   D. 0.428

60. Find the curvature correction for a distance of 1000 meters?

    A. 0.628 m   B. 2.137 m

    C. 3.734 m   D. 0.07849 m

61. Piping in soil occurs when

    A. Effective pressure becomes zero

    B. The soil is highly porous

    C. Sudden change in permeability occurs

    D. The soil is highly stratified

62. As per IS 1498-1970, the particle size of coarse gravel will range within

    A. 100 mm to 150 mm sieve   B. 4.75 mm to 2.0 mm sieve

    C. 80 mm to 20 mm sieve   D. 300 mm to 350 mm

63. The dimension for discharge is

    A. ML^{-3} B. $L^{3}T^{-1}$

    C. $L^{2}T^{-1}$ D. T^{-1}

64. Pycnometer is used to determine

    A. Shrinkage in soil   B. Plastic index of soil

    C. Liquid index of soil   D. Specific gravity of soil

65. Rise of ground water table above ground surface causes

    A. Effective stress first increase and the decreases

    B. No change in effective stress

    C. Decrease in effective stress

    D. Increase in effective stress

66. The ratio of plasticity Index to percentage of clay size particle is between 0.75 and 1.25, then it is

    A. Highly active clay   B. Active Clay

    C. Inactive clay   D. Normal clay

67. A soil stratum is 10 m thick with pervious stratum on top and bottom. Determine the time required for 50% Consolidation. Given that coefficient of permeability = 10^{-7} cm/s. Take the value for coefficient of compression = 0.0003 cm²/g void ratio = 2, time factor = 0.197 and γw = 1 gm/cm³

    A. 110 days   B. 570 days

    C. 50 days   D. 1100 days

68. If soil is dried beyond its shrinkage limit, it will show

A. Large volume change

B. Moderate volume change

C. No volume change

D. Low volume change

69. For a hydraulically efficient rectangular channel of bed width 5 m and a depth of flow is 2.5 m, then the hydraulic radius is

A. 0.883 m

B. 2.5 m

C. 5 m

D. 1.25 m

70. When Froude number is greater than one, the type of flow is known as

A. Shooting flow

B. Ideal flow

C. Tranquil flow

D. Critical flow

71. In a constant head parameter with cross section area of $10 cm^2$. When the flow was taking place under a hydraulic of 0.5, the amount of water collected in 60 second. Is 600cc. The permeability of the soil is

A. 0.002 cm/s

B. 0.02 cm/s

C. 0.2 cm/s

D. 2 cm/s

72. If the stream function $\varphi = 2x^3 - 3.5y^2$ what is the magnitude of velocity at point (2, 1) is?

A. 24

B. 25

C. 26

D. 15

73. The effective diameter of the soil particle is

A. D_{55}

B. D30

C. D60

D. D10

74. Compute the intensity of active earth pressure at depth of 8 meter in dry cohesion less sand with an angle of internal friction of 30° and unit weight of soil as $18 kN/m^3$.

A. $70 kN/m^3$

B. $61 kN/m^3$

C. $101 kN/m^3$

D. $48 kN/m^3$

75. Pick the true statement.

(i) Hydraulic jump occurs when a supercritical flow meets a subcritical flow of sufficient depth.

(ii) Hydraulic jump occurs when a supercritical flow meets a critical flow of sufficient depth.

A. Statement (i) is false and statement (ii) is true

B. Statement (i) and (ii) are true.

C. Statement (i) alone is true.

D. Statement (ii) alone is true

76. The specific gravity of Hematite is

A. 6.5

B. 5.2

C. 4.0

D. 1.2

77. Pressure of a fluid is measured by

A. Manometer

B. Thermometer

C. Pivot tube

D. Barometer

78. A point through which the force of buoyancy is supposed to act.

    A. Metacentric height
        B. Metacenter

    C. Centre of buoyancy
        D. Buoyancy

79. A laboratory test was carried on a soil sample obtained from a foundation site reveal the following. The total mass of soil sieved = 200 g and the cumulative mass retained on 75 mm micron sieve = 150 g. Calculate the percentage of soil finer than 75 micron sieve?

    A. 25 percent
        B. 10 percent

    C. 52 percent
        D. 5 percent

80. A real fluid in which the shear stress is directly proportional to the rate of shear strain is known as

    A. Ideal fluid
        B. Ideal plastic fluid

    C. Non Newtonian fluid
        D. Newtonian fluid.

81. The ratio of the volume of water actually striking the runner to the volume of water supplied by the jet to the turbine is known as.

    A. Overall efficiency
        B. Hydrauilc efficiency

    C. Mechanical efficiency
        D. Volumetric efficiency

82. Type of dam in which the external forces are resisted by the weight of the dam itself is.

    A. Arch dam
        B. Earth dam

    C. Gravity dam
        D. Rigid dam

83. In a town, the monthly precipitation is recorded as 28 cm and the mean temperature is recorded as 25°C over period of one month. Calculate the monthly runoff.

    A. 31 cm
        B. 5 cm

    C. 10 cm
        D. 16 cm

84. The boundary layer takes place for

    A. Ideal fluids
        B. Flow over flat plate only

    C. Pipe flow only
        D. Real fluids

85. Shear stress develops on a fluid element, if

    A. The fluid container is subject to uniform linear acceleration

    B. The fluid is in- viscous

    C. The fluid is at rest

    D. The fluid is viscous and the flow is non-uniform

86. The main function of a casing in Pelton turbine is to

    A. It divides the jet into two equal parts and gets deflected by 160º

    B. Makes the water to glide over the inner surface

    C. Is to prevent the splashing of water and to discharge water to tail race.

    D. Control the amount of water striking the bucket

87. A discharge of 1 cumec is flowing in a rectangular channel one metre wide at a depth of 20 cm. The bed slope of the channel is

    A. Mild
        B. Steep

    C. Adverse
        D. Critical

88. The temperature at which the air mass just becomes saturated if cooled at constant pressure with moisture neither added nor removed is called

A. Degree day   B. Dew point

C. Normal daily temperature   D. Mean daily temperature

89. A spring which is formed when the downward passage of ground water in a permeable deposit is hindered by an underlying impervious layer is called

A. Valley springs   B. Artesian spring

C. Fault spring   D. Stratum spring

90. The main function of corbel in a Buttress dam is

A. To support the water and transmit the water load to series of Buttress.

B. To help in transmitting the load from the upstream deck to the Buttress

C. To reduce (or) prevent seepage.

D. To reinforce the Buttress.

91. A dam has siphon spillway whose cross-section is 1 m high and 4 m wide. The tail water elevation at design flow is 6 m below the summit of the siphon and the head water elevation is 1.5 m above the summit. Assuring a coefficient of discharge of 0.6 what is the capacity of siphon?

A. 20.45 cumecs   B. 29.1 cumecs

C. 12.85 cumecs   D. 76.3 cumecs

92. A rectangular open channel of width 4.5 m carrying a discharge of 100m^3/sec. The critical depth of the channel is

A. 7.09 m   B. 1.31 m

C. 2.16 m   D. 3.69 m

93. A 25 cm diameter pipe carries oil of specific gravity at a velocity of 3 m/s. at another section the diameter is 20 cm. Find the velocity at this section.

A. 4.68 m/s   B. 5.02 m/s

C. 11.74 m/s   D. 9.03 m/s

94. For a pipe of radius r, flowing half full under the action of gravity, the hydraulic depth is

A. $\dfrac{r}{2}$ B. 2.0.379r

C. $\dfrac{\pi r}{4}$ D. r

95. The drainage system which consists of laterals and sub mains, in which laterals are provided only one side of sub main. This system is called

A. Herring bone pattern   B. Double main system.

C. Natural system   D. Grid iron layout

96. Find the delta for a crop if the duty for a base period of 110 days is 1400 hectares/cumec.

A. 68 cm   B. 100 cm

C. 12 cm   D. 34 cm

97. Which of the following non-automatic rain gauges is being used by Indian Meteorological Department?

A. Tipping bucket type rain gauge.

B. Float type rain gauge.

C. Symon's Rain gauge

D. Weighing bucket rain gauge.

98. Chezy's formula is given by_____, where, v is average velocity [m/s],

C is Chezy's coefficient

m is the hydraulic radius and

i is the hydraulic gradient,

A. $V = \sqrt{mci}$

B. $V = m\sqrt{ci}$

C. $V = c\sqrt{mi}$

D. $V = i\sqrt{mc}$

99. The word "unit" in the unit hydrograph denotes _____

A. Unit base period of the hydrograph

B. Arbitrary

C. The unit depth of run off

D. Unit duration of the storm

100. Acidic soils are reclaimed by _____

A. Provision of drainage

B. Leaching of the soil

C. Using lime stone as a soil amendment

D. Using gypsum as a soil amendment

101. Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched in the year

A. 2000

B. 2008

C. 2013

D. 2015

102. As per National Building Organization (NBO), for a 100 mm Φ server, the gradient required to generate self-cleansing velocity is:

A. 1 in 120

B. 1 in 60

C. 1 in 110

D. 1 in 100

103. A coagulation-sedimentation plant clarifies 40 million litre of water every day. The quantity of filter alum required at the plant is 18 mg/l. Determine the filter alum required per day at 18 mg/l

A. 410 kg

B. 837 kg

C. 720 kg

D. 156 kg

104. Which of the following is a secondary air pollutant?

A. Carbon dioxide

B. Sulphur dioxide

C. Carbon monoxide

D. Ozone

105. The signpost should be painted in:

A. 25 cm alternatively in black and white bands

B. 70 cm white and green bands

C. 50 cm black and yellow bands

D. 10 cm yellow and black bands

106. Determine the rate of super elevation for a horizontal highway curve radius of 500 m and speed 100 kmph.

A. 0.389

B. 0.089

C. 0.28

D. 0.027

107. The rate of change of temperature in the atmosphere with height is called as

A. Inversion

B. Lapse rate

C. Normal daily temperature

D. Dew point

108. A sprinkler irrigation system is suitable when

A. The water table is low

B. The land gradient is steep and the soil is easily erodible

C. The soil is having low permeability

D. The crops to be grown have deep roots.

109. The preferable unevenness index upto speed of 100 kmph is

A. 620 cm/km

B. 250 cm/km

C. 500 cm/km

D. 400 cm/km

110. Calculate the radius of a rotary curve for a vehicle speed of 30 kmph and coefficient of friction as 0.45

A. 22.34 m

B. 30.5 m

C. 15.75 m

D. 12.73 m

111. Calculate the diameter of a circular sewer laid at a slope of 1 in 400 when it is running half full with a velocity of 1.9 m/s. Take Manning's constant, n = 0.012.

A. 2.73 m

B. 1.23 m

C. 3.42 m

D. 5.61 m

112. The maximum legal axle load for highways as specified by IRC is

A. 1990 kg

B. 7200 kg

C. 8170 kg

D. 2340 kg

113. As per IRC, what is the minimum width of two lane carriage way with raised kerbs?

A. 3.5 m

B. 7.5 m

C. 12.5 m

D. 10 m

114. The high amount of fluoride in drinking water can cause:

A. Argyria

B. Mental disorders

C. Dental cavities

D. Blue baby syndrome

115. The valve used to remove the entire water within a pipe after closing the supply is called

A. Reflux valve

B. Air valve

C. Gate valve

D. Sluice valve

116. Delta (Δ) in cm, Duty (D) in hectare/ cumec and Base period (B) in days are related as

A. $D = 8.64\dfrac{B}{\Delta}$

B. $\Delta = 864 B / D$

C. $B = 864\,\Delta / D$

D. $B = 864 D / \Delta$

117. Maximum daily demand in supply is equal to

A. 2.5 × average daily demand

B. 4 × average daily demand

C. 2 × average daily demand

D. 1.8 × average daily demand

118. The minimum and maximum value of 15minute peak hour factor on a section of a road is respectively

A. 0.5 and 0.75

B. 0.25 and 0.5

C. 0.5 and 1

D. 0.25 and 1

119. A part of land that is acquired during initial stages of construction for future expansion is called

A. Footpath

B. Camber

C. Right of way

D. Kerb

120. Activated sludge process is an example of

A. Aerobic attached growth process.

B. Anaerobic suspended growth process.

C. Anaerobic attached growth process.

D. Aerobic suspended growth process.

121. What is the modular ratio of M25 grade of concrete if σ_{cbc} = 8.5 MPa

A. 12.04

B. 15.63

C. 14.39

D. 10.98

122. Transition zone in concrete is

A. Concrete shrinks when allowed to dry in air at low relative humidity

B. Time where concrete transfer from wet form to dry form

C. Zone between aggregate and hydrated cement paste

D. Cement particles taking part in hydration process

123. Mix proportion for M20 Grade Concrete is

A. 1:4:8

B. 1:3:6

C. 1:1.5:3

D. 1:2:4

124. In tests on aggregate, Los Angeles test is developed to overcome the defects found in

A. Impact test

B. Dorry Abrasion test

C. Deval test

D. Crushing test

125. The ordinate of influence line diagram for bending moment always will be

A. Force

B. Length

C. $\dfrac{Force}{Length}$

D. Force × length

126. Plastic shrinkage can be reduced by

A. Using aggregates of bigger size.

B. Preventing rapid loss of water from surface.

C. Replacing cement with other Pozzolanic materials

D. Dense compacting.

127. Which of the following test is not used for measurement of workability in concrete?

A. Normal consistency test

B. Flow test

C. Slump test

D. Kelly ball test

128. The separation of the constituent materials of concrete is known as

A. vibration

B. Segregation

C. Bleeding

D. Honeycombing

129. Arrange the following processes in order of their treatment given to the water

1. Filtration

2. Chlorination

3. Screening

4. Sedimentation

5. Aeration

A. 3,4,5,2,1

B. 1,3,2,5,4

C. 1,2,3,4,5

D. 3,5,4,1,2

130. Chlorosis is term a which denotes

A. Dropping of leaves

B. Downward curvature of the leaf

C. Killing of tissue

D. Reduction in the chlorophyll

131. The suitable method of disposal for discarded medicine

A. Disinfection

B. incineration

C. Discharge into sewers

D. Shredding

132. Revibration is a process used to manufacture which of the following type of concrete?

A. Lightweight concrete

B. Aerated concrete

C. Geo Polymer concrete

D. High performance concrete

133. What will be the Euler buckling load of a column of actual length l when it is fixed at one and free at other end?

A. $\dfrac{\pi^2 EI}{l^2}$

B. $\dfrac{4\pi^2 EI}{l^2}$

C. $\dfrac{\pi^2 EI}{4l^2}$

D. $\dfrac{2\pi^2 EI}{l^2}$

134. In a two system of forces Fi – 4 kN and F2 – 3 kN and the magnitude of resultant force R – 5 kN, find the angle (e)

A. 180°

B. 90°

C. 120°

D. 35°

135. Which of the following method is not used for finding deflection of determinate beams?

A. Macaulay's method

B. Moment distribution method

C. Moment area method

D. Strain energy method

136. As per 3306 : 1974 , the maximum permissible limit for lead effluent discharge into public sewers is

A. 1 mg/l

B. 5 mg/l

C. 12 mg/l

D. 4 mg/l

137. A simply supported beam carrying a uniformly distributed load of 8 kN/m over the whole span of 3m. What will be the maximum bending moment of the beam?

A. 686.7 N

B. 700.28 N

C. 327.13 N

D. 482 N

138. As per IS:10262:2009, standard deviation for M25 concrete is

A. 4.0

B. 3.5

C. 5.0

D. 4.5

139. The ratio of carry over moment to applied moment is called as

A. Reduction factor

B. Multiplication factor

C. Distribution factor

D. Carry over factor

140. A single load of 100 kN rolls along a girder of 20 m span which is simply supported. What will be the absolute maximum bending moment?

A. 210 kN-m

B. 300 kN-m

C. 1500 kN-m

D. 500 kN-m

141. For two way simply supported slab of shorter span (upto 3.5 m) with mild steel reinforcement, the span to overall depth ratio is generally taken as

A. 1. 40

B. 2.45

C. 3.35

D. 4.20

142. A tensile strength of the plate is given by

Fu = ultimate tensile stress of the plate in MPa.

An = Net area of the plate

γml = Partial safety factor

γm0 = Partial safety factor for material resistance governed by yielding

A. $0.9\dfrac{fuAn}{\gamma m_0}$

B. $0.9\dfrac{fuAn}{\gamma m1}$

C. $0.2\,fy\,\dfrac{An}{\gamma m1}$

D. $0.9\,fu\,An$

143. The minimum beam width required for 2 hours of fire exposure is

A. 1.150 mm

B. 2.100 mm

C. 3.280 mm

D. 4.200 mm

144. What is the effective throat thickness of the weld, if the size of the weld is 3 mm and K value is 0.7?

A. 2.3 mm

B. 4.28 mm

C. 3.7 mm

D. 2.1 mm

145. A tie bar 50 mm X 8 mm is to carry a load of 80 kN. Find the gauge length

A. 57 mm

B. 83 mm

C.150 mm

D.113 mm

146. When gantry girders carry moving loads, for 6000 m span, then the deflection is.

A. 8.5 mm

B. 10 mm

C. 15 mm

D. 21 mm

147. In a tension member, the thickness of the gusset plate should not be less than

A. 12 mm

B. 2 mm

C. 15 mm

D. 5 mm

148. For a bolt, the ultimate tensile stress is 420 MPa and the net tensile stress area of the blot is 100 mm². What is the nominal tensile capacity of the blot?

A. 67.5 kN

B. 37.8 kN

C. 20.18 kN

D. 100.46 Kn

149. The characteristic compressive strength of concrete cube at 28 days strength was found to be 25 mm². Calculate the modulus of elasticity of concrete at 28 days?

A. 5000 N/mm²

B. 2500 N/mm²

C. 25000 N/mm²

D. 12500 N/mm²

150. The minimum beam width for 1 hour fire exposure is:

A. 200 mm

B. 300 mm

C. 150 mm

D. 280 mm

151. Improve the bracketed part of the sentence.

The firm asked her to return the fund (given to) the project.

A. allotted for

B. given in

C. No Improvement

D. allocated to

152. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

He is the character (1)/ of extreme loyalty and (2)/a commitment freak (3)/. No error (4)

A. 1

B. 2

C. 3

D. 4

153. A sentence has been given with a blank to be filled with an appropriate word/words. Choose the correct alternative.

She said her house is situated _____ from the Red fort.

A. far

B. farther

C. further

D. farthest

154. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

The politics of serving food (1)/ prepared to US safety standards (2)/ are tricky on a number of levels (3)/. No error (4)

A. 4

B. 1

C. 2

D. 3

155. Improve the bracketed part of the sentence.

My mother (insisted on accompanying) me to my first class.

A. No Improvement

B. agreed to come

C. demanded to come

D. insists on coming

156. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

It is a (1)/ period of great (2)/ change in life (3)/. No error (4)

A. 1

B. 4

C. 3

D. 2

157. Improve the bracketed part of the sentence.

Kolkata is famous (at its) sweets.

A. for its

B. as its

C. due to its

D. No Improvement

158. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

The internal confusion and conflict (1)/ makes the victim many times (2)/ incapable of handling the pressure (3)/. No error (4)

A. 2

B. 1

C. 3

D. 4

159. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

The technician arrive in the afternoon (1)/ and did a neat and satisfactory (2)/ work of replacing the water meter (3)/. No error (4)

A. 1

B. 4

C. 3

D. 2

160. A sentence has been given with a blank to be filled with an appropriate word. Choose the correct alternative.

Let me introduce you to my _____ brother.

A. older

B. elder

C. latter

D. superior

161. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

I and John (1)/ are ready to (2)/ take this responsibility (3)/. No error (4)

A.

B. 2

C. 4

D. 1

162. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

Their is an essential difference between (1)/ critical-self-assessment and (2)/ feeling of insecurity (3)/. No error (4)

A. 4

B. 2

C. 1

D. 3

163. Improve the bracketed part of the sentence.

Visiting our grandparents during the summer vacation was a childhood (convention).

A. tradition

B. No Improvement

C. custom

D. habit

164. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

The problem shifting from a brown to (1)/ a green economy is that the time horizons for (2)/transition vary for different constituencies (3)/. No error (4)

A. 4

B. 2

C. 1

D. 3

165. A sentence has been given with a blank to be filled with an appropriate word/words. Choose the correct alternative.

He ran _____ quickly and had an accident.

A. much	B. lots
C. too	D. a lot

166. Rearrange the parts of the sentence in correct order.

Robusta coffee is cheaper

P: the bean of choice for inexpensive

Q: commercial coffee brands

R: to produce, has twice the caffeine

S: content of Arabica, and is typically

A. RSPQ	B. PSRQ
C. QRPS	D. QRSP

167. A sentence has been given with a blank to be filled with an appropriate word. Choose the correct alternative.

He's the kind of writer _____ other writers love.

A. which	B. what
C. that	D. whose

168. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

Not all men (1)/ are guilty but (2)/ too much are (3)/. No error (4)

A. 1	B. 4
C. 3	D. 2

169. Find the part of the given sentence that has an error in it. If there is no error, choose 'No error'.

It is the delay that (1)/ would hang in the air, (2)/ when all is calm again (3)/. No error (4)

A. 1	B. 4
C. 2	D. 3

170. Improve the bracketed part of the sentence.

She read her mother's test reports (with great care).

A. with scrutiny	B. with care
C. carefully	D. No Improvement

171. In the given question, four words are given out of which one word is correctly spelt. Choose the correctly spelt word.

A. Epittomise	B. Epitommise
C. Eppitomize	D. Epitomize

172. In the given question, four words are given out of which one word is correctly spelt. Choose the correctly spelt word.

A. Epilloge	B. Epelogue
C. Epilogue	D. Epilogeu

173. The question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

P: These victims were in poor health and they were not treated with antivenin.

Q: Still, brown widow bites were associated with the deaths of two people in Madagascar in the early 1990s.

R: However, the species is not aggressive and only injects a tiny amount of venom when it bites.

S: Brown widow spider venom is considered to be twice as powerful as that of the black widow.

A. PQSR
B. SRPQ
C. SPQR
D. SRQP

174. In the following question, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

Make somebody's hackles rise

A. To humiliate someone

B. To annoy someone

C. To take back previous statement

D. To let loose a wild animal on someone

175. In the given question, four words are given out of which one word is correctly spelt. Choose the correctly spelt word.

A. Fatus
B. Feetus
C. Featus
D. Fetus

176. In the given question, four words are given out of which one word is correctly spelt. Choose the correctly spelt word.

A. Fatus
B. Feetus
C. Featus
D. Fetus

177. Rearrange the parts of the sentence in correct order.

The practice of grading

P: sellers and buyers a guarantee concerning

Q: the product to aid their negotiations

R: the origin, nature, and quality of

S: and classifying coffee gives

A. SPRQ
B. SRQP
C. RQPS
D. SPQR

178. Rearrange the parts of the sentence in correct order.

The practice of grading

P: sellers and buyers a guarantee concerning

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R: the origin, nature, and quality of

S: and classifying coffee gives

A. SPRQ
B. SRQP
C. RQPS
D. SPQR

179. In the following question, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

Burn the midnight oil

A. To stay up working late at night   B. To be hopeful of good news

C. To indulge in illicit activities   D. To wait for someone

180. In the following question, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

Make a clean breast of it

A. To create an underground group

B. To be on the run from police

C. To reveal a secret

D. To confess

181. In the following question, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

Make a clean breast of it

A. To create an underground group   B. To be on the run from police

C. To reveal a secret   D. To confess

182 The question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

P: On a wet Sunday afternoon in 1983, Dave Kelland relieved himself in a field.

Q: Thus the Blackawton International Festival of Wormcharming was born.

R: Cryonics might seem like an unusual basis for a festival, but not quite as unusual as this.

S: Kelland was perplexed after realizing that this action caused numerous worms to surface, and he decided to create a competition around his newfound "wormcharming" abilities.

A. QSPR   B. RPSQ

C. QRSP   D. SPQR

183. In the given question, four words are given out of which one word is correctly spelt. Choose the correctly spelt word.

A. Extemppore   B. Extempore

C. Exstempore   D. Exttempore

184. Choose the word that means the same as the given word.

Unsullied

A. Imminent   B. Immaculate

C. Immunity   D. Immigrate

185. In the given question, four words are given out of which one word is correctly spelt. Choose the correctly spelt word.

A. Eulougize   B. Eulougise

C. Eulogise   D. Eullogise

186. In the following question, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

Turn up one's nose at

A. A Foul smell

B. To reject

C. Refuse to acknowledge a grave situation

D. To make comparisons

187. In the given question, four words are given out of which one word is correctly spelt. Choose the correctly spelt word.

A. Angelic

B. Angelec

C. Engelic

D. Engelec

188. Choose the word that means the same as the given word.

Unsung

A. Biased

B. Notorious

C. Nameless

D. Hoarse

189. Choose the word that is opposite in meaning to the given word.

Eminent

A. Infamous

B. Premiditate

C. Paramount

D. Obscure

190. In the following question, out of the given four alternatives, select the alternative which best expresses the meaning of the Idiom/Phrase.

To blow hot and cold

A. To have inconsistent mood or opinions

B. To be rich and to poor frequently

C. To burn one's tongue on something hot

D. To blow on your food before consuming it

191. Choose the word that can substitute the given sentence.

A list of books available in a library

A. Catalogue

B. Glossary

C. Directory

D. Index

192. Choose the word that can substitute the given sentence.

A large sleeping-room with many beds

A. Dormitory

B. Hotel

C. Bedroom

D. Attic

193. Choose the word that can substitute the given sentence.

A list of passengers and luggage

A. Waybill

B. Stub

C. Receipt

D. Ticket

194. Choose the word that can substitute the given sentence.

A large number of fish swimming together

A. Litter

B. Fleet

C. Shoal

D. Herd

195. Choose the word that can substitute the given sentence.

A list of books and writings of one author or one subject

A. Menu

B. Autobiography

C. Index

D. Bibliography

Passage – 196 to 201

Comprehension:

Read the following information carefully and answer the given questions.

The use of vegetable oil-based biofuels has rocketed in recent years because they are considered a "greener" substitute for fossil fuels. Although their sustainability is now increasingly questioned, the demand continues to grow, and this has stimulated the ongoing expansion of oil palm cultivation across the tropics, especially in Indonesia. Greenhouse gas emissions are important because they have far-ranging environmental effects such as climate change. The European Union (EU) defined minimum greenhouse gas emission saving requirements for biofuels in its Renewable Energy Directive: the entire life cycle of palm-oil biodiesel has to show at least 60% greenhouse gas emission savings compared to fossil fuel. In this study, researchers from the German-Indonesian Collaborative Research Centre "Ecological and Socioeconomic Functions of Tropical Lowland Rainforest Transformation Systems (EFForTS)" analysed the entire life cycle of palm-oil biodiesel. The researchers used field-based measurements of greenhouse gas fluxes during different stages of oil palm cultivation in the Jambi province in Indonesia. "Mature oil palms capture high rates of CO2, but there are serious consequences for the environment from clearing forest. In fact, carbon emissions caused by cutting down the forest to plant oil palms are only partially offset by the future carbon capture," says lead author Ana Meijide from the Agronomy Group at the University of Göttingen. The study showed that palmoil biodiesel from the first-rotation cycle of palms produces 98% more emissions than fossil fuel. "The negative impact of biodiesel on greenhouse gases is reduced when palm oil comes from second-generation oil palm plantations," says Professor Alexander Knohl, senior author from the Bioclimatology Group at the University of Göttingen. Only palm-oil biodiesel from second rotation plantations reaches the greenhouse gas emission savings required by the EU directive. Based on these findings, the researchers tested alternative scenarios that could lead to higher greenhouse gas savings compared to current models. "Longer rotation cycles, such as extending the plantation cycle to 30 or even 40 years compared to the conventional 25 years, or earlier yielding varieties have a substantial positive effect on greenhouse gas emissions -both scenarios are doable and relatively easy to implement," as per Meijide.

196. What is the central idea of the given passage?

A. To encourage people to use more fossil fuels than palm oil

B. To understand the effect of greenhouse gases on climate change

C. To conduct various researches on palm oil

D. To understand the effect of palm-oil biodiesel on greenhouse gases

197. What is the tone of the above passage?

A. Speculative

B. Technical

C. Biased

D. Acerbic

198. When does the palm oil push more emission than fossil fuels, as per the research?

A. From the second-generation oil palm plantations

B. During first rotation plantations, when fossil fuels are burned.

C. During longer rotation cycles.

D. During first rotation plantations, when forests are cleared.

199. What is the antonym of the word 'stimulated' as used in the first paragraph of the passage?

A. Servile

B. Foment

C. Exhausted

D. Trigger

200. Who has conducted the study to analyses the complete life cycle of palm oil?

A. European Union

B. Ana Meijide

C. Professor Alexander Knohl

D. German-Indonesian Collaborative Research Centre

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