CHANDIGARH HOUSING BOARD
POST: SDE (BUILDING)
Question Booklet & Answer Key
29.01.2023 (MORNING)

1. Choose the correct antonym for the given underlined word from the options that follow:-
Deferential
A) Arrogant B) Accurate C) Clear D) Actual

2. Choose the correct synonym for the given underlined word from the options that follow:-
Impecunious
A) Rich B) Irrelevant C) Reckless D) Poor

3. Identify the error in the underlined parts of the sentence
The most interior room is also the largest room in the house.
A) B) C) D)

4. Choose the correct preposition to be filled in the blank from the options that follow:-
Child marriage is a great hindrance _____ progress.
A) of B) to C) on D) with

5. Choose the correct meaning of the given underlined idiom from the options that follow:-
Dip one's pen in gall
A) To seek support from others by one's writings B) To put an end to an undesirable situation
C) Write spitefully D) Stay calm despite provocations

6. Starting with the earliest, arrange them in the order they became Permanent Representative of India to the United Nations:
i) T.S.Tirumurti, ii) Syed Akbaruddin, iii) Asoke Kumar Mukerji,
A) i), ii), iii) B) ii), iii) i) C) iii), i), ii) D) iii), ii), i)

7. About how many 'International Customer' Satellites have been launched by ISRO?
A) 300 B) 400 C) 500 D) 600

8. On whom Bharat Ratna was conferred concurrently?
A) Sarvapalli Radhakrishnan, Govind Ballabh Pant B) Vallabh Bhai Patel, Morarji Desai
C) B.R. Ambedkar, C.Rajagopalachari D) Lata Mangeshkar, Sachin Tendulkar

9. What is the Altitude of Chandigarh:
A) 204 - 265 mts above mean sea level B) 254 - 365 mts above mean sea level
C) 403 - 465 mts above mean sea level D) 304 - 365 mts above mean sea level

10. The Theme of National Engineer Day 2022 was:
A) Engineering for a Healthy Planet B) Engineering for a Sustainable development
C) Engineering for Skill development & Employment D) Engineering for Change

11. Find the missing number of the series :
0, 0, 2, 12, 36, ?
A) 80 B) 60 C) 108 D) Can't be determined

12. Jaggi drives 10 kms towards East from his house and turns left and drives another 10 kms. He again turns left and drives 40 kms straight, then he turns right and drives for another 5 kms to reach his office where he works.
How far and in which direction is Jaggi's office from his house ?
A) 55 NW B) 45 SE C) 33.5 NW D) 30.4 NW

13. More than 10 persons were sitting in a circular row facing the centre . B is 3rd to the left of C. Two persons are sitting between D and B. A sits immediate right of E. One person is sitting between C and E. Less than two person are sitting between D and A. A does not sit second to the right of B.
How many persons are sitting between B and A in anti-clockwise direction ?
A) 3 B) 4 C) 5 D) 6

14. Six friends P, Q, R, S, T and U are sitting at different positions in a row, and each of them play a different game viz- Hockey, Cricket, Football, Volleyball, Tennis, Badminton, but not necessary in the same order. The friend who plays Badminton does not sit at the extreme end of the row. Q sits immediately before R and plays Cricket. T sits between U and S. Q is second to left of S. P sits at the left end of the row and plays Football. T plays Volleyball. R neither play Badminton nor Tennis.
Which game does U play.
A) Tennis B) Badminton C) Hockey D) Hockey or Badminton

15. A cuboid is of dimensions (4cm × 3cm × 3cm). The block is painted yellow on the pair of opposite surfaces of dimensions (4cm × 3cm). Remaining two opposite surfaces of dimensions (4cm × 3cm) are painted red. And two surfaces of dimensions (3cm × 3cm) are painted with green colour. Now the block is divided into smaller cubes of dimensions (1cm × 1cm × 1cm). In how many cubes all the three colours appear?
A) 24 B) 20 C) 16 D) 8

16. Two partners invest ₹125000 and ₹85000 respectively in a business and agree that 60% of the profit should be divided equally between them and the remaining profit is to be treated as interest on capital. If one partner gets ₹600 more than the other, find the total profit made in the business.
A) ₹8800 B) ₹8885 C) ₹8995 D) ₹7875

17. There are three taps of diameters 1 cm., $\frac{4}{3}$ cm. and 2 cm., respectively. The ratio of the water flowing through them is equal to the ratio of the square of their diameters. The biggest tap can fill the tank alone in 61 minutes. If all the taps are opened simultaneously, how long will the tank take to be filled?
A) 44 minutes B) 45 minutes C) 36 minutes D) 46 minutes

18. A took 15 seconds to cross a rectangular field diagonally walking at the rate of 52 metre/minute and B took the same time to cross the same field along its sides walking at the rate of 68 metre/minute. Find the area of the field.
A) 45 sq.mtrs. B) 60 sq.mtrs. C) 51 sq.mtrs. D) 30 sq.mtrs.

19. A man covers distance of 1400 km in 80 days resting 10 hours a day. If he rests 16 hours a day and walks at 2.5 times the previous speed, then in how many days will he cover 1000 km?
A) 20 days B) 35 days C) 40 days D) 50 days

20. A and B are two events such that P (A) = 0.3 and P (AUB) = 0.8. If A and B are independent, then P (B) is :
A) $\frac{5}{7}$ B) $\frac{3}{8}$ C) $\frac{2}{7}$ D) $\frac{4}{7}$

21. 1 Terabyte is equal to:
A) 1,024 Gigabytes B) 1,024 Megabytes C) 256 Gigabytes D) 256 Megabytes

22. The transistorized computer circuits designed between the mid-1950s and mid-1960s were introduced in the:
A) First generation B) Second generation C) Third generation D) Fourth generation

23. Which of the following lists of computer components is ranked from fastest to slowest in terms of access time?
A) Optical drive, HDD, RAM, CPU cache
B) CPU cache, SSD, RAM, HDD
C) RAM, Optical drive, CPU cache, SSD
D) CPU cache, RAM, SSD, Optical drive

24. In MS-EXCEL, the formulae used to calculate the sum of values from the cell C1 to C10 is:
A) =sum(C1-C10) B) =sum(C1,C10) C) =sum(C1:C10) D) =sum(C1+C10)

25. In computer networking, what is DHCP an acronym for?
A) Dynamic Host Configuration Protocol
B) Document Host Configuration Protocol
C) Data Hyper Compression Protocol
D) Datagram High Correction Process

26. The annual precipitation data of a city is normally distributed with mean and standard deviation as 1000 mm and 200 mm, respectively. The probability that the annual precipitation will be more than 1200 mm is
A) < 50%
B) 50%
C) 75%
D) 100%

27. The following statements are related to bending of beams:
I - The slope of the bending moment diagram is equal to the shear force.
II - The slope of the shear force diagram is equal to the load intensity.
III - The slope of the curvature is equal to the flexural rotation.
IV- The second derivative of the deflection is equal to the curvature.
The only FALSE statement is
A) I
B) II
C) III
D) IV

28. Which one of the following is categorised as a long-term loss of prestress in a prestressed concrete member?
A) Loss due to elastic shortening
B) Loss due to friction
C) Loss due to relaxation of strands
D) Loss due to anchorage slip

29. The effective stress friction angle of a saturated, cohesionless soil is 38°. The ratio of shear stress to normal effective stress on the failure plane is
A) 0.781
B) 0.616
C) 0.488
D) 0.438

30. A uniformly distributed line load of 500 kN/m is acting on the ground surface. Based on Boussinesq's theory, the ratio of vertical stress at a depth 2 m to that at 4 m, right below the line of loading, is
A) 0.25
B) 0.5
C) 2.0
D) 4.0

31. For a steady incompressible laminar flow between two infinite parallel stationary plates, the shear stress variation is
A) linear with zero value at the plates
B) linear with zero value at the centre
C) quadratic with zero value at the plates
D) quadratic with zero value at the centre

32. A super-elevation e is provided on a circular horizontal curve such that a vehicle can be stopped on the curve without sliding. Assuming a design speed v and maximum coefficient of side friction f_{max}, which one of the following criteria should be satisfied?
A) $e \leq f_{max}$
B) $e > f_{max}$
C) No limit on e can be set
D) $e = \frac{1-f_{max}^2}{f_{max}}$

33. The wastewater from a city, containing a high concentration of biodegradable organics, is being steadily discharged into a flowing river at a location *S*. If the rate of aeration of the river water is lower than the rate of degradation of organics, then the dissolved oxygen of the river water
A) is lowest at the location *S*.
B) is lowest at a point upstream of the location *S*.
C) remains constant all along the length of the river.
D) is lowest at a point downstream of the location *S*.

34. Let *G* be the specific gravity of soil solids, w the water content in the soil sample gw the unit weight of water, and g d the dry unit weight of the soil. The equation for the zero air voids line in a compaction test plot
A) $\gamma_d = \frac{G\gamma_w}{1+wG}$
B) $\gamma_d = \frac{G\gamma_w}{wG}$
C) $\gamma_d = \frac{wG}{1+\gamma_w}$
D) $\gamma_d = \frac{wG}{1-\gamma_w}$

35. An effective rainfall of 2-hour duration produced a flood hydrograph peak of 260 m^3/s. The flood hydrograph has a base flow of 20 m^3/s. If the spatial average rainfall in the watershed for the duration of storm is 2 cm and the average loss rate is 0.4 cm/h, the peak of 2-hours unit hydrograph (in m^3/s-cm) is
A) 150 m^3/s
B) 170 m^3/s
C) 100 m^3/s
D) 200 m^3/s

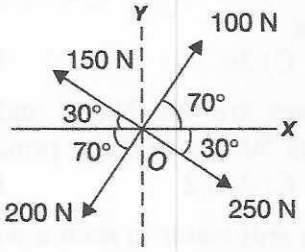
36. If the characteristic strength is defined as that value, below which not more than 50% of the result are expected to fall. Assuming a standard deviation of 4 MPa, the target mean strength (in MPa) to be considered in the mix design of a M30 concrete would be

A) 25.0 B) 30.0 C) 37.5 D) 27.5

37. An observer standing on the deck of a ship just sees the top of a lighthouse. The top of the lighthouse is 36 m above the sea level and the height of the observer's eye is 9 m above the sea level. The distance (in km, up to one decimal place) of the observer from the lighthouse is

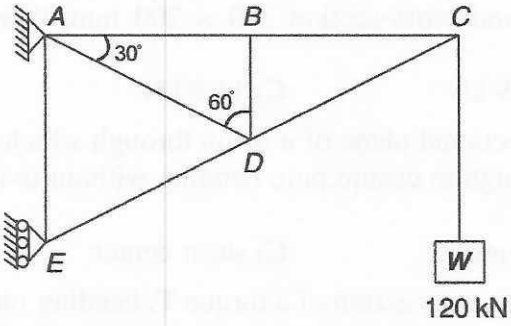
A) 34.7 B) 49.5 C) 45.2 D) 37.1

38. The resultant (in Newtons) of the coplanar concurrent force system shown in the following figure is



A) 135.2 B) 153.2 C) 100.5 D) 250.5

39. The figure is a pin jointed plane truss loaded at point C by hanging a weight of 1200 kN. The member DB of the truss is subjected to a force of

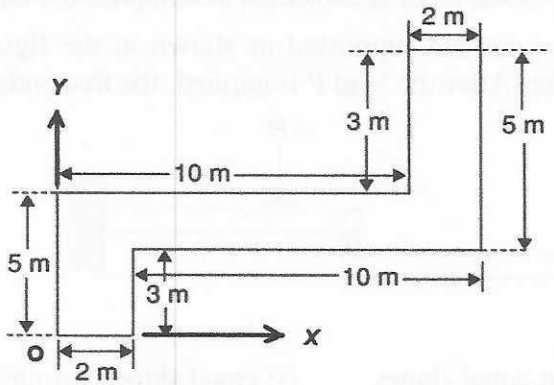


A) 50 kN compressive B) 120 kN compressive C) 120 kN tensile D) Zero

40. The motion of a particle is defined as $s = 2t^3 - 6t^2 + 15$, where s is in metres and t is in seconds. The acceleration when the velocity is zero, is

A) 4 m/s^2 B) 6 m/s^2 C) 8 m/s^2 D) 12 m/s^2

41. The x-coordinate and y-coordinate of the centre of gravity w.r.t. origin O for the following figure are, respectively



A) 5m, 2.5m B) 6m, 3m C) 2.5m, 5m D) 6m, 4m

42. The rate of change of velocity and the rate of change of momentum of a moving body respectively are
A) acceleration and impulse
B) acceleration and force
C) displacement and force
D) force and displacement

43. A steel pipe is to be used to support a load of 150 kN. Pipes having outside diameter of 101.6 mm are available in different thicknesses of 3 mm, 3.25 mm, 3.65 mm, and 3.85 mm. Take yield stress = 250 N/mm^2. Assuming a factor of safety of 1.8, the most economical thickness would be
A) 3 mm
B) 3.25 mm
C) 3.65 mm
D) 3.85 mm

44. Coefficient of linear expansion of a solid is α. A cube of volume V of this solid is heated by 1° C. Then change in volume of the cube is
A) $V\alpha$
B) $3V\alpha$
C) 3α
D) $V\alpha/3$

45. At a point in a material, the principal stresses are 800 N/cm^2 and 300 N/cm^2, and both are tensile. The normal stress on a plane inclined at 50° to the major principal plane will be
A) 506.6
B) 262.8
C) 246.2
D) 562.2

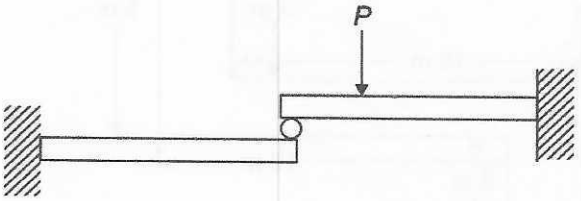
46. If a small concrete cube is submerged deep in still water in such a way that the pressure exerted on all faces of the cube is p, then the maximum shear stress developed inside the cube is
A) p
B) $p/2$
C) 0
D) $2p$

47. A beam of 150 mm wide and 300 mm deep can support a maximum load of 50 kN at its centre when it is used as a simply supported beam of 3 m span. If the same material is used for a cantilever of length 2.5 m and cross-section 200 × 200 mm, then the maximum load it can support at its free end will be
A) 9.9 kN
B) 8.9 kN
C) 11.9 kN
D) 15.9 kN

48. The point within the cross-sectional plane of a beam through which the resultant of the external on the beam has to pass through to ensure pure bending without twisting of the cross-section of the beam is called
A) moment center
B) centroid
C) shear center
D) elastic center

49. A shaft is subjected to simultaneous action of a torque T, bending moment M and an axial thrust F. Which one of the following statements is correct for this situation?
A) One extreme end of the vertical diameter fibre is subjected to maximum compressive stress only.
B) The opposite extreme ends of the vertical diameter fibre are subjected to tensile and compressive stresses only.
C) Every point on the surface of that shaft is subjected to maximum shear stress only.
D) Axial longitudinal fibre of the shaft is subjected to compressive stress only.

50. Two identical cantilever beams are supported as shown in the figure, with their free ends in contact through a rigid roller. After the load P is applied, the free ends will have



A) equal deflections but not equal slopes.
B) equal slopes but not equal deflections.
C) equal slopes as well as equal deflections.
D) neither equal slopes nor equal deflections.

51. A cantilever beam of span L, is subjected to a downward load of 800 kN uniformly distributed over its length and a concentrated upward load P at its free end. For vertical displacement to be zero at the free end, the value of P is
A) 300 kN
B) 500 kN
C) 800 kN
D) 1000 kN

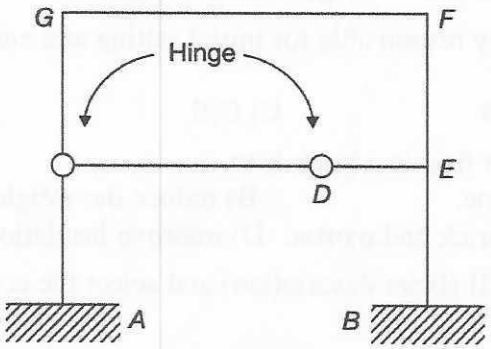
52. The axial load carrying capacity of a long column of a given material, cross-sectional area A and length L, is governed by
A) yield strength of its material only. B) its flexural rigidity only.
C) its slenderness ratio only. D) both flexural rigidity and slenderness ratio.

53. If the diameter of a long column is reduced by 20%, then percentage of reduction in Euler buckling load is
A) 4 B) 36 C) 49 D) 59

54. Modulus of resilience may be defined as
A) strain energy per unit volume of the body.
B) maximum strain energy which can be stored by a body without undergoing permanent deformation.
C) proof resilience per unit volume of the body.
D) strain energy stored when load is suddenly applied.

55. Consider the following statements:
I. If a beam has two axes of symmetry, even then shear-centre does not coincide with the centroid.
II. For a section having one axis of symmetry, the shear-centre does not coincide with the centroid but lies on the axis of symmetry.
III. If a load passes through the shear-centre, then there will be only bending in the cross-section and no twisting.
Which of these statements are correct?
A) I, II and III B) I and II C) II and III D) I and III

56. Based on static indeterminacy of the structure shown below, it is _____.



A) unstable B) stable and determinate
C) stable and 5th degree indeterminate D) stable and 3rd degree indeterminate

57. The unit load method used in structural analysis is
A) applicable only to statically indeterminate structures. B) another name for stiffness method.
C) an extension of Maxwell's reciprocal theorem. D) derived from Castigliano's theorem.

58. A single-bay single-storey portal frame has a hinged left-hand support and a fixed right-hand support. All other parameters are symmetrical about its vertical middle-axis. It is loaded with uniformly distributed load (UDL) on the beam. Which one of the following statements is true with regard to the deformation of the frame?
A) It would sway to the left-hand side. B) It would sway to the right-hand side.
C) It would not sway at all.
D) The beam would bend downwards, but the frame will not sway.

59. A uniformly distributed load of length 8 m crosses a simply supported girder of span 20 m. The maximum bending moment at the left-quarter-span point occurs when the distance between the centre of gravity the total load and mid span is
A) 0 B) 2 m C) 3 m D) 4 m

60. The ordinate of the influence line diagram (ILD) for bending moment have dimension of
A) length B) force C) length/force D) None of these

61. For linear elastic frame, if stiffness matrix is doubled with respect to the existing stiffness matrix, the deflection of the resulting frame will be
A) twice the existing value. B) half the existing value.
C) the same as existing value. D) can't be determined.

62. In a two-hinged arch an increase in temperature induces
A) maximum bending at the crown. B) uniform bending moment in the arch rib.
C) no bending moment in the arch rib. D) maximum bending moment at hinges.

63. A cable carrying a load of 10 kN/m run of horizontal span, is stretched between supports 100 m apart. If the supports are at same level and the central dip is 15 m, the ratio of maximum tension to the minimum tension in the cable is
A) 1.95 B) 1.65 C) 1.35 D) 1.05

64. Match list I with list II and select the correct answer using codes given below the lists:

List-I		List-II	
a.	Fineness of cement	1.	Le-Chatelier apparatus
b.	Setting time	2.	Vicat's needle
c.	Soundness	3.	Air-permeability apparatus
d.	Workability	4.	Slump cone

A) a-1, b-2, c-3, d-4 B) a-3, b-1, c-4, d-2 C) a-3, b-2, c-1, d-4 D) a-1, b-4, c-3, d-2

65. The following test is conducted to determine the strength of hardened existing concrete?
A) Bullet test B) Kelly ball test C) Rebound hammer test D) Cone penetrometer

66. The compound which is largely responsible for initial setting and early strength gain of Ordinary Portland Cement is
A) C_3A B) C_3S C) C_2S D) C_4AF

67. The most important purpose of frog in a brick is to
A) emboss manufacturer's name. B) reduce the weight of brick.
C) form keyed joint between brick and mortar. D) improve insulation by providing 'hollows'.

68. Match List I (Term) with List II (Brief description) and select the correct answer using the codes given below the lists:

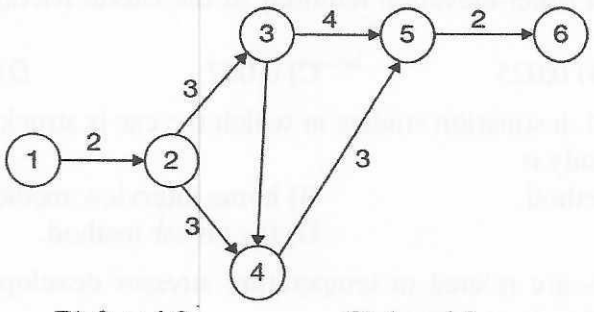
List-I		List-II	
a.	Heart shakes	1.	Disintegration caused by fungi
b.	Knot	2.	Outer layers of a log of wood
c.	Rot	3.	A branch base embedded in timber by natural growth
d.	Sap wood	4.	Cracks widest at centre & diminishing towards the outer circumference

A) a-1, b-3, c-4, d-2 B) a-4, b-2, c-1, d-3 C) a-1, b-2, c-4, d-3 D) a-4, b-3, c-1, d-2

69. Identify the incorrect pair:
A) Piece work contract—Petty works and regular maintenance works.
B) Lump sum contract—Adopted for buildings, bridges, electrical works, etc.
C) Item rate contract—Payments were done earlier to the construction.
D) Labor contract—Not practiced in government.

70. Negative slack occurs when
A) dummy activities are large in number. B) events stick to their schedule.
C) dummy activities do not exist. D) deficiency of resources occurs.

71. In the network shown, total float for the activities 2–4 and 3–5 are respectively



A) 0 and 0 B) 2 and 2 C) 1 and 2 D) 1 and 1

72. Consider the following statements:
I. Modulus of elasticity of concrete increases with increase in compressive strength of concrete
II. Brittleness of concrete increases with decrease in compressive strength of concrete.
III. Shear strength of concrete increases with increase in compressive strength of concrete.
The true statements are
A) I and III B) I, II, III C) II and III D) I and II

73. Flexural collapse in over reinforced beams is due to
A) primary compression failure. B) secondary compression failure.
C) primary tension failure. D) bond failure.

74. The plane section remains plane assumption in bending theory implies that
A) strain profile is linear. B) stress profile is linear.
C) both strain and stress profiles are linear. D) shear deformations are neglected.

75. A rectangular beam of 500 mm × 700 mm with effective cover of 40 mm is subjected to factored values of shear force 12 kN, bending moment 150 kN-m and a torsional moment 15 kN-m. If the shear resistance of the cross section is, τ_c = 1.3 MPa, then the design bending moment in kN-m will be
A) 120 B) 114 C) 150 D) 180

76. A surveyor measured the distance between two points on plan drawn to a scale of 1 cm = 30 m and the result was 500 m. Later it was discovered that 1 cm = 10 m scale was used. The true distance between the points would be _____.
A) 168.3 m B) 165.6 m C) 162.3 m D) 166.6 m

77. In leveling between two points A and B on opposite banks of a river, the staff readings at A and B were 1.295 and 2.960 m respectively. The level was then removed and set up near B and the readings on A and B were 0.56 and 2.42. The true difference of levels between A and B is
A) 3.486 m B) 3.525 m C) 3.538 m D) 3.624 m

78. If the image formed by the objective lens is not in the same plane with cross hairs, then it is known as
A) focusing of eye piece. B) focusing of objective. C) parallax. D) aberration.

79. Correction for temperature in a chain when the temperature at field is more than the standard temperature is
A) additive B) negative C) constant D) none of these

80. Match List-I with List-II and select the correct answer:

List-I		List-II	
a.	Traversing	1.	Rays are drawn to locate the station on which the table is set up.
b.	Resection	2.	Atleast two rays are drawn from two different stations to the details to be located.
c.	Intersection	3.	Rays are drawn in the direction of details through the station point on which the table is setup.
d.	Radiation	4.	Rays are drawn on the map by setting up the table over each of the stations towards the subsequent station.

A) a-1, b-3, c-4, d-2 B) a-2, b-3, c-4, d-1 C) a-4, b-2, c-1, d-3 D) a-4, b-3, c-2, d-1

81. The radius of horizontal circular curve is 400 m. The design speed is 80 km/h and coefficient of lateral friction is 0.1. The super-elevation required (if the lateral friction is assumed to develop) will be
A) 0.58 B) 0.025 C) 0.007 D) 0.48

82. The method of origin and destination studies in which the car is struck with a pre-coded card as it enters the area under study is
A) road side interview method. B) home interview method.
C) license plate method. D) tag on car method.

83. The following statements are related to temperature stresses developed in concrete pavement slabs with free edges (without any restraint)
P. The temperature stresses will be zero during both day and night times if the pavement is considered weightless.
Q. The temperature stresses will be compressive at the bottom of the slab during night time if the self-weight of the pavement slab is considered.
R. The temperature stresses will be compressive at the bottom of the slab during day time if the self-weight of the pavement slab is considered.
The true statement (s) is/are
A) P only B) Q only C) P and Q only D) P and R only

84. In the rigid pavements, base course is provided for
A) prevention of subgrade settlement B) prevention of slab cracking
C) prevention of mud pumping D) prevention of thermal expansion

85. Two bitumen samples X and Y have softening points 45°C and 60°C respectively. Consider the following statements:
I. Viscosity of X will be less than that of Y at the same temperature.
II. Penetration value of X is lesser than that of Y under standard conditions.
A) Both I and II are true. B) I is false and II is true.
C) Both are false. D) I is true and II is false.

86. In the revised CBR design method recommended by IRC for design of flexible pavement total thickness depends upon
A) CBR value of soil only.
B) CBR value of soil and magnitude of wheel load.
C) CBR value of soil and number of commercial vehicles per day.
D) CBR value of soil and cumulative standard axle loads.

87. A road is provided with a horizontal circular curve having deflection angle of 55° and centre line radius of 250 m. A transition curve is to be provided at each end of the circular curve of such a length that the rate of gain of radial acceleration is 0.3 m/s^3 at a speed of 50 km/h. Length of the transition curve required at each of the ends is
A) 2.57 m B) 33.33 m C) 35.73 m D) 1666.67 m

88. The ideal form of the curve for the summit curve is
A) lemniscate B) parabolic C) circular D) spiral

89. The non-passing sight distance on a highway for a design speed of 100 km/h, ascending gradient as 2%, coefficient of friction as 0.7 and brake efficiency as 50%, will be
A) 146.2 m B) 184.54 m C) 162.03 m D) 175.05 m

90. In water treatment, slow sand filters when compared to rapid sand filters produce
A) lesser contaminated effluent. B) more contaminated effluent.
C) equally contaminated effluent. D) cannot be judged

91. A coastal city produces municipal solid waste (MSW) with high moisture content, high organic materials, low calorific value and low inorganic materials. The most effective and sustainable option for MSW management in that city is
A) composting B) dumping in the sea C) incineration D) landfill

92. A waste water stream flowing at 3 m^3/s rate with ultimate BOD 110 mg/L is joining a small river flowing at 10 m^3/s rate and ultimate BOD 5 mg/L. Both water streams get mixed up simultaneously where cross-sectional area of the river is 70 m^2. Assuming K = 0.25/day, the BOD (in mg/L) of the river water, 10 km downstream of the mixing point is
A) 8.83 g/m^3 B) 24.22 g/m^3 C) 15.53 g/m^3 D) 6.85 g/m^3

93. Out of the following, the factors which affect the sludge digestion are:
I. Temperature II. pH
III. Mixing and stirring of raw sludge IV. Seeding of sludge
A) I and II B) II and III C) II, III and IV D) All of these

94. The process in which the chlorination is done beyond the breakpoint is known as
A) pre-chlorination B) post-chlorination C) super chlorination D) break point chlorination

95. As per Lacey's method for design of alluvial channels, identify the true statement from the following:
A) Wetted perimeter increases with an increase in design discharge.
B) Hydraulic radius increases with an increase in silt factor.
C) Wetted perimeter decreases with an increase in design discharge.
D) Wetted perimeter increases with an increase in silt factor.

96. An agricultural land of 437 ha (hectares) is to be irrigated for a particular crop. The base period of crop is 90 days and the total depth of water required by the crop is 105 cm. If the rainfall of 15 cm occurs during base period, the duty of irrigation water is
A) 437 ha/cumec B) 486 ha/cumec C) 741 ha/cumec D) 864 ha/cumec

97. A 2-km long pipe of 0.2 m diameter connects two reservoirs. The difference between the water levels in the reservoirs is 8 m. The Darcy-Weisbach friction factor of the pipe is 0.04. Accounting for frictional entry and exit losses, the velocity in the pipe in (m/s) is
A) 0.63 B) 0.35 C) 2.52 D) 1.25

98. A fine-grained soil has liquid limit of 60 and plastic limit of 20. As per the plasticity chart, according to IS classification, the soil is represented by letter symbols
A) CL B) CI C) CH D) CL – ML

99. If during a permeability test on a soil sample with a falling head permeameter, equal time intervals are noted for drop of head from 'h_1' to 'h_2' and again from 'h_2' to 'h_3', then which one of the following relations would hold good?
A) $h_3^2 = h_1 h_2$ B) $h_1^2 = h_2 h_3$ C) $h_2^2 = h_1 h_3$ D) $h_1 - h_2 = h_2 - h_3$

100. Consider the following two statements and choose the correct answer.
I. In Rankine's theory the retaining wall is assumed to be smooth and vertical.
II. In Coulomb's wedge theory the retaining wall is assume to be rough.
A) I is true, II is false. B) I is false, II is true.
C) I and II are true. D) I and II are false.

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Chandigarh Housing Board
Post: SDE (Building)
Answer Key (A-Series) : 29.01.2023 (Morning)

Q.No.	Ans	Q.No.	Ans	Q.No.	Ans	Q.No.	Ans
1	A	26	A	51	A	76	D
2	D	27	C	52	D	77	B
3	A	28	C	53	D	78	C
4	B	29	A	54	C	79	A
5	C	30	C	55	C	80	B
6	D	31	B	56	D	81	B
7	B	32	A	57	D	82	D
8	B	33	D	58	A	83	C
9	D	34	A	59	C	84	C
10	A	35	D	60	A	85	D
11	A	36	B	61	B	86	D
12	C	37	A	62	A	87	C
13	C	38	B	63	D	88	B
14	A	39	D	64	A	89	D
15	D	40	D	65	C	90	A
16	D	41	D	66	B	91	A
17	C	42	B	67	C	92	A
18	B	43	C	68	D	93	D
19	C	44	B	69	C	94	C
20	A	45	A	70	D	95	A
21	A	46	C	71	C	96	D
22	B	47	B	72	B	97	A
23	D	48	C	73	B	98	C
24	C	49	D	74	A	99	C
25	A	50	A	75	C	100	C