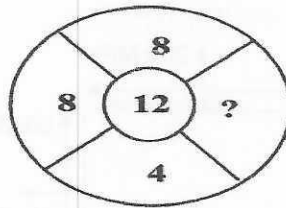
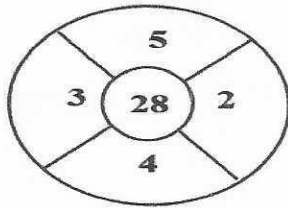


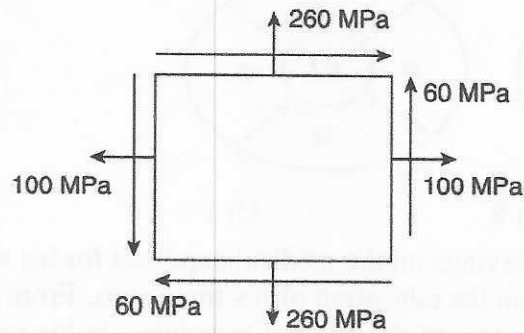
CHANDIGARH HOUSING BOARD
POST: SDE (PUBLIC HEALTH)
Question Booklet & Answer Key
28.01.2023 (MORNING)

15. Find the missing number in the following figures .

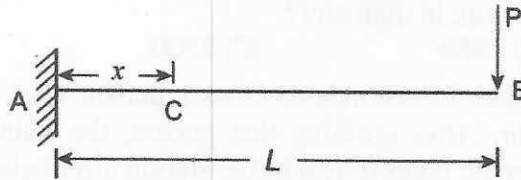


- A) 3 B) 9 C) 1 D) 2
16. Mr. X spends 40% of his savings on the medical expenses for his wife. He also spends 20% each of the remaining amount on the education of his three sons. From the remaining amount, half of it was spent for a family trip and the amount remaining in his saving account is ₹12000. How much money did Mr. X had initially:
 A) ₹50000 B) ₹100000 C) ₹150000 D) ₹200000
17. How many spherical bullets can be made out of a solid cube of lead whose edge measures 44 cm., each bullet being 4 cm. in diameter?
 A) 2541 B) 2550 C) 2500 D) 2575
18. A 125 metre long train takes 25 seconds to cross a person who is going in the same direction with the speed of 4 km/hr. After crossing that person, the train can reach next station in 30 minutes. How long that person takes to reach that station after being crossed by train?
 A) $3\frac{1}{4}$ hrs. B) $2\frac{3}{4}$ hrs. C) $3\frac{3}{4}$ hrs. D) $2\frac{1}{4}$ hrs.
19. A shopkeeper allows a discount of 10% on the marked price of an item but charges a sales tax 8% on the discounted price. If the customer pays ₹729 as the price including the sales tax, then what is the marked price of the item?
 A) ₹800 B) ₹700 C) ₹600 D) ₹750
20. Total wages for a work is ₹1280. A alone can do this piece of work in 8 days while B alone can do it in 12 days. If A and B work on alternate days. Find the share of A in total wages.
 A) ₹800 B) ₹500 C) ₹600 D) ₹700
21. Which of the following values is the smallest regarding computer storage?
 A) 100 GB B) 10 000 000 000 Bytes C) 1 TB D) 1 000 000 KB
22. ASCII, a character coding scheme, stands for:
 A) American standard code for information interchange
 B) All purpose scientific code for information interchange
 C) American security code for information interchange
 D) American Scientific code for information interchange
23. A 25 inches computer monitor implies that:
 A) The screen is 25 inches wide. B) The screen is 25 inches high.
 C) A circle of 25 inches diameter is available for display.
 D) The diagonal across the screen is 25 inches.
24. Computer follows a simple principle called GIGO which means:
 A) garbage input good output B) great instructions great output
 C) good input good output D) garbage in garbage out
25. The unique address of web page on website is called as:
 A) URL B) HTTP C) Browser D) E-mail
26. Two metallic balls having potential energy in the ratio 3 : 5 are made to slide down a frictionless inclined plane with zero position. The ratio of their kinetic energy when they reach at bottom of inclined plane will be
 A) 5 : 3 B) 3 : 5 C) 1 : 1 D) 2 : 3

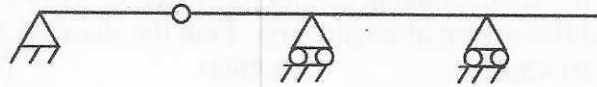
27. Figure shows state of stress at a point in a stressed body. Radius of Mohr's circle representing the state of stress is



- A) 60 B) 80 C) 100 D) 120
28. A cantilever is loaded as shown in the figure. If L is the length of the beam and EI , the flexural rigidity, the magnitude of slope at point C at a distance x from fixed end is



- A) $\frac{Px}{EI}(2L - x)$ B) $\frac{Px}{2EI}(2L - x)$ C) $\frac{Px}{2EI}(L - x)$ D) $\frac{Px}{EI}(L - x)$
29. A bar of length L , breadth b and thickness t , is subjected to an axial pull of P . If e_x is the strain in the direction of pull, volumetric strain produced is ($m =$ Poisson's ratio)
- A) $e_x(1 + 2\mu)$ B) $e_x(1 - 2\mu)$ C) $e_x(1 + \mu)$ D) $e_x(1 - \mu)$
30. The static indeterminacy of a continuous beam with an internal hinge shown below is



- A) zero B) 1 C) 2 D) 3
31. During the process of hydration of cement, due to increase in Dicalcium Silicate (C_2S) content in cement clinker, the heat of hydration
- A) increases B) initially increases and then decreases C) decreases D) does not change
32. A cantilever beam curved in plan is subjected to lateral loads will develop at any section
- A) bending moment & shearing force. B) bending moment & twisting moment.
C) twisting moment & shearing force. D) bending moment, twisting moment & shearing force
33. The shear stress at the neutral axis in a beam of triangular section with a base of 40 mm and height 20 mm, subjected to a shear force of 3 kN is
- A) 3 MPa B) 6 MPa C) 10 MPa D) 20 MPa
34. A two-span continuous beam having equal spans each of length L is subjected to a uniformly distributed load w per unit length. The beam has constant flexural rigidity. The reaction at the middle support is
- A) $\frac{wL}{4}$ B) $\frac{5wL}{4}$ C) $\frac{5wL}{6}$ D) $\frac{wL}{8}$

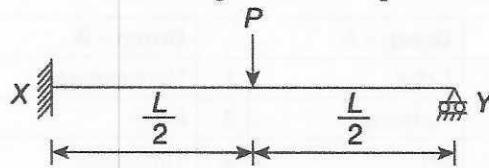
35. A circular solid shaft of span $L = 5$ m is fixed at one end and free at the other end. A twisting moment $T = 200$ kN-m is applied at the free end. The torsional rigidity GJ is 50000 kN-m²/rad. Following statements are made for this shaft.

I. The maximum rotation is 0.02 rad. II. The torsional strain energy is 2kN-m

With reference to the above statements, which of the following is correct?

- A) Both statements are true B) Statement I is true but II is false
C) Statement II is true but I is false D) Both the statements are false
36. The ratio of the stiffness of a beam at the near end when the far end is hinged to the stiffness of the beam at the near end when the far end is fixed is
- A) 1/2 B) 3/4 C) 1 D) 4/3

37. The modulus of rupture of concrete gives
 A) the direct tensile strength of the concrete
 B) the direct compressive strength of the concrete
 C) the tensile strength of the concrete under bending
 D) the characteristic compressive strength of the concrete
38. Identify the *false* statement from the following, pertaining to the design of concrete structures.
 A) The assumption of a linear strain profile in flexure is made use of in working stress design, but not in ultimate limit state design.
 B) Torsional reinforcement is not required to be provided at the corners of simply supported rectangular slabs, if the corners are free to lift up.
 C) A rectangular slab, whose length exceeds twice its width, always behaves as a one-way slab.
 D) The 'load balancing' concept can be applied to select the appropriate tendon profile in a prestressed concrete beam subject to a given pattern of loads.
39. Which one of the following factors does not affect the lateral buckling strength of a steel I-section undergoing bending about its major axis?
 A) Boundary conditions at the ends
 B) Radius of gyration about the major axis of the section
 C) Radius of gyration about the minor axis of the section
 D) Laterally unsupported length of the compression flange
40. The ultimate collapse load (P) in terms of plastic moment M_p by kinematic approach for a propped cantilever of length L with P acting at its mid-span as shown in figure, would be



- A) $P = \frac{2M_p}{L}$ B) $P = \frac{3M_p}{L}$ C) $P = \frac{5M_p}{2L}$ D) $P = \frac{6M_p}{L}$
41. Soil has been compacted in an embankment at a bulk density of 2150 kg/m^3 and a water content of 12%. The value of specified gravity of soil solids is 2.65. The water table is well below the foundation level. The void ratio of the compacted soil is
 A) 0.42 B) 0.56 C) 0.25 D) 0.38
42. Quick sand condition occurs when
 A) The void ratio of the soil becomes 1.0
 B) The upward seepage pressure in soil becomes zero
 C) The upward seepage pressure in soil becomes equal to the saturated unit weight of the soil
 D) The upward seepage pressure in soil becomes equal to the submerged unit weight of the soil
43. A 6-m high retaining wall having a smooth vertical back face retains a layered horizontal backfill. Top 3m thick layer of the backfill is sand having an angle of internal friction, $\phi = 30^\circ$ while the bottom layer is 3m thick clay with cohesion factor, $c = 20 \text{ kPa}$. Assume unit weight for both sand and clay as 18 kN/m^3 . The total active earth pressure per unit length of the wall (in kN/m) is
 A) 150 B) 216 C) 167 D) 190
44. A vertical triangular plane area, submerged in water, with one side contained in the free surface, vertex downward. Its latitude is h . The distance of the pressure center below the free surface is
 A) $h/2$ B) $h/3$ C) $3h/4$ D) $2h/3$
45. The average rainfall for a 3-hour duration storm is 2.7 cm and the loss rate is 0.4 cm/h. The flood hydrograph has a base flow of $20 \text{ m}^3/\text{s}$ and produces a peak flow of $210 \text{ m}^3/\text{s}$. The peak of a 3-h unit hydrograph is
 A) $126.67 \text{ m}^3/\text{s}$ B) $105.50 \text{ m}^3/\text{s}$ C) $77.67 \text{ m}^3/\text{s}$ D) $70.37 \text{ m}^3/\text{s}$
46. Zero hardness of water can be achieved by
 A) lime soda process B) ion exchange treatment
 C) excess lime treatment D) excess alum and lime treatment

47. The radius of a horizontal circular curve on a highway is 120 m. The design speed is 60 km/hour, and the design coefficient of lateral friction between the tyre and the road surface is 0.12. The estimated value of super-elevation required (if full lateral friction is assumed to develop), and the value of coefficient of friction needed (if no super-elevation is provided) will, respectively, be
 A) 0.116 and 0.24 B) 0.077 and 0.37 C) 0.094 and 0.24 D) 0.082 and 0.37
48. Bituminous materials are commonly used in highway construction because of their good
 A) tensile and compression properties B) shear strength and tensile properties
 C) binding and water proofing properties D) bond and tensile properties
49. The magnetic bearing of a line AB is S 45° E and the declination is 5° West. The true bearing of the line AB is
 A) S 50° E B) S 40° W C) S 40° E D) S 50° W
50. A bench mark has been established at the soffit of an ornamental arch at the known elevation of 100 m above sea level. The back sight used to establish height of instrument is an inverted staff reading of 2.105 m. A forward sight reading with normally held staff of 1.105 m is taken on a recently constructed plinth. The elevation of the plinth is
 A) 101.210 m B) 99.000 m C) 96.790 m D) 98.790 m
51. The presence of silver (Ag) in drinking water causes
 A) argyria B) hypertension C) anaemia D) blue baby disease
52. Match the Characteristics of water in Group-A with corresponding test used for measuring in Group-B.

	Group - A		Group - B
P.	Color	1.	Nephelometer
Q.	Turbidity	2.	EDTA
R.	pH	3.	Tintometer
S.	Hardness	4.	Potentiometer

- A) P-3, Q-1, R-4, S-2 B) P-4, Q-3, R-1, S-2
 C) P-1, Q-4, R-2, S-3 D) P-2, Q-1, R-3, S-4
53. A well oxidized sewage will contain
 A) Nitrites and Sulphur B) More Ammonia and H₂S but less nitrates and sulphates
 C) Less Ammonia and H₂S but more nitrates and sulphates D) H₂S, CO₂ and water
54. In a community of 1500 people water is supplied at 200 L/head/day. If BOD produced is 40 g/head/day and BOD loading rate for oxidation pond is 20 kg/ha/day. Assuming the depth of pond, $d = 2$ m and efficiency of pond = 80%, the BOD of the effluent will be
 A) 100 mg/L B) 150 mg/L C) 75 mg/L D) 50 mg/L
55. In determination of Chemical Oxygen Demand, sewage is titrated with ferrous ammonium sulphate using potassium dichromate as oxidant in the presence of silver sulphate and mercuric sulphate as catalyst and inhibitor respectively. In this, the excess amount of _____ left in sample after digestion is found.
 A) Potassium dichromate B) Ferrous Ammonium sulphate
 C) Mercuric Sulphate D) Oxygen
56. A sewer has a diameter of 250 mm and slope of 1 in 500. While running full it has a mean velocity of 0.8 m/s. If both diameter and slope are doubled, what will be the changed mean velocity when running half full? (Use Manning's formula)
 A) 1.0 m/s B) 1.2 m/s C) 1.6 m/s D) 1.8 m/s
57. The method of refuse disposal, involving burial in trenches, is called
 A) Incineration B) Composting C) Pulverization D) There is no such method
58. Algae dies out, though fish life may survive, in a river zone, known as
 A) Zone of degradation B) Zone of active decomposition
 C) Zone of recovery D) Zone of inactivity

59. If the Cl demand of water is 0.5 mg/l to have a residual Cl of 0.1 mg/l. What dose of bleaching powder is added to the water if bleaching powder contains 32% of available chlorine?
 A) 1.875 mg/l B) 1.25 mg/l C) 1.562 mg/l D) 2.188 mg/l
60. If the per capita contribution of suspended solids and B.O.D is 100 gm and 60 gm, respectively, find the population equivalent of 50,000 liters daily of industrial waste water containing 1800 mg/l of suspended solids.
 A) 800 B) 900 C) 1000 D) 1100
61. Temporary hardness in water is caused by the presence of
 A) Bicarbonates of Ca and Mg B) Sulphates of Ca and Mg
 C) Chlorides of Ca and Mg D) Nitrates of Ca and Mg
62. The most important water quality parameter for domestic use of water is
 A) carbonate hardness B) non-carbonate hardness
 C) coliform group of organisms D) chlorides
63. Two samples of water A and B have pH values of 4.4 and 6.4, respectively. How many times the sample A is more acidic than the sample B?
 A) 0 B) 15 C) 100 D) 200
64. Use of coagulants such as alum results in:
 A) reduction of pH of treated water. B) increase of pH of treated water.
 C) no change in pH of treated water. D) increased turbidity of treated water.
65. A town has an existing horizontal flow sedimentation tank with an overflow rate of $12\text{m}^3/\text{day}/\text{m}^2$, and it is desirable to remove particles that have settling velocity of 0.1 mm/sec. Assuming the tank is an ideal sedimentation tank, the percentage of particles removal is approximately equal to
 A) 32% B) 48% C) 72% D) 82%
66. Among the population forecasting methods, arithmetical increase method gives _____ than that given by geometrical increase method.
 A) higher value B) same value C) lesser value D) accurate
67. The maximum permissible limit for fluoride in drinking water is
 A) 10 mg/l B) 1.5 mg/l C) 15 mg/l D) 1.0 g/l
68. The disinfection efficiency of chlorine increases by
 i) decreasing the time of contact ii) decreasing the temperature of water
 iii) increasing the temperature of water
 The correct answer is
 A) Only iii) B) both i) and ii) C) both i) and iii) D) only ii)
69. Which of the following valves allows water to flow in one direction but prevents its flow in reverse direction?
 A) sluice valve B) air-relief valve C) pressure relief valve D) reflux valve
70. The most suitable water supply system analysis method for long and narrow pipes is
 A) circle method B) equivalent pipe method
 C) Hardy cross method D) electrical analogy method
71. Which of the following units works in anaerobic conditions?
 A) activated sludge treatment unit B) sedimentation tank
 C) sludge digestion tank D) trickling filters
72. The drop manholes are provided in sewerage system when there is
 A) change in alignment of sewer line B) change in size of sewers
 C) change in the elevation of ground level D) change from gravity system to pressure system

73. In sewage treatment, Chlorine is sometimes used
 A) to avoid flocculation
 B) to increase biological activity of bacteria
 C) to avoid bulking of activated sludge
 D) to help in grease separation
74. Sewage sickness is related to
 A) clogging of soil pores due to excessive application of sewage leading to obstruction of aeration and septic conditions
 B) reduction in waste purifying capacity of the soil
 C) destruction of aquatic flora and fauna due to gross pollution of water due to sewage
 D) toxicity of sewage causing interference with its treatment
75. A town is required to treat 4.2 m^3 of raw water per minute for daily domestic supply. Flocculating particles are to be produced by chemical coagulation. A column analysis indicated that an overflow rate of 0.2 mm/s will produce satisfactory particle removal in a settling basin at a depth of 3.5 m . The required surface area for settling is
 A) 210 m^2
 B) 350 m^2
 C) 728 m^2
 D) 2100 m^2
76. All of the following are included in the social determinants of health(SDOH) except:
 A) Education access and quality
 B) Genetics
 C) Healthcare access and quality
 D) Economic stability
77. Vaccination against Covid 19 is an example of
 A) Agent Host interrupting factor
 B) Environment host interrupting factor
 C) Environment agent interrupting factor
 D) All of these
78. The most cost-effective strategy for health promotion of a community is:
 A) Secondary prevention
 B) Primary prevention
 C) Primordial prevention
 D) Tertiary prevention
79. Human Development Index(HDI) was created to emphasise that:
 A) Economic growth is the only criteria to assess the development of a nation
 B) Economic growth is not a criteria to assess the development of a nation
 C) Economic growth along with people and their capabilities should be the criteria to assess the development of a nation
 D) None of these
80. The corner stone for delivery of healthcare services in India are:
 A) Tertiary care hospitals
 B) Primary health centres
 C) Civil Hospitals
 D) Secondary care centres
81. Food fortification is an intervention used to fight
 A) Deficiency of micro-nutrients like minerals & vitamins
 B) Protein energy malnutrition
 C) Acute infections
 D) All of these
82. The epidemiological study that assesses the causal relationship in an association must depict:
 A) Consistency and strength of the association
 B) Specificity and coherence of the association
 C) Temporal relationship of the association
 D) All of the above
83. Behavioral scientists search for a better understanding of many problems that are particularly relevant to public health professionals, including:
 A) Trauma and violence
 B) Stress and anxiety
 C) Substance abuse
 D) All of the above
84. All of the following are causative agents of soil-transmitted helminth infections except:
 A) *Ascarislumbricoides*
 B) *Plasmodium falciparum*
 C) *Trichuristrichiura*
 D) *Ancylostomaduodenale*
85. The main aim of studying behavioural science in health is to:
 A) Improve the quality of life by better understanding of behaviour
 B) Give medical treatment to patients
 C) Increase demand of products in market
 D) To study the environment
86. The National Family Health Survey for the year 2019-2020 is
 A) Third round of health survey
 B) Fourth round of health survey
 C) Fifth round of health survey
 D) Second round of health survey
87. The major burden of non-communicable diseases in India is contributed by all of the following except

88. Screening for a disease in a population is a useful technique to:
 A) Detect the presence of disease before the symptoms appear
 B) Detect the seriousness of disease
 C) Assess the progress of disease
 D) None of these
89. Sensitivity refers to a test's ability to designate:
 A) An individual with disease as positive
 B) An individual without disease as negative
 C) Both of the above
 D) None of the above
90. In the national immunisation schedule, following vaccines are administered at birth or as early as possible, except
 A) BCG
 B) OPV
 C) DPT
 D) Hepatitis B
91. All of the following are examples of immunising agents except:
 A) Tetanus toxoid
 B) Covishield
 C) Anti-rabies immunoglobulins
 D) Erythromycin
92. The biggest source of water contamination in India is:
 A) Chemicals from factories
 B) Untreated sewage
 C) Oil leaks
 D) Improper agricultural practices
93. While calculating the incidence of a disease, the numerator refers to:
 A) Number of new cases who develop a specific disease or a health condition during specified time period
 B) Number of current cases (both new and pre-existing) who have a disease or health condition during specified time period
 C) Both of the above
 D) None of the above
94. The most widespread micronutrient condition worldwide is:
 A) Vitamin A deficiency
 B) Iron deficiency anaemia
 C) Iodine deficiency
 D) Vitamin D deficiency
95. In a normal distribution curve, the percentage of scores that are covered within 2 standard deviations are:
 A) Around 95%
 B) Around 98%
 C) Around 96%
 D) Around 99%
96. Feedback in a communication process refers to:
 A) Response of a sender to the message that has been delivered
 B) Response of the receiver to the message that has been delivered
 C) Response of a sender to the message that has to be delivered
 D) Response of a receiver to the message that has to be delivered
97. The non-modifiable risk factors for stroke include:
 A) Hypertension
 B) Family History of stroke
 C) Smoking
 D) Diabetes
98. National oral health program (NOHP) was launched by Ministry of Health and Family Welfare, Government of India in:
 A) FY 2015-2016
 B) FY 2014-2015
 C) FY 2016-2017
 D) FY 2017-2018
99. The current focus of family planning program is:
 A) To specifically target the women for family planning measures
 B) To offer a basket of family planning choices to both men and women
 C) To specifically prevent unintended pregnancies
 D) To specifically target mistimed pregnancies
100. The main components of Ayushman Bharat Digital Mission include all of the following except:
 A) ABHA number
 B) Unified Health Interface
 C) Hospital Equipment Registry
 D) Healthcare Professional Registry

Chandigarh Housing Board
Post: S. D. E Public Health
Answer Key (A-Series) :28.01.2023 (Morning)

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