

ANSWER SHEET

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|--------|------|
| 1. B | 30.A |
| 2. C | 31.B |
| 3. C | 32.C |
| 4. B | 33.D |
| 5. A | 34.B |
| 6. B | 35.C |
| 7. C | 36.B |
| 8. B | 37.D |
| 9. D | 38.D |
| 10. -- | 39.D |
| 11. C | 40.D |
| 12. D | 41.C |
| 13. A | 42.B |
| 14. B | 43.B |
| 15. B | 44.C |
| 16. B | 45.C |
| 17. B | 46.B |
| 18. A | 47.C |
| 19. B | 48.B |
| 20. A | 49.B |
| 21. B | 50.A |
| 22. A | |
| 23. D | |
| 24. C | |
| 25. D | |
| 26. C | |
| 27. C | |
| 28. B | |
| 29. A | |

- 1) In a linear elastic structural element
 - (a) Stiffness is directly proportional to flexibility
 - (b) stiffness is inversely proportional to flexibility
 - (c) stiffness is equal to flexibility
 - (d) stiffness and flexibility are not related
- 2) The stress-strain diagram for two materials A & B is shown below:

The following statements are based on this diagram

- (I) Material A is more brittle than material B
- (II) The ultimate strength of material B is more than that of A

With reference to the above statement which of the following applies?

- (a) Both the statements are false
 - (b) Both the statements are true
 - (c) (I) is true but (II) is false
 - (d) (I) is false but (II) is true
- 3) The shear modulus(G), modulus of elasticity(E) & Poisson's ratio(μ) of a material are related as.
 - (a) $G = E/[2(1+\mu)]$
 - (b) $E = G/[2(1+\mu)]$
 - (c) $G = E/[2(1-\mu)]$
 - (d) $G = E/[2(\mu-1)]$
- 4) An axially loaded bar is subjected to the normal stress of 173MPa. The shear stress in the bar is
 - (a) 73 MPa (b) 86.5 MPa (c) 100 MPa (d) 122.3 MPa
- 5) A propped cantilever beam of span L , loaded with uniformly distributed load of intensity w /unit length, all through the span. Bending moment at the fixed end is
 - (a) $WL^2/8$ (b) $WL^2/2$ (c) $WL^2/12$ (d) $WL^2/24$

6) The plastic collapse load W for the propped Cantilever supporting two point loads as shown in figure in terms of plastic moment(M) is given by

- (a) $3M/L$ (b) $4M/L$ (c) $5M/L$ (d) $6M/L$

7) The modulus of rupture of concrete gives the

- (a) Direct tensile strength of concrete
(b) Direct compressive strength of concrete
(c) Tensile strength of concrete under bending
(d) Characteristic strength of concrete

8) An isolated T beam is used as a walkway. The beam is simply supported with an effective span of 6m. The effective width of flange, for the cross-section shown in figure, is

- (a) 900mm (b) 1000mm (c) 1259mm (d) 1500mm

9) If ϕ =nominal diameter of reinforcing bar, f =compressive stress in the bar and H =design bond stress of concrete, the anchorage length L of straight bar in compression is equal to

- (a) $N=\phi f/H$ (b) $N=\phi f/2H$ (c) $N=\pi\phi f/H$ (d) $N=\phi f/4H$

10) The lateral ties in reinforced concrete rectangular concrete under axial compression are used to

- (a) Avoid the buckling of the longitudinal steel under compression
(b) Provide adequate shear capacity
(c) Provide adequate confinement to concrete
(d) Reduce the axial deformation of the column

- 11) The creep strains are
- (a) Caused due to dead loads only
 - (b) Caused due to live loads only
 - (c) Caused due to cyclic loads only
 - (d) Independent of loads
- 12) IS: 1343-1980 limits the minimum characteristics strength of pre-stressed concrete for post tensioned work & pretension work as
- (a) 25MPa, 30MPa
 - (b) 25MPa, 35MPa
 - (c) 30MPa, 35MPa
 - (d) 30MPa, 40MPa
- 13) A prestressed concrete rectangular beam of size 300x900mm is prestressed with an initial prestressing force of 700 kN at an eccentricity of 350mm at mid span stress at top of the due to prestress alone, in N/mm^2 is
- a) -3.46
 - (b) 2.59
 - (c) Zero
 - (d) 8.64
- 14) According to Darcy's law for flow through pores media, the velocity is proportional to
- (a) Effective stress
 - (b) Hydraulic gradient
 - (c) Cohesion
 - (d) Stability number
- 15) A river 5m deep consist of a sand bed with saturated unit weight of 20 KN/m^3 , $\gamma_w = 9.81 \text{ KN/m}^3$ effective vertical stress at 5 m from the top of sand bed is
- (a) 41 KN/m^2
 - (b) 51 KN/m^2
 - (c) 55 KN/m^2
 - (d) 53 KN/m^2
- 16) Sand drains are used to
- (a) Reduce the settlement
 - (b) Accelerate the consolidation
 - (c) Increase the permeability
 - (d) Transfer the load
- 17) Well foundation are commonly used as foundation for which of the following structures
- (a) Water tank
 - (b) Bridges
 - (c) Buildings
 - (d) Reciprocating machines
- 18) Negative skin friction in a soil is considered when the pile is constructed through a
- (a) Fill material
 - (b) Dense coarse sand
 - (c) over consolidated stiff clay
 - (d) dense fine sand
- 19) If duty D is 1428 Hectare/cumec and base period B is 120 days for an irrigated crop, then delta in meters is given by
- (a) 102.8
 - (b) 0.73
 - (c) 1.38
 - (d) 10.50
- 20) A sprinkler irrigation system is suitable when
- (a) A land gradient is steep & soil is easily erodible
 - (b) the soil is having low permeability
 - (c) Water table is low
 - (d) the crops to be grown have deep roots

- 21) Excessive fluoride in drinking water causes
- (a) Alzheimer's disease (b) Mottling of teeth (c) Blue baby disease (d) Skin Cancer
- 22) Hardness of water is directly measured by titration with ethylene di amide tetra acetic acid (EDTA) using
- (a) Erichrome black T indicator (b) Ferroin indicator (c) Methyl orange Phenolphthalein Indicator
- 23) The alkalinity & hardness of a water sample are 250mg/L & 350mg/L as CaCO_3 respectively. The water has
- (a) 350mg/L carbonate hardness & zero non carbonate hardness
 (b) 250mg/L carbonate hardness & 350 non carbonate hardness
 (c) 250mg/L carbonate hardness & 100 non carbonate hardness
 (d) 250mg/L carbonate hardness & 0 non carbonate hardness
- 24) Two samples of water A & B have pH values of 4.4 & 6.4 respectively. How many times more acidic sample A is sample B
- (a) 0 (b) 15 (c) 100 (d) 200
- 25) If tomato juice having pH of 4.1. The hydrogen ion concentration will be
- (a) $10.94 \times 10^{-3} \text{ mol/L}$ (b) $9.94 \times 10^{-3} \text{ mol/L}$ (c) $8.94 \times 10^{-3} \text{ mol/L}$ (d) $7.94 \times 10^{-3} \text{ mol/L}$
- 26) The following chemical is used for coagulation
- (a) Ammonium chloride (b) Aluminum chloride (c) Aluminum sulphate (d) Copper sulphate
- 27) For a flow of 5.7 MLD & detention time of 2 hours, the surface area of a rectangular sedimentation tank to remove all particles have settling velocity of 0.33 mm/s is
- (a) 20 (b) 100 (c) 200 (d) 400
- 28) The disinfection efficiency of chlorine in water treatment
- (a) Is independent on pH value
 (b) Remain constant at all pH
 (c) Is increased by increasing pH
 (d) Is reduced by increasing pH
- 29) Sewage treatment in an oxidation pond is accomplished primarily
- (a) Alga-bacterial symbiosis (b) Algal photosynthesis only
 (b) Bacterial oxidation only (c) Chemical oxidation only

- 30) From the following options, identify the acid which is not responsible for acid rain
- (a) Acetic acid
 - (b) Sulphurous acid
 - (c) Nitrous acid
 - (d) Nitric acid
- 31) _____ causes minimum water pollution among the following nutrients
- (a) Organic matter
 - (b) Potassium
 - (c) Nitrogen
 - (d) Phosphorous
- 32) Out of the following equipment, _____ is most suitable for the removal of gaseous pollutants.
- (a) Electrostatic precipitator
 - (b) Fabric filter
 - (c) Settling chamber
 - (d) Cyclone separator
- 33) The main industrial source for H_2S emission is _____
- (a) Sugar Industry
 - (b) Pulp and Paper industry
 - (c) Cement industry
 - (d) Thermal power plants utilizing coal
- 34) _____ is the ideal method which is to be adopted when the solid waste consists of large amount of organic matter along with high moisture content
- (a) Recycling method
 - (b) Composting method
 - (c) Incineration method
 - (d) Pelletizing method
- 35) The dissolved oxygen content will be _____
- (a) Same throughout the day
 - (b) Maximum at midnight
 - (c) Maximum at noon
 - (d) Maximum in the morning
- 36) The daily waste water production from a certain industry amounts to 6 mega liters with a BOD 5 of 370 mg/L. The average BOD5 of a person is 0.06 kg/day. The population equivalent is _____
- (a) 1/37000
 - (b) 37000
 - (c) 222000
 - (d) 470

- 37) Winkler's method with azide modification is used for measuring _____ for water quality test.
- (a) Nitrate (b) Nitrite (c) Total alkalinity (d) Dissolved oxygen
- 38) The Streeter-Phelps equation describes how _____ decreases in a river or stream along a certain distance by degradation of _____
- (a) COD; BOA (b) TOD; COD (c) TOD; BOD (d) DO; BOD
- 39) 175 kg of bleaching powder contains _____ kg of chlorine stoichiometrically.
- (a) 96 (b) 75 (c) 71 (d) 48
- 40) Who is the authority for approving schedule of Rate for public works?
- a) Kerala PWD (b) Local Body (c) Chief Engineer (c) Govt. of Kerala
- 41) Which year schedule of Rate is applicable for the civil work undertaken by Local Self Government Department (LSGD)?
- (a) PWD 2012 (b) LSGD 2014 (c) CPWD 2014 (d) Urban Affairs Department 2014
- 42) Technical sanction issued by competent authority for executing a civil work as per PWD schedule of rate is known as
- (a) Administrative sanction
(b) Technician Sanction
(c) Work execution order
(d) Supply order
- 43) Financial sanction issued by the administrative department is known as
- (a) Sanction order
(b) Administrative sanction
(c) Office order
(d) Permissive sanction
- 44) Who is the authority to give Technical Sanction for execution of work having an estimated cost ₹10 crore?
- (a) Engineer in charge of work
(b) Head of Department
(c) Chief Engineer
(d) Municipal council/Panchayat Committee

- 45) Security deposit for a work is executed at the time of _____
- (a) starting execution of the work
 - (b) tendering the work
 - (c) signing of agreement
 - (d) completing the work
- 46) Type of estimate which indicate total cost of work?
- (a) Preliminary estimate
 - (b) Detailed estimate
 - (c) Abstract of estimate
 - (d) Schedule of estimate
- 47) What type of estimate is prepared for a Lump Sum (LS) provision given in the detailed estimate at the time of execution of work?
- (a) Preliminary estimate
 - (b) Detail estimate
 - (c) Working
 - (d) Rate contract estimate
- 48) If estimated cost for civil work exceed the cost of ₹20,000/- what type of procurement procedure is to be followed in a Government work?
- (a) Quotation
 - (b) Tender
 - (c) Local enquiry
 - (d) Negotiation with contractor
- 49) What is the full form of EMD?
- (a) Earned money deposit
 - (b) Earnest money deposit
 - (c) Estimated money deposit
 - (d) Earlier money deposit
- 50) Method of execution of work if taking detailed estimate of work is not possible at the time of preparing the estimate it is known as
- (a) Piece work method
 - (b) Rate contract method
 - (c) Direct execution method
 - (d) Quotation method