Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree Supplementary Examination May 2023 (2019 Scheme)

Course Code: CET308

Course name: COMPREHENSIVE COURSE WORK

Max. Marks: 50 Duration: 1Hour

Instructions: ***(1) Each question carries one mark. No negative marks for wrong answers***
(2) Total number of questions: 50
(3) All questions are to be answered. Each question will be followed by 4 possible answers of which only ONE is correct.
(4) If more than one option is chosen, it will not be considered for valuation.

1. The major and minor principal stresses at a point are 3MPa and -3Mpa respectively, then maximum shear stress at the point is

   a) zero b) 3 Mpa c) 6 Mpa d) 9 Mpa

2. For an isotropic material, the relationship between the Young's modulus€, shear modulus(G) and Poisson's ratio μ is given by

   a) $G = \frac{E}{1+\mu}$ b) $G = \frac{E}{2(1+\mu)}$ c) $G = \frac{E}{1+2\mu}$ d) $G = \frac{E}{2(1+2\mu)}$

3. Young's modulus of elasticity for a perfectly rigid body is

   a) zero b) unity c) infinity d) None of these

4. The ratio of lateral strain to the linear strain is called

   a) Modulus of elasticity b) Modulus of rigidity c) Bulk modulus d) Poisson's ratio

5. The value of Poisson's ratio for cork and concrete are

   a) 0.1 and zero b) zero and 0.5 c) zero and 0.1 d) 0.5 and zero

6. If the shear force along a section of a beam is zero, the bending moment at the section is

   a) zero b) maximum c) minimum d) average of maximum and minimum

7. Flexural rigidity of a beam having Modulus of Elasticity E and moment of inertia I is expressed by

   a) EI b) $\frac{E}{I}$ c) $\frac{I}{E}$ d) None of these

8. Maximum strain energy stored in a material upto the elastic limit is called

   a) Resilience b) Proof resilience c) Modulus of resilience d) Bulk resilence

9 The bending moment diagram of a cantilever beam of length *l* carrying concentrated load W at the free end will be

a) a right angled triangle b) an isosceles triangle c) an equilateral triangle d) a rectangle

10. The ratio between fully plastic moment and yield moment of a rectangular section in flexure is

a) $\frac{3}{2}$ b) $\frac{2}{3}$ c) 1 d) 2

11 For a fluid, the shear stress was found to be directly proportional to the velocity gradient. The fluid is classified as

a) Non – Newtonian Fluid b) Ideal Fluid c) Newtonian Fluid d) Thixotropic Fluid

12 The total pressure on the surface of a vertical sluice gate 2m x 1m with its top 2m surface 0.5m below the water level will be,

a) 19.62 Kn b) 19 Kn c) 15.62 Kn d) 17 Kn

13 At a certain point, the absolute pressure and atmospheric pressure is given by 850 mm of mercury and 700 mm of mercury respectively. What is the value of gauge pressure (mm of mercury) at that point?

a) 100 b) 50 c) 200 d) 150

14 A floating body will remain in stable equilibrium if the metacentre is

a) above the centre of buoyancy b) above the centre of gravity c) below the centre of gravity d) below the centre of buoyancy

15 Which of the following laws states that pressure or intensity of pressure at a point in static fluid is equal in all directions?

a) Darcy's law b) Newton's law c) Hydrostatic law d) Pascal's law

16 The height of hydraulic jump is equal to

a) sequent depth b) difference in conjugate depths c) difference in alternate depths d) initial depth

17 What is the cross-sectional area (in square meter) of the channel, if its hydraulic radius and wetted perimeter is given as 300 cm and 860 cm respectively

a) 10.5 b) 15.6 c) 25.8 d) 32.4

18 Which of the following expression represents the critical state of flow in non-rectangular channel?

a) $y_c = \left(\frac{q^2}{g}\right)^{1/3}$ b) $\frac{Q^2}{g} = \frac{A^3}{T}$ c) $\frac{Q^3}{g} = \frac{A^2}{T}$ d) $\frac{Q^2}{g} = \frac{A}{T^3}$

19 A rectangular channel will be most economical when the flow depth to channel bottom width is in the ratio :

a) 1 : 2 b) 2 : 1 c) 1 : 4 d) 1 : 1

20 A horizontal pipe carrying water has velocities of 2m/sec and 1m/sec at the left and right ends. The pressure head difference is

a) g b) $\frac{1}{g}$ c) $\frac{1.5}{g}$ d) $1.5\,g$

21 Error due to bad ranging is

a) Compensating b) Cumulative positive c) Cumulative negative d) Both (b) and (c)

22 If quadrantal bearing of a line is N35W, then whole circle bearing is

a) 325° b) 205° c) 215° d) 315°

23 Isogonic lines are lines passing through

a) Point having zero dip b) Point having same dip c) Point of zero declination d) Point having same declination

24 Sensitivity of a bubble tube can be increased by

a) Decreasing radius of curvature of the tube b) Decreasing length of the bubble c) Increasing diameter of the tube d) Increasing viscosity of the liquid

25 When "h" is the difference in height between extremities of chain length "l", then the correction for slope required is

a) $\frac{h}{l}$ b) $\frac{h^2}{l}$ c) $\frac{h^2}{2l}$ d) $\frac{h}{2l}$

26 The horizontal distance between any two consecutive contours is called

a) Vertical equivalent b) horizontal equivalent c) Contour interval d) Contour gradient

27 A contour line can cross one another on map only in case of

a) A vertical cliff b) A valley c) A ridge d) An overhanging cliff

28 The probable error of any observation of weight w is given by

a) $\sqrt{\frac{E_s}{\sqrt{w}}}$ b) $\sqrt{\frac{E_s}{w}}$ c) $\frac{E_s}{\sqrt{w}}$ d) None of these

29 The minimum number of satellites needed for a GPS to determine its position precisely

a) 2 b) 3 c) 4 d) 24

30 Which of the following indicates the principle of GPS

a) Trilateration b) Resection c) Trisection d) Traversing

31 If porosity of soil sample is 20%, the void ratio is

a) 0.20 b) 0.80 c) 1.00 d) 0.25

32 A certain soil has the following properties: G=2.71, n=40% and w=20%. The degree of saturation of the soil (rounded off to the nearest percent) is

a) 81.3 b) 79 c) 84.5 d) 75.8

33 The toughness index of clayey soils is given by

a) Plasticity Index/Flow Index b) Liquid Limit/Plastic Limit c) Liquidity Index/Plastic Limit d) Plastic Limit/Liquidity Index

34 The consistency of saturated cohesive soil is affected by

a) Water content b) Particle size distribution c) Density index d) Coefficient of permeability

35 As per Indian standard classification system, an expression for A-Line is

a) $Ip = 0.73(W_L - 20)$ b) $Ip = 0.70(W_L - 20)$ c) $Ip = 0.73(W_L - 10)$ d) $Ip = 0.70(W_L - 10)$

36 A fine-grained soil has liquid limit of 60 and plastic limit of 20. Asper the plasticity chart, according to IS classification, the soil is represented by the letter symbols

a) CL b) CI c) CH d) CL-ML

37 According to Darcy's law for flow through porous media, the velocity is proportional to

a) Effective stress b) Hydraulic gradient c) Cohesion d) Stability number

38 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

39 Root time method is used for determining

a) Time factor b) Coefficient of consolidation c) Coefficient of compressibility d) Coefficient of volume compressibility

40 In a compaction test, as the compaction effort is increased, the optimum moisture content

a) Decreases b) Remains same c) Increases d) Increases first there after decreases

41 The property of fresh concrete in which water in the mix tends to rise to the surface while placing and compaction is called

a) bleeding b) creep c) Segregation d) Shrinkage

42 Factor of safety of steel for steel as compared to concrete is

a) same b) lower c) Higher d) None of these

43 Fineness of cement is tested by

a) Air permeability method b) Le-Chatelier method c) Vicat's apparatus d) All of these

44 Workability of concrete is measured by

a) Vicat apparatus test b) Slump test c) Minimum void method d) Talbot Richard test

45 The term ----- is used to denote the finishing of mortar joints of either stone masonry or brick masonry

a) plastering b) pointing c) painting d) grouting

46 Which of the following is not a Bogues compounds are

a) Tri calcium silicate b) Di calcium silicate c) Tri calcium aluminate d) Di calcium aluminate

47 Dummy activities are used to

a) Determine the critical path b) Determine the project completion time c) Maintain the required network d) None of these

48 The time by which an activity completion time can be delayed without affecting the start of the succeeding activities is known as

a) Duration b) Total float c) Free float d) Interfering float

49 Which of the following is not a type of contract

a) Item rate contract b) Open contract c) Percentage rate contract d) Lump sum contract

50 The occurrence of the completion of an activity is called its

a) Head event b) Tail event c) Dual role event d) None of these

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