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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (S,FE) (FT/WP/PT) Examination December 2025 (2019 Scheme)

Course Code: CET308
Course Name: COMPREHENSIVE COURSE WORK

Max. Marks: 50 Duration: 1Hour

Instructio ***(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 yield stress of a twisted bar as compared to an ordinary mild steel bar is nearly

   a) 50% more b) 25% more c) 50% less d) 25% less

2. The material in which large deformation is possible before absolute failure by rupture takes place, is known as

   a) Ductile b) Plastic c) Brittle d) Elastic

3. In a body loaded under plane stress conditions, what is the number of independent stress components in order to completely specify the state of stress at a point?

   a) 3 b) 4 c) 6 d) 9

4. For engineering materials, Poisson's ratio lies between

   a) 0 and 1 b) -1 and +1 c) $-\frac{1}{2} and + \frac{1}{2}$ d) 0 and $\frac{1}{2}$

5. For a material having modulus of elasticity equal to 300GPa and Poisson's ratio equal to 0.5, what is the modulus of rigidity?

   a) 74.0 GPa b) 80.0 Gpa c) 100.0 GPa d) 128.50GPa

6. If an element is subjected to pure shearing τ_{xy}, then the maximum principal stress is equal to

   a) $2\tau_{xy}$ b) $\frac{\tau_{xy}}{2}$ c) τ_{xy} d) τ_{xy}^{2}

7. If a material had identical elastic properties in all directions, it is said to be

   a) Elastic b) Isotropic c) Orthotropic d) Homogeneous

8. If A be the area of cross-section of a bar, the gauge length for the measurement of ductility will be

   a) $5.65 \times A^{½}$ b) $5.65 \times A^{1}$ c) $6.56 \times A^{½}$ d) $6.56 \times A^{1}$

9. A cantilever beam of T cross-section carries uniformly distributed load. Where does the maximum magnitude of the bending stress occur?

a) At the top of cross-section b) At the junction of flange and web c) At the mid-depth point d) At the bottom of the section

10. The shear stress distribution over rectangular cross-section of a beam follows

a) Straight line path b) Circular path c) Parabolic path d) irregular path

11 The point in the immersed body through which the resultant pressure of the liquid may be taken to act is known as

a) Centre of gravity b) Centre of buoyancy c) Centre of pressure d) Metacentre

12 Poise has the unit of

a) $Dyne\frac{cm}{s^2}$ b) $Dyne\frac{cm}{s}$ c) $Dyne\frac{s}{cm}$ d) $Dyne\frac{s}{cm^2}$

13 The surface tension in a soap bubble of 20 mm diameter with its inside pressure being 4 N/m^2 above the atmospheric pressure is

a) 0.005N/m b) 0.01 N/m c) 0.2 N/m d) 0.04 N/m

14 If the weight of a body immersed in a fluid exceeds the buoyant force, then the body will

a) Rise until its weight equals the buoyant force b) Float c) Tend to move downward and it may finally sink d) None of the above

15 Stream line, streak lines and path line are identical in the case of

a) Uniform flow b) Steady flow c) Unsteady flow d) Rotational flow

16 In fluid flow, the line of constant piezometric head passes through two points which have the same

a) Elevation b) Pressure c) Velocity d) Velocity potential

17 Principle of continuity is based on conservation of:

a) Energy b) Mass c) Both energy and mass d) None of the above

18 The sum of pressure head, kinetic head and datum head is called as

a) Hydraulic gradient line b) Total energy line c) Total equation line d) Transmission line

19 Which of the following device is used to measure the velocity of liquid through a pipe

a) Barometer b) Thermometer c) Pitot tube d) Hydrometer

20 The flow in open channel is said to be subcritical if the Froude number is

a) Less than 1.0 b) Equal to 1.0 c) Greater than 1.0 d) None of the above

21 Which of the following type of ranging is done if both ends of surveying lines are visible?

a) Indirect Ranging b) Reciprocal Ranging c) Unable to do d) Direct Ranging

22 A well-conditioned triangle has angles not less than ---- and more than ----- respectively

a) 10^0 *and* 90^0 b) 30^0 *and* 120^0 c) 90^0 *and* 120^0 d) None of these

23 A 30 m metric chain is found to be 0.1 m too short through out the measurement. If the distance measured is recorded as 300 m, then the actual distance measured will be

a) 300.lm b) 301.0m c) 299.0m d) 310.0m

24 Offsets are

a) Lateral measurement made with respect to main survey lines b) Perpendiculars erected from chain lines c) Taken to avoid unnecessary walking between stations d) Measurements which are not made at right angles to the chain line

25 If fore bearing of a line is S49°52'E (assuming there is no local attraction), the back bearing of the line will be

a) S52°49'E b) S49° 52'E c) N49°08'E d) N49°52'W

26 The true bearing of a line is 34°20'40" and the magnetic declination at the place of observation is 2°00'20"W on the date of observation. The magnetic bearing of the line is

a) 36°21'00" b) 34°20'20" c) 32°20'20" d) 32°00'20"

27 For locating an inaccessible point with the help of only a plane table, one should use

a) Traversing b) Resection c) Radiation d) Intersection

28 Angle of dip at pole is

a) 0^0 b) 90^0 c) 45^0 d) 30^0

29 The vertical distance between any two consecutive contours is called

a) Vertical Equivalent b) Horizontal Equivalent c) Contour interval d) Contour Gradient

30 A combination of an electronic theodolite and an electronic distance measurement is called

a) Tachometer b) Distomat c) Total Station d) Tachometry

31 The ratio of volume of voids to volume of solids is known as

a) Porosity b) Degree of Saturation c) Void ratio d) Specific Gravity

32 Toughness index is defined as the ratio of

a) Plasticity index to Flow index b) Plasticity index to Consistency index c) Liquidity index to Flow index d) None of these

33 The value of porosity of a soil sample in which the total volume of soil grains is equal to twice the total volume of voids would be

a) 75% b) 66.66% c) 50% d) 33.33%

34 Consolidation of soil is due to the expulsion of

a) Water b) Air c) Both water and air d) None of these

35 A soil has a liquid limit of 40% and plasticity index of 20%. The plastic limit of the soil will be

a) 20% b) 30% c) 40% d) 60%

36 The apparatus used to find the liquid limit of soil is

a) Mohr b) Casagrande c) Otto d) Terzaghi

37 Unconfined compression test is conducted on

a) sand b) laterite c) clay d) Silt

38 In a direct shear test the failure plane will be

a) Vertical b) Horizontal c) At 45^0 with horizontal d) Principal plane

39 The law which governs the permeability of a soil is

a) Darcy's law b) Terzaghi's Theorem c) Stoke's law d) Mohr Coulomb Theory

40 Sheep-foot rollers are recommended for compacting

a) granular soils b) Cohesive soils c) hard rock d) any type of soil

41 If 'P' is the standard consistency of cement, the amount of water used in conducting the initial setting time test on cement is

a) 0.65P b) 0.85P c) 0.6P d) 0.8P

42 The temperature range in a cement kiln is

a) 500° to 1000°C b) 1000° to 1200°C c) 1300° to 1500°C d) 1600°to 2000°C

43 In cements, generally the increase in strength during a period of 14 days to 28 days is primarily due to

a) C_3A b) C_2S c) C_3S d) C_4AF

44 Which one of the following properties of cement concrete is ascertained by conducting compaction factor test?

a) Bulk density b) Compressive strength c) Modulus of rupture d) Workability

45 Flexural strength of M25 concrete is

a) 25MPa b) Less than 25MPa c) Greater than 25MPa d) 50MPa

46 Vicat apparatus is used for

a) Fineness test b) Consistency test c) Soundness test d) None of the above

47 Slump test of concrete is used to measure

a) Workability b) Compressive strength c) Impact value d) Initial setting time

48 The exposed surfaces of walls to be provided with

a) Guniting b) Grouting c) Pointing d) Washing

49 PERT is used in the preparation of:

a) Budgeting b) Scheduling c) Evaluating d) Finalizing

50 Which one of the following project management techniques is deterministic in nature?

a) CPM b) PERT c) GERT d) None of these

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