

Register No:

Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SIXTH SEMESTER B.TECH. DEGREE EXAMINATION(R,S), MAY 2024**Civil Engineering
(2020 SCHEME)****Course Code : 20CET308****Course Name : Comprehensive Course Work****Max. Marks : 50****Duration: 75 Minutes****PART A***(Answer all questions. Each question carries 1 mark)*

1. According to Hooke's law
(A) Stress is proportional to strain (B) Stress is inversely proportional to strain
(C) Stress is proportional to square of strain (D) Stress is inversely proportional to square of strain
2. The product EI is also known as
(A) polar moment (B) stiffness
(C) modulus of rigidity (D) flexural rigidity
3. The diagram with direct stress along x-axis and shearing stress along y-axis is called
(A) Eddy diagram (B) Stress block diagram
(C) Mohr's circle (D) Influence line diagram
4. Which test is done on steel to obtain the stress-strain curve?
(A) Flexural strength test (B) Tensile strength test
(C) Compression test (D) Split tensile strength test
5. A beam with one end fixed and other end simply supported is called
(A) cantilever beam (B) fixed beam
(C) overhanging beam (D) propped cantilever beam
6. Weight of a beam is an example of
(A) concentrated load (B) uniformly varying load
(C) uniformly distributed load (D) varying load
7. The device used to measure the fluid pressure is
(A) hygrometer (B) calorimeter
(C) manometer (D) thermometer
8. What is the area of a pipeline which carries $100 \text{ m}^3/\text{s}$ of water with a velocity of 0.25 m/s ?
(A) 100 m^2 (B) 200 m^2
(C) 300 m^2 (D) 400 m^2
9. The equation based on the principle of conservation of mass is called
(A) Pascal's law (B) Bernoulli's equation
(C) Euler's equation (D) Continuity equation

10. The point in the immersed body through which the resultant pressure of the liquid may be taken to act is known as
 - (A) metacentre
 - (B) centre of pressure
 - (C) centre of buoyancy
 - (D) centre of gravity
11. Barometer is used to measure
 - (A) pressure in pipes and channels
 - (B) atmospheric pressure
 - (C) very low pressure
 - (D) difference in pressure between two points
12. Critical velocity is the velocity at which flow changes from
 - (A) turbulent to laminar
 - (B) laminar to turbulent
 - (C) steady flow to unsteady flow
 - (D) uniform flow to non-uniform flow
13. What is the vertical circle of a theodolite used for?
 - (A) To measure horizontal angles
 - (B) To measure vertical angles
 - (C) To measure distances
 - (D) To measure slopes
14. How does a total station calculate the position of a target point?
 - (A) By measuring the time taken for a signal to return
 - (B) By triangulating distances and angles from known points
 - (C) By analyzing satellite signals
 - (D) By using ground-penetrating radar
15. Floating car method is used to carry out
 - (A) speed and delay study
 - (B) spot speed
 - (C) traffic density study
 - (D) traffic volume study
16. The point of importance through which a highway alignment should/should not pass.
 - (A) Grade point
 - (B) Obligatory point
 - (C) Crossing
 - (D) All of the above
17. Which component of a total station is used to measure horizontal angles?
 - (A) Electronic distance meter (EDM)
 - (B) Theodolite
 - (C) Altimeter
 - (D) Compass
18. What is the benchmark in leveling?
 - (A) A standard reference point with a known elevation
 - (B) The highest point in the survey area
 - (C) The lowest point in the survey area
 - (D) The mid-point between two points
19. Which type of soil typically experiences a decrease in effective stress during loading?
 - (A) Cohesive soil
 - (B) Granular soil
 - (C) Organic soil
 - (D) Peat soil
20. What is the plasticity index of a soil?
 - (A) The range of particle sizes in the soil
 - (B) The percentage of coarse particles in the soil
 - (C) The difference between the liquid limit and the plastic limit
 - (D) The measure of soil's ability to retain water
21. Which of the following is NOT considered as an index property of soil?
 - (A) Grain size distribution
 - (B) Plasticity index
 - (C) pH level
 - (D) Atterberg limits
22. What are the two main components of shear strength in soil?
 - (A) Cohesion and friction
 - (B) Compaction and consolidation
 - (C) Permeability and porosity
 - (D) Atterberg limits and plasticity index
23. What is the primary apparatus used in the Vane Shear Test?
 - (A) Triaxial compression machine
 - (B) Direct shear box
 - (C) Vane shear device
 - (D) Proctor compaction apparatus

24. What is the primary cause of consolidation in soils?
 (A) Capillary action (B) Percolation
 (C) Pore water pressure dissipation (D) Soil compaction
25. What is the term for the property of fresh concrete that describes the separation of coarse aggregates from the mortar?
 (A) Segregation (B) Bleeding
 (C) Setting (D) Plastic shrinkage
26. What is the purpose of curing after plastering?
 (A) To enhance decorative effects (B) To increase surface hardness
 (C) To prevent cracking (D) To reduce plaster thickness
27. Which raw material provides the essential ingredient for cement clinker formation?
 (A) Gypsum (B) Sand
 (C) Clay (D) Iron ore
28. Which factor is a potential challenge of prefabricated construction?
 (A) Improved quality control (B) Reduced construction speed
 (C) Increased material waste (D) Limited design options
29. What is prefabricated construction?
 (A) Construction method involving assembling components off-site (B) Construction method using only traditional building materials
 (C) Construction method focused on on-site fabrication (D) Construction method without any pre-planning
30. What is rubble masonry primarily composed of?
 (A) Dressed stones of uniform size (B) Irregularly shaped stones of varying sizes
 (C) Cut and squared stones with precise dimensions (D) Stones arranged in a haphazard manner without mortar

PART B

(Answer all questions. Each question carries 2 marks)

31. When a body is subjected to a direct tensile stress in one plane, the maximum normal stress occurs at a section inclined at ----- degree to the normal.
 (A) 15 (B) 45
 (C) 30 (D) 0
32. If the bulk modulus and shear modulus are 1 and 2 respectively, what is the value of Young's modulus of elasticity?
 (A) 3 (B) 3.1
 (C) 3.6 (D) 3.9
33. Froude number for critical flow is
 (A) 2 (B) 1.5
 (C) 1 (D) 1.2
34. Milk, blood and clay are examples of ----- fluid.
 (A) ideal (B) pseudo-plastic
 (C) perfect (D) Newtonian
35. The bearings of the lines AB and BC are $146^\circ 30'$ and $68^\circ 30'$. The included angle ABC is
 (A) 102° (B) 78°
 (C) 45° (D) none of these
36. What is the typical accuracy of a consumer-grade GPS receiver?
 (A) Within a few kilometers (B) Within a few hundred meters

(C) Within a few meters

(D) Within a few centimeters

37. When drainage is permitted through a consolidated sample during the test, the test is called:

(A) Quick test

(B) UU test

(C) Slow test

(D) CU test

38. The effective stress at a depth of 2.5 m in a saturated soil of density 19 kN/m^3 with water table at the ground surface is.----- kN/m^2

(A) 35

(B) 45

(C) 55

(D) 65

39. What is pointing in masonry?

(A) The process of laying bricks or stones

(B) The process of finishing mortar joints

(C) The process of curing mortar

(D) The process of applying paint to masonry surfaces

40. Which type of contract involves a fixed price for the work to be performed, with the contractor bearing the risk of cost overruns?

(A) Cost-plus contract

(B) Lump sum contract

(C) Time and material contract

(D) Unit price contract
