JKSSB JE

Civil Engineering

Mega Mock Challenge
(August 11th - August 12th 2021)

Questions &
Answer Key

1. In a surveyor's compass
   A. needle is edge bar type.
   B. the scale is free to float along with the magnetic needle.
   C. graduations are inverted
   D. sighting and reading bearings can be done simultaneously.

Ans. A

2. A line AB of length 20 m has a reduced bearing of S60°E. The latitude of the line is:

   A. 10 m   B. -10 m

   C. 20 m   D. -20 m

Ans. B

3. The staff reading upon the floor and roof of a workshop are 1.5 m and -2m respectively. The reduced level of the floor the workshop is 201.355m. Determine the height of the workshop.

   A. 204.855m   B. 200.855m

   C. 0.5 m   D. 3.5 m

Ans. D

4. The angle of elevation to the top of a tower is measured as 45°00' using a theodolite placed at a distance of 100m from the tower. The staff reading held at a station of RL 100m was 2.5m, the telescope being horizontal. The reduced level of the top of the tower is

   A. 100m   B. 200m

   C. 202.5m   D. 102.5m

Ans. C

5. Perambulator is a device used for
   A. Measuring vapour pressure
   B. Measuring horizontal distance
   C. Calculating horizontal angle
   D. To calculate spot speed of moving vehicle

Ans. B

6. The stress strain curve showing elasto plastic material with strain hardening is

A.

B.

C.

D.
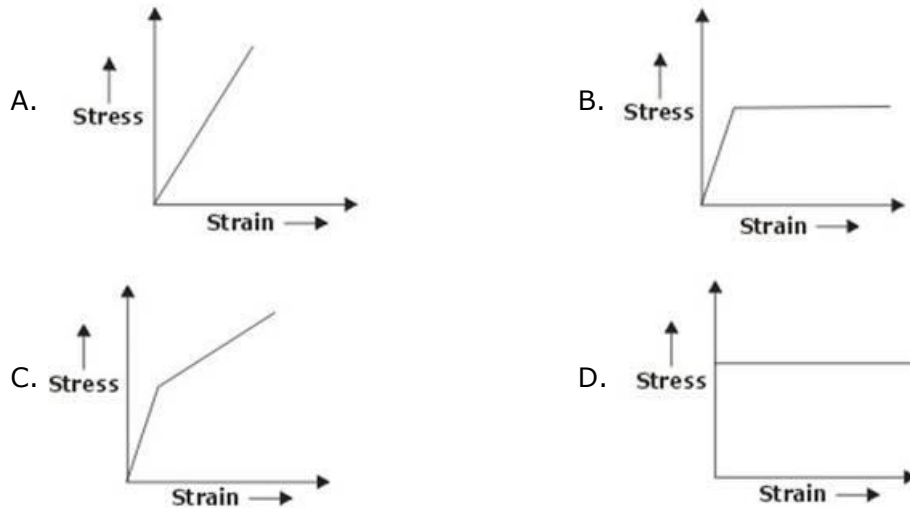
Ans. C

7. The stress level below which there is less probability of failure even after infinite number of loading cycle is termed as

A. Plastic limit

B. Ultimate stress

C. Elastic limit

D. Endurance limit

Ans. D

8. Young's modulus of elasticity depends upon

(i) Load applied to the body

(ii) Mineralogical composition of material

(iii) Temperature

(iv) Strain induced in the body

A. i and iii

B. ii and iv

C. ii and iii

D. i and iv

Ans. C

9. A solid bar of length 1.5 m and weight density 25 kN/m^3 hangs vertically below the ceiling. The deformation in the bar due to its self-weight will be equal to

Assume modulus of elasticity of bar is 30000 kN/m^2.

A. 9.38 mm

B. 0.938 mm

C. 0.0938 mm

D. 0.0938 m

Ans. B

10. **Statement 1:** If a material is heated to a temperature twice its initial temperature, its length would be twice of initial length.

Statement 2: Length of a material varies linearly with temperature.

A. Statement 1 and 2 both are correct and statement 2 is correct explanation of statement 1

B. Statement 1 and 2 both are correct and statement 2 is not the correct explanation of Statement 1

C. Statement 1 is true, statement 2 is false.

D. Statement 1 is false, statement 2 is true.

Ans. D

11. A composite bar of steel and copper is heated till the temperature reaches $80°C$. The type of stresses generated in copper and steel respectively are

A. Tensile, compressive

B. Compressive, compressive

C. Compressive, tensile

D. Tensile, Tensile

Ans. C

12. Range of Modulus of rigidity of a material is

A. $\frac{E}{3} < G < \infty$

B. $0 < G < \frac{E}{2}$

C. $\frac{E}{3} < G < \frac{E}{2}$

D. $\frac{E}{2} < G < \infty$

Ans. C

13. For Soffit formwork to beams (Props to be re fixed immediately after removal of formwork), form work removal time is

A. 16-24 hours

B. 3 days

C. 7 days

D. 28 days

Ans. C

14. While designing the pile as a column, the end conditions adopted is -

A. Both ends fixed

B. One end fixed and other end free

C. One end fixed and other end hinged

D. Both ends hinged

Ans. C

15. What is the main principle of Prestressed Concrete Structures?

A. To introduce shear stress

B. To introduce

C. To introduce compressive stresses in the zone wherever tensile stresses are expected

D. To introduce tensile stresses

Ans. C

16. For limit state of collapse, the partial safety factors recommended by IS 456:2000 for estimating the design strength of concrete and reinforcing steel are respectively

A. 1.5 and 1.15
B. 1.0 and 1.0
C. 1.15 and 1.5
D. 1.5 and 1.0

Ans. A

17. If the permissible compressive and tensile stresses in a single reinforced beam are 50 km/cm^2 and 1400 kg/cm^2 respectively and the modular ratio is 18, the percentage area of the steel required for an economic section is

A. 0.496%
B. 0.596%
C. 0.696%
D. None of these

Ans. C

18. If simply supported concrete beam, prestressed with a force of 2500kN, is designed by load balancing concept for an effective span of 10m and to carry a total load of 4OkN/m, the central dip of the cable profile should be:

A. 100mm
B. 200mm
C. 300 mm
D. 400 mm

Ans. B

19. If the diameter of the main reinforcement in a slab is 16 mm, the concrete cover to main bars is

A. 12 mm
B. 13 mm
C. 14 mm
D. 16 mm

Ans. D

20. In a rectangular column effective depth of column having both ends fixed is 250 m and width of the column is 250 mm. If the overall depth of the column is 350 mm, then the maximum area of compression reinforcement is

A. 2500 mm^2
B. 1250 mm^2
C. 3500 mm^2
D. 1750 mm^2

Ans. C

21. The degree of saturation of zero void line is

A. 0%
B. 25%
C. 50%
D. 100%

Ans. D

22. If the sand in situ is in its densest state, the relative density of sand is

A. zero
B. 1
C. between 0 and 1
D. greater than 1

Ans. B

23. Quicksand is a

    A. type of sand.

    B. flow condition occurring in cohesive soils.

    C. flow condition occurring in cohesionless soils.

    D. flow condition occurring in both cohesive and cohesionless soils.

Ans. C

24. Black cotton soil exhibits large swelling and shrinkage due to the presence of the following clay mineral :

    A. Kaolinite   B. Illite

    C. Montmorillonite   D. Halloysite

Ans. C

25. A saturated specimen of clay was immersed in mercury and displaced volume was 25 cc. The weight of the sample was 35 gm. After oven-drying for 48 hours, the weight reduced to 20 gm while volume came down to 12 cc. The shrinkage limit of soil is

    A. 10%   B. 7·5%

    C. 12·5%   D. 15%

Ans. A

26. Consider the following statements in respect of a steady two-dimensional rotational flow:

    1) Continuity is satisfied and streamlines can be drawn

    2) Both stream function and velocity potential exist.

    Which of the statements given above is/are correct?

    A. 1 only   B. 2 only

    C. Both 1 and 2   D. Neither 1 nor 2

Ans. A

27. The motion of outgoing water from the hole made at midpoint of completely filled open cylindrical tank with water is _____.

    A. forced vortex   B. irrotational

    C. rotational   D. turbulent

Ans. B

28. A body floats in stable equilibrium _____.

    A. When its metacentric height is zero

    B. When metacentre is above centre of gravity

    C. When its centre of gravity is below its centre of buoyancy

    D. None of these

Ans. B

29. Which of the following statements is not correct?

    A. A gauge always measures pressure above the surrounding atmospheric pressure

    B. At a point inside a fluid, pressure is exerted equally in all directions.

    C. Typical actual variation of pressure with elevation in the atmosphere is more adiabatic than isothermal

    D. Vacuum pressure at a point is always measured above absolute zero pressure.

Ans. D

30. Which of the following causes the major loss in the long pipes?

    A. Friction

    B. Gradual contraction and enlargement both

    C. Sudden contraction

    D. Sudden enlargement

Ans. A

31. Which of the following equation of fluid considers the fluid as a viscous flow

    A. Continuity Equation   B. Euler's Equation

    C. Bernoulli's Equation   D. Navier's Equation

Ans. D

32. The sphere of diameter 0.02 m is falls in the fluid of kinematic viscosity 10 stokes with the terminal velocity of 0.02 m/s. What is the value of coefficient of drag on the falling sphere?

    A. 40   B. 60

    C. 80   D. 100

Ans. B

33. A reservoir which retains excess supplies during periods of peak flows and release them gradually during low flows:

    A. Retarding reservoir   B. Flood control reservoir

    C. Distribution reservoir   D. Conservation reservoir

Ans. D

34. Optimum depth of kor-watering for rice is:

    A. 13.5 cm   B. 16.5 cm

    C. 19 cm   D. 20 cm

Ans. C

35. The crop period of a crop is 120 days. It requires 10 cm depth of water at every 10 days. Its delta is :

    A. 120 cm   B. 60 cm

    C. 12 cm   D. 6 cm

Ans. A

36. Sprinkler irrigation is not suitable to

    A. Rice   B. Fodder

    C. Lawn   D. None of the given answers

Ans. A

37. Type of cross – drainage work when canal is passed below the drainage is:

    A. Super passage   B. Aqueduct

    C. Inlet   D. Level crossing

Ans. A

38. What is the main disadvantage of the Aeration process?

    A. Excessive aeration absorb too much carbon dioxide, and water becomes corrosive.

    B. Excessive aeration absorbs too much oxygen, and thus water becomes corrosive.

    C. It removes oils and decomposes algae and other aquatic product from water

    D. If effectively removes volatile gases, which is harmful to water.

Ans. B

39. For a given discharge, the efficiency of the sedimentation tank can be increased by

    A. increasing the depth of the tank.

    B. decreasing the depth of the tank.

    C. increasing the surface area of the tank.

    D. decreasing the surface area of the tank.

Ans. C

40. For wastewater, the 5 -day BOD at 20°C is found to be 200 mg/L. For the same wastewater, 5 -day BOD at 30°C will be

    A. less than 200 mg/L.   B. more than 200 mg/L.

    C. 200 mg/L.   D. zero, as all bacteria, will die

Ans. B

41. MPN index is a measure of which one of the following?

    A. Coliform bacteria   B. BOD_5

    C. Dissolved oxygen content   D. Hardness

Ans. A

42. Flocculation is a process

    A. that removes algae from stabilization pond effluent.

    B. that promotes the aggregation of small particles into larger particles to enhance their removal by gravity.

    C. that mixes the coagulant in water.

    D. None of the above

Ans. B

43. The area of a certain district in India is 13400 sq. km and there are 12 towns as per 1981 census. Determine the length of national highway?

A. 268 km
B. 278 km
C. 288 km
D. 298 km

Ans. A

44. Calculate the extra width of the pavement required on a horizontal curve of radius 300 m on a single lane highway, the design speed being 80 kmph. Assume wheel base length of 6m:

A. 0.05 m
B. 0.04 m
C. 0.03 m
D. 0.06 m

Ans. D

45. What is the extra widening required for a pavement of 6m width on a horizontal curve of radius 220m, if the longest wheel of vehicle expected on the road is 6m and design speed is 70 kmph?

A. 0.3m
B. 0.66m
C. 0.7m
D. 0.9m

Ans. B

46. Structural failures considered in mechanistic method of bituminous pavement design

A. Fatigue and shear
B. Shear and slippage
C. Rutting and shear
D. Fatigue and Rutting

Ans. D

47. Lane capacity of a road having saturation head way as 2.7 sec and the cycle time as 60 sec is (green time = 27 sec, amber time = 5 sec, startup lost time = 4 sec, clearance lost time = 1 sec)

A. 480 veh/hr
B. 600 veh/hr
C. 540 veh/hr
D. 584 veh/hr

Ans. B

48. The Fire point is the lowest temperature at which:

A. the vapour of a substance momentarily takes fire
B. the material gets ignited and burns under specified conditions of test
C. the bitumen starts to flow
D. None of the above

Ans. B

49. Bituminious materials are used in highway construction primarily because of their:

A. cementing and water proofing properties
B. Load bearing capacity
C. High specific gravity
D. Black colour which facilitates road marking

Ans. A

50. The cumulative undulations over first half of 1km test distance is 60cm and the cumulative undulation of the second half of test distance is 80 cm. Determine the undulation index (mm/km) of the road.

A. 600

B. 800

C. 1400

D. 200

Ans. C

51. The value of the curve lead to be provided for a BG track with crossing number 8.5 is nearly,

A. 5.1 m

B. 14.25 m

C. 21.4 m

D. 28.5 m

Ans. D

52. If L is the length of a rail and R is the radius of a curve, the versine h for the curve is _____.

A. $a = L/4R$

B. $a = L^2/4R$

C. $h = L^2/8R$

D. $h = L^2/16R$

Ans. C

53. The plan of a building is in the form of a rectangle with centre line dimensions as $14.7m \times 9.7m.$ The thickness of the wall in super structure is 0.30 m. What is the floor area of the building?

A. 150 m^2

B. 135.36 m^2

C. 142.59 m^2

D. None of these

Ans. B

54. Consider the following statements:

A floating floor construction can

1) Efficiently absorb impact noise

2) Efficiently insulate against impact noise

3) Efficiently insulate against air born noise

Which of these statements are correct?

A. 1, 2 and 3

B. 1 and 2

C. 2 and 3

D. 1 and 3

Ans. D

55. The estimate prepared on the basis of the built-up covered area at the floor level of any storey of a building is known as:

A. Building cost index estimate

B. Cubical content method

C. Unit base method

D. Plinth area estimate

Ans. D

56. Which of the following is the correct statement for length of the long wall as one move from earthwork to brick work in super structure in long and short wall method?

    A. Its value decreases

    B. Its value depends upon the length of the wall.

    C. Its value increases.

    D. Its value remains same.

Ans. A

57. Unlike bar charts, milestone charts show?

    A. Scheduled chart or completion of major deliverables and key external interfaces

    B. Activity start and end dates of critical tasks

    C. Expected durations of the critical path

    D. Dependencies between complementary projects

Ans. A

58. _____ recognizes that a project or phrase should begin and commits the organization to do so:

    A. Initiating Process
    B. Solicitation Process

    C. Scoping process
    D. Planning process

Ans. A

59. Injury frequency rate per lakh of man-hours worked is calculated as:

    A. $\dfrac{No.\ of\ days\ lost\ x1,00,000}{No.\ of\ man-hours\ worked}$

    B. $\dfrac{No.\ of\ disabling\ injuries\ x1,00,000}{Total\ No.\ of\ man-hours\ worked}$

    C. $\dfrac{Injury\ frequency\ rate\ x\ Injury\ service\ rate}{1000}$

    D. $\dfrac{No.\ of\ disabling\ injuries}{Total\ No.\ of\ man-hours\ worked}$

Ans. B

60. A scaled drawing of the proposed construction site showing all the relevant features such as entry and exit points to the site, storage area for materials, toilets workers quarters, etc. is called

    A. Construction Plan
    B. Job Layout

    C. Development Plan
    D. Architectural Plan

Ans. B

***