



UPSSSC JE

Civil Engineering

Mega Mock Challenge

(January 26th - January 27th 2022)

Questions &
Solutions

8. At the centre line of a pipe flowing under pressure where the velocity gradient is zero, the shear stress will be _____.

- A. Minimum
- B. Maximum
- C. Zero
- D. Could be any value

Ans. C

9. Barometer is used to measure _____.

- A. pressure in pipes, channels etc.
- B. atmospheric pressure
- C. very low pressure
- D. difference of pressure between two points

Ans. B

10. The runaway speed of a turbine is _____.

- A. The actual running speed at design load
- B. The synchronous speed of the generator
- C. The speed attained by the turbine under no load condition
- D. The speed of the wheel when governor fails

Ans. C

11. A floating body is in stable equilibrium:

- A. When its metacentric height is zero
- B. When the centre of gravity of the body is below the centre of buoyancy
- C. When the metacentre is above the centre of gravity of body
- D. In none of the above situations

Ans. C

12. When an ideal fluid flows past a sphere _____.

- A. highest intensity of pressure occurs around the circumference at right angle to direction of flow
- B. lowest pressure intensity occurs at front stagnation point
- C. lowest pressure intensity occurs at rear stagnation point
- D. total drag is zero

Ans. D

13. In a falling head permeability test, the time taken for head to fall from 27 cm to 3 cm is 10 minutes, if the test is repeated with the same initial head i.e. 27 cm then what time would it take for head to fall to 9 cm?

- A. 3 minutes
- B. 5 minutes
- C. 6 minutes
- D. 7.5 minutes

Ans. B

29. Scrap value of a property may be _____.
- A. both negative or positive
 - B. constant
 - C. negative
 - D. positive

Ans. A

30. The plan of a building is in the form of a rectangle with centre line dimensions of outer walls as $14.7\text{m} \times 9.7\text{m}$. The thickness of the wall in super structure is 0.30 m. What is the floor area of the building?
- A. 143 m^2
 - B. 139 m^2
 - C. 152 m^2
 - D. 135.36 m^2

Ans. D

31. In the analysis of rates, the profit for the contractor is generally taken as _____.
- A. 20%
 - B. 15%
 - C. 10%
 - D. 5%

Ans. C

32. Calculate the quantity (cubic meter) of the earthwork for a canal of 50 m long. Depths of canal at two extreme sections are 3 m and 5 m. The bottom width and top width of the canal are 2m and 4m. Use midsection method.
- A. 450
 - B. 600
 - C. 750
 - D. 900

Ans. B

33. Calculate the number of bricks in 20 cubic metres brick works.
- A. 500
 - B. 1000
 - C. 10000
 - D. 100000

Ans. C

34. The assumption on which the trapezoidal formula for volume is based, is _____.
- A. The end sections are parallel planes
 - B. The mid-area of a pyramid is half the average area of the ends
 - C. The volume of the prismoidal is over-estimated and hence a prismoidal correction is applied
 - D. All options are correct

Ans. D

35. In the centre line method of working out volumes, for cross walls, what deductions must be made from the centre line length at each junction?
- A. twice the breadth
 - B. half the breadth
 - C. 1.5 breadth
 - D. None of these

Ans. B

36. If the storey height is equal to length of RCC wall, the percentage increase in strength is _____.
- A. 0
 - B. 10
 - C. 20
 - D. 30

Ans. B

37. If 20 mm diameter longitudinal bars are provided in a simply supported beam. The anchorage value for a U-shaped standard band is.
- A. 240 mm
 - B. 160 mm
 - C. 320 mm
 - D. 200 mm

Ans. C

38. In a square column of side 600 mm the unsupported length of column in the direction is considered to be 5 m. The minimum eccentricity for the design of column is
- A. 25
 - B. 30
 - C. 35
 - D. 40

Ans. B

39. Segregation is responsible for
- A. honey-combed concrete
 - B. porous layers in concrete
 - C. surface scaling in concrete
 - D. All options are correct

Ans. D

40. As per IS 456:2000 , if Span/depth ratio for span less than 10m. then beam is
- A. simply supported beam
 - B. continuous beam
 - C. cantilever beam
 - D. Simple supported beam with a hinge at mid span.

Ans. C

41. The partial factor of safety for concrete as per IS 456-2000_____.
- A. 1.5
 - B. 1.15
 - C. 0.87
 - D. 0.466

Ans. A

42. In the conventional pre-stressing, the diagonal tension in concrete _____.
- A. increases
 - B. decreases
 - C. does not change
 - D. may increase or decrease

Ans. B

43. The minimum percentage of shear reinforcement in R.C.C beam is _____.
- A. $0.85/f_y$
 - B. 0.4
 - C. 4
 - D. $40S_v/f_y d$

Ans. D

44. A groyne pointing upstream is known as:
- A. attracting groyne
 - B. repelling groyne
 - C. normal groyne
 - D. Ordinary groyne

Ans. B

45. Intensity of irrigation _____.
- A. Is the percentage of culturable commanded area proposed to be irrigated annually
 - B. Is always more than 100 %
 - C. Is the percentage that could be ideally irrigated
 - D. All the options are correct

Ans. A

46. Which of the following is the correct assumption of the Kennedy's theory?
- A. Shape of regime channel is semicircular.
 - B. Silt is in suspension due to buoyancy force.
 - C. Silt is in suspension due to eddy formed from bottom of channel.
 - D. Silt is in suspension due to eddy formed from wetted perimeter of channel.

Ans. C

47. The first watering which is given to a crop is called
- A. Base
 - B. Crop
 - C. Kor
 - D. Delta

Ans. C

48. Which of the following is a Rabi crop?
- A. Wheat
 - B. Rice
 - C. Maize
 - D. Jute

Ans. A

49. The value of Sodium Adsorption Ratio for medium sodium water lies between
- A. 8 to 16
 - B. 10 to 18
 - C. 15 to 23
 - D. 26 to 34

Ans. B

50. A crop requires 19 cm of water in 14 days. then the duty of the crop is
- A. 266 hec/cum
 - B. 637 hec/cum
 - C. 1137 hec/cum
 - D. 864 hec/cum

Ans. B

51. The elementary profile of a dam is
- A. A trapezoidal
 - B. An equilateral triangle
 - C. A rectangle
 - D. A right angled triangle

Ans. D

52. The most desirable alignment of an irrigation canal is along?
- A. the valley line
 - B. normal to contour line
 - C. the ridge line
 - D. the contour line

Ans. C

53. Method of applying water directly to the root zone of the plant is called _____
- A. Check flooding
 - B. drip method
 - C. furrow method
 - D. sprinkler irrigation

Ans. B

54. Calculate the equivalent radius (cm) of the resisting section of 20 cm slab, if the ratio of radius of wheel load distribution to the thickness of the slab is greater than 1.724
- A. 20
 - B. 35.6
 - C. 40
 - D. 40.9

Ans. A

55. In preparation of Marshall Mix design, the mass specific gravity of Marshall Specimen is 2.1 and the theoretical specific gravity of Marshall specific gravity is 2.4, then calculate the percentage air voids?

- A. 16.4%
- B. 12.5 %
- C. 10.6 %
- D. 9.4 %

Ans. B

56. The weight of coarse aggregate having specific gravity 2.65, which is completely filled into a cylinder of volume 0.003 m^3 is 5247 gm. What is the angularity number of this aggregate?

- A. 0
- B. 1
- C. 10
- D. none of above

Ans. B

57. Calculate the safe stopping sight distance for a design speed of 60 km/h hour two way traffic on a single lane road. The reaction time of driver is 2.5 sec.

- A. 82.21
- B. 136.23
- C. 164.42
- D. 674.24

Ans. C

58. Pick up the correct statement from the following

- A. Construction joints are necessarily planned for their locations
- B. Expansion joints are provided to accommodate thermal expansion
- C. Contraction joints are provided to control shrinkage cracks
- D. All option are correct

Ans. D

59. The absolute minimum radius of curve for safe operation, for a speed of 110 kmph is:

- A. 110 m
- B. 440 m
- C. 220 m
- D. 577 m

Ans. B

60. The shear failure of soil sub grade may be attributed to?

- A. Inadequate stability
- B. Excessive stress
- C. Inadequate stability & Excessive stress
- D. none of the mentioned

Ans. C

61. The bulk specific gravity of a bituminous mix is 2.4 and its theoretical specific gravity is 2.5. Calculate the percentage of air voids in the bituminous mix

- A. 1%
- B. 2.5%
- C. 4%
- D. 3.33%

Ans. C

62. The main purpose of providing camber

- A. To maintain equilibrium
- B. To collect storm water
- C. To follow IRC specifications
- D. To follow geometric specifications

Ans. B

63. The extra width of pavement is provided
- A. Horizontal curve
 - B. width of pavement
 - C. Length of pavement
 - D. Super elevation

Ans. A

64. Bituminous 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

65. In a Marshall sample, the bulk specific gravity of mix and aggregates are 2.4 and 2.6 respectively. The sample includes 5% of bitumen (by total weight of mix) of specific gravity 1.2. The theoretical maximum specific gravity of mix is 2.4. The voids in mineral aggregates (VMA) in the Marshall sample in % is:
- A. 16.2 %
 - B. 17.7 %
 - C. 18.9 %
 - D. 19.4 %

Ans. B

66. The star and grid pattern of road network was adopted in
- A. Nagpur road plan
 - B. Lucknow road plan
 - C. Bombay road plan
 - D. Delhi road plan

Ans. A

67. If a vehicle is negotiating a curve of radius 50 m with a wheel base of 7 m, then the value of off tracking is
- A. 0.77
 - B. 0.63
 - C. 0.49
 - D. 0.35

Ans. C

68. What is the value of off-tracking while a vehicle is negotiating a curve of radius 40 m with a wheel base of 7 m:
- A. 0.75 m
 - B. 0.69 m
 - C. 0.60 m
 - D. 0.52 m

Ans. C

69. Calculate the number of sleepers required for 2 km railway track, if sleeper density is $(n + 2)$ for broad gauge and the length of one rail for a broad gauge is 13 m.
- A. 2200
 - B. 2310
 - C. 2430
 - D. 2050

Ans. B

70. What does the gauge of a railway line define?
- A. Thickness of steel plates used
 - B. Distance between two parallel rails of a track.
 - C. Instrument to measure pressure.
 - D. Pressure that a railway track can stand.

Ans. B

71. What is the concentration of H^+ ions in moles/L in water if the pOH value is 5?
 A. 10^{-6} B. 10^{-7}
 C. 10^{-8} D. 10^{-9}

Ans. D

72. One litre of sewage, when allowed to settle for 30 minutes gives a sludge volume of 30 cm^3 . If the dry weight of this sludge is 6 grams, then its sludge volume index is:
 A. 3 ml/gm B. 5 ml/gm
 C. 6 ml/gm D. 9 ml/gm

Ans. B

73. Sludge bulking can be controlled by:
 A. Chlorination B. Coagulation
 C. Aeration D. Denitrification

Ans. A

74. A mixed liquor with 2500 mg/l of suspended solids has the settled volume of 225 ml from a liter of this mixed liquor. Its sludge volume index is
 A. 75 ml/g B. 90 ml/g
 C. 120 ml/g D. 135 ml/g

Ans. B

75. What is the maximum permissible limit of fluoride in drinking water?
 A. 1.2 mg/l B. 1.5 mg/l
 C. 3.0 mg/l D. 0.5 mg/l

Ans. B

76. The following data pertain to a waste water sample
 Initial Dissolved oxygen = 10 mg/l
 Final Dissolved oxygen = 3 mg/l
 Dilution = 2 %
 The Biochemical oxygen demand of the given wastewater sample is:
 A. 250 mg/l B. 500 mg/l
 C. 300 mg/l D. 350 mg/l

Ans. D

77. An ideal settling basin is designed with the surface overflow rate (SOR) of $1\text{m}^3/\text{m}^2/\text{hour}$. Particles have their discrete settling velocities and concentration as follows:

Particle type	settling velocity (m/h)	Initial concentration (mg/l)
(a)	1	100
(b)	0.5	100
(c)	0.1	100
(d)	0.05	100

Which one of the following give the correct estimate of the overall removal of particles per hour?

- A. 65 mg/l B. 165 mg/l
 C. 265 mg/l D. 365 mg/l

Ans. B

78. Raw water is entering a treatment plant and contains 250 mg/l suspended solids. If 55% of these solids are removed in sedimentation then find the solids removed in sedimentation as sludge?

- A. 144.5 mg/l
- B. 141.6 mg/l
- C. 137.5 mg/l
- D. 135.5 mg/l

Ans. C

79. Biochemical oxygen demand is quoted at what temperature?

- A. 25°C
- B. 20°C
- C. 15°C
- D. 10°C

Ans. B

80. The inspection pit or chamber is a manhole provided in a base drainage system _____.

- A. at every change of direction
- B. at every change of gradient
- C. at every 30 m intervals
- D. all options are correct

Ans. D

81. Which of the following are primary air pollutants?

- A. Sulphur dioxide and Nitrogen oxides
- B. Ozone and Carbon monoxide
- C. Sulphur dioxide and Ozone
- D. Nitrogen oxide and Ozone

Ans. A

82. With an increase in the denominator of the representative fraction, the scale of the map will _____.

- A. decrease
- B. either decrease or increase
- C. increase
- D. remain same

Ans. A

83. A line of true length 398 m when measured by a chain of 20 m chain is recorded to be 400 m. What is the actual length of the chain (in m)?

- A. 19.9
- B. 20.1
- C. 20.4
- D. 21.5

Ans. A

84. The values of whole circle bearing vary from _____.

- A. 0° to 90°
- B. 0° to 180°
- C. 0° to 270°
- D. 0° to 360°

Ans. D

85. The type of surveying in which the curvature of the earth is taken into account is called _____.

- A. Geodetic surveying
- B. Plane surveying
- C. Preliminary surveying
- D. Topographical surveying

Ans. A

86. Survey line provided to verify the accuracy of the frame work is known as?

- A. Check line
- B. Tie line
- C. Subsidiary line
- D. Base line

Ans. A

87. The direction of a line relative to a given meridian is known as?
- A. Angle of line
 - B. Direction of line
 - C. Relative meridian
 - D. Bearing of line

Ans. D

88. Mean Sea Level (MSL) adopted by Survey of India for reference, is located at?
- A. Delhi
 - B. Kolkata
 - C. Mumbai
 - D. Karachi

Ans. C

89. The main principle of surveying is to work _____.
- A. from part to the whole
 - B. from whole to the part
 - C. from higher level to the lower level
 - D. from lower level to higher level

Ans. B

90. The main principle of field surveying is to work from
- A. higher level to lower level
 - B. lower level to higher level
 - C. part to whole
 - D. whole to part

Ans. D

91. Check lines (or proof lines) in Chain Surveying are essentially required _____.
- A. to plot the chain lines
 - B. to plot the offsets
 - C. to indicate the accuracy of the survey work
 - D. to increase the out-turn

Ans. C

92. Geodetic survey is different from plane surveying because of _____.
- A. Very large area is covered
 - B. The curvature of the earth is considered
 - C. Undulations of the topography
 - D. The large difference of elevations

Ans. B

93. Chain surveying is most suitable when _____.
- A. The ground is fairly leveled and open with simple details
 - B. The area is small in extent
 - C. Plans are required on a large scale
 - D. All option are correct

Ans. D

94. Number of links in a 30 m metric chain is _____.
- A. 100
 - B. 150
 - C. 180
 - D. 200

Ans. B

95. Hydrographic survey deals with the mapping of _____.
- A. Large water bodies
 - B. Canal system
 - C. Colour movement
 - D. None of these

Ans. A

96. A well-conditioned triangle has angles not less than _____ and not more than _____ respectively.
- A. 10° , 90°
 - B. 30° , 120°
 - C. 90° , 120°
 - D. None of these

Ans. B

97. Chainage is the distance measured _____.
- A. Along a chain line
 - B. Perpendicular to a chain line
 - C. Perpendicular to a tie line
 - D. None of these

Ans. A

98. The Horizontal angle which the true meridian makes with magnetic meridian is called _____.
- A. Magnetic declination
 - B. True declination
 - C. Dip
 - D. Azimuth

Ans. A

99. For which of the following, will the chain surveying be well adopted one?
- A. Large areas with difficult details
 - B. Small surveys in open ground
 - C. Small surveys with crowded details
 - D. Large areas with simple details

Ans. B

100. The area of a field found to be 2000 m^2 when measured with a 30 m tape. Determine the correct area if the tape was found to be 0.30 m too short?
- A. 1960.2 m^2
 - B. 2600.4 m^2
 - C. 2475.5 m^2
 - D. 3000 m^2

Ans. A

101. Pick up the correct statement from the following
- A. Lime in excess, causes the cement to expand and disintegrate
 - B. Silica in excess, causes the cement to set slowly
 - C. Alumina in excess, reduces the strength of the cement
 - D. all options are correct

Ans. D

102. With a percentage increase of carbon in steel, decreases its _____.
- A. strength
 - B. hardness
 - C. brittleness
 - D. ductility

Ans. D

103. The standard size of brick as per Indian standards is _____.
- A. 20 cm x 10 cm x 10 cm B. 23 cm x 12 cm x 8 cm
C. 19 cm x 9 cm x 9 cm D. 18 cm x 9 cm x 9 cm

Ans. C

104. Curing_____.
- A. reduces the shrinkage of concrete
B. preserves the properties of concrete
C. prevents the loss of water by evaporation
D. All options are correct

Ans. D

105. Cut- Back bitumen
- A. is prepared by adding volatile diluents
B. has viscosity lower than ordinary bitumen
C. is classified in three classes
D. All of the above

Ans. D

106. Fly ash can be utilised in manufacturing of
- A. Cellular concrete blocks B. Bricks
C. Concrete D. All of the above

Ans. D

107. The main constituents of fly ash are:
- A. Silica B. Aluminium oxide
C. Ferrous oxide D. All of the above

Ans. D

108. PPC stands for
- A. Portland produced cement B. Perfect Portland cement
C. Portland pozzolana cement D. Perfect pozzolana cement

Ans. C

109. Concrete containing
- A. silicious aggregates, has higher co-efficient of expansion
B. igneous aggregates, has intermediate co-efficient of expansion
C. lime stones has lowest co-efficient of expansion
D. All option are correct

Ans. D

110. Pick up the correct statement from the following
- A. Water enables chemical reaction to take place with cement
B. Water lubricates the mixture of gravel, sand and cement
C. Only a small quantity of water is required for hydration of cement
D. All option are correct

Ans. D

111. Which one of the following materials is used as a bonding admixture
- A. natural rubber
 - B. synthetic rubber
 - C. organic polymers
 - D. All option are correct

Ans. D

112. Pick up the correct statement from the following
- A. An increase in water content must be accompanied by an increase in cement content
 - B. Angular and rough aggregates reduce the workability of the concrete
 - C. Large size aggregates increase the workability due to lesser surface area
 - D. All option are correct

Ans. D

113. Grading of sand causes great variation in
- A. workability of concrete
 - B. strength of concrete
 - C. durability of concrete
 - D. All option are correct

Ans. D

114. According to the IS specifications, initial setting time of the ordinary portland cement should not be less than ____.
- A. 10 minutes
 - B. 30 minutes
 - C. 6 hours
 - D. 10 hours

Ans. B

115. Concrete is:-
- A. Good in compression, good in tension
 - B. Good in compression, weak in tension
 - C. Weak in compression, weak in tension
 - D. Weak in compression, good in tension

Ans. B

116. Permanent deformation in concrete due to dead load of concrete is termed as:
- A. Strain
 - B. Extent
 - C. Creep
 - D. Ambit

Ans. C

117. Water cement ratio is generally expressed in volume of water required per _____.
- A. 10 kg
 - B. 20 kg
 - C. 30 kg
 - D. 50 kg

Ans. D

118. Pozzolana cement is used with confidence for construction of _____.
- A. dams
 - B. massive foundations
 - C. abutments
 - D. All options are correct

Ans. D

119. The commercial name of white and colored cement in India is _____.
- A. colocrete
 - B. rainbow cement
 - C. silvicrete
 - D. all options are correct

Ans. D

120. The factor of safety for steel as compared to concrete is _____.

- A. higher
- B. same
- C. lower
- D. None of these

Ans. C

121. The strength and quality of concrete depends on _____.

- A. aggregate shape
- B. aggregate grading
- C. surface area of the aggregate
- D. All options are correct

Ans. D

122. Plaster of Paris can be obtained from the calcinations of _____.

- A. Lime stone
- B. Gypsum
- C. Dolomite
- D. Bauxite

Ans. B

123. The compressive strength of 100 mm cube as compared to 150 mm cube is always _____.

- A. less
- B. more
- C. equal
- D. None of these

Ans. B

124. The strength and quality of concrete depends on –

- A. aggregate shape
- B. aggregate grading
- C. surface area of the aggregate
- D. All options are correct

Ans. D

125. The process of proper and accurate measurement of concrete ingredients for uniformity of proportion is known as _____.

- A. batching
- B. grading
- C. mixing
- D. None of these

Ans. A
