OSSC JE

Previous Year Paper

(Civil) 2015

JE(Civil) (Main) – 2015 – Set – 2
Technical Paper

Time : $1\frac{1}{2}$ hours

Full Marks : 100

*Each question carries **1** mark.*

There is negative marking of 0.25 mark for each wrong answer.

*Answer **all** questions, choosing the correct **one** from the alternatives suggested and darken the appropriate circle using BLUE **or** BLACK BALL POINT PEN.*

1. A construction schedule is prepared after collecting :
   (1) Number of operations
   (2) Output of labour
   (3) Output of machinery
   (4) All of these

2. The first stage of construction is :
   (1) Preparation of estimate
   (2) Survey of the site
   (3) Initiation of proposal
   (4) Preparation of tender

3. Time and progress chart of a construction is known as :
   (1) Bar chart
   (2) Gantt chart
   (3) Milestone chart
   (4) All of these

4. The overall in-charge of an organization at the site responsible for the execution of the work is :
   (1) Executive engineer
   (2) Junior engineer
   (3) Engineer
   (4) Assistant engineer

5. Low cost, higher volume items requires :
   (1) No inspection
   (2) Little inspection
   (3) Intensive inspection
   (4) 100% inspection

6. The reduction in project time normally results in :

(1) Decreasing the direct cost and increasing indirect cost

(2) Increasing the direct cost and decreasing the indirect cost

(3) Both increasing the direct cost and indirect cost

(4) Both decreasing the direct cost and indirect cost

7. Target mean strength of M_{20} grade of concrete in N/mm^2 is :

(1) 26.6

(2) 28.25

(3) 20

(4) 0

8. For building project estimate which method is generally used in PWD ?

(1) Centre line method

(2) Long wall and short wall method

(3) Crossing method

(4) Short wall methods

9. Most accurate method of estimation is based on :

(1) Building cost index estimate

(2) Plinth area estimate

(3) Detailed estimate

(4) Cube rate estimate

10. The method of analysis of distribution system in which domestic supply is neglected and fire demand is considered as :

(1) Equivalent method

(2) Circle method

(3) Electrical analysis method

(4) Hardy-cross method

11. Which type of survey facilitates field observations and the plotting on a sheet simultaneously ?

(1) Compass surveying

(2) Chain surveying

(3) Theodolite surveying

(4) Plane table surveying

$V_1 + \frac{v^2}{2g(1-n)}$

12. Compared to a level surface, the stopping sight distance on a descending gradient is :
    (1) Less
    (2) More ✓ (2)
    (3) Same
    (4) Depends on the speed

13. The depth of water standing for crop, during the time, the crop grows in the field is defined as :
    (1) Duty
    (2) Crop ratio
    (3) Delta ✓ (3)
    (4) Base period

14. The bulking of sand occurs due to :
    (1) Surface moisture ✓
    (2) Air in voids
    (3) Capillary action ✓ (1)
    (4) Viscosity

15. The distance between two brass rings in a surveyor's chain is :
    (1) 20 cm ✓ (1)
    (2) 40 cm
    (3) 1 cm
    (4) 50 cm

16. Size of Venturimeter is specified by :
    (1) Pipe diameter ✓ (4)
    (2) Throat diameter ✓
    (3) Angle of diverging section
    (4) Both pipe diameter and throat diameter

17. Stream line and path lines always coincide in case of :
    (1) Steady flow ✓ (1)
    (2) Laminar flow
    (3) Uniform flow
    (4) Turbulent flow

18. A connection which is formed when a wall takes a turn :
    (1) Lap (4)
    (2) Closer
    (3) Bat
    (4) Quoin ✓

19. The type of bond provided in brick masonry for carrying heavy loads is :
    (1) Flemish bond
    (2) English bond ✓ (2)
    (3) Zigzag bond
    (4) Dutch bond

20. A good building stone should not absorb water more than :
    (1) 5% ✓ (1)
    (2) 10%
    (3) 15%
    (4) 20%

21. The main ingredients of Portland cement are :
(1) Lime and Silica
(2) Lime and Alumina
(3) Silica and Alumina
(4) All of these

22. Nominal proportion of M_{20} grade of concrete :
(1) 1 : 2 : 4
(2) 1 : 1.5 : 3
(3) 1 : 1 : 2
(4) 1 : 3 : 6

23. Compound of cement responsible for early strength :
(1) C_2S
(2) C_3S
(3) C_3A
(4) C_4AF

24. Lime mortar is generally made with :
(1) Quick Lime
(2) Hydraulic Lime
(3) Fat Lime
(4) White Lime

25. An instrument used for setting out right angles :
(1) Optical square
(2) Cross staff
(3) Prismatic compass
(4) Level

26. Line drawn through points of same declination :
(1) Agonic line
(2) Isogonic line
(3) Aclinic line
(4) None of these

27. Which of the following is a permanent adjustment in compass survey instrument ?
(1) Adjustment of pivot points
(2) Focusing of prism
(3) Centring
(4) Levelling

28. The longest line in chain survey :
(1) Base line
(2) Check line
(3) Tie line
(4) All of these

29. If the fore bearing of a line AB is 30° and that of line BC is 100°, then the included angle between the lines is :
(1) 110°
(2) 130°
(3) 70°
(4) 280°

Cross to each other - (4) both cave, overhanging

30. Two contours of different elevation can unite to form one line only in the case of :
    (1) Cave
    (2) Overhanging drift
    (3) Vertical drift
    (4) Both (2) and (3)

31. For a tacheometer the additive and multiplying constants are respectively :
    (1) 0 and 100
    (2) 100 and 0
    (3) 0 and 0
    (4) 100 and 100

32. What is Compound Curve ?
    (1) Two or more arcs of same radii meeting each other at common tangent point
    (2) Two or more arcs of same radii meeting each other at initial tangent point
    (3) Two or more arcs of different radii meeting each other at common tangent point
    (4) Two or more arcs of different radii meeting each other at different tangent points

33. Fly ash is an environment pollutant produced by :
    (1) Oil refinery
    (2) Fertilizer plant
    (3) Hydro electric power plant
    (4) Thermal power plant

34. The base materials for distemper is :
    (1) Lime
    (2) Lime putty
    (3) Cement wash
    (4) Chalk

35. Turpentine oil is used in paint as a :
    (1) Base
    (2) Drier
    (3) Carrier
    (4) Thinner

36. Which is closest to the purest form of the iron ?
    (1) Cast iron
    (2) Wrought iron
    (3) Pig iron
    (4) Steel

37. Height of arc is the :
    (1) Vertical distance between springing line and intrados
    (2) Perpendicular distance between extrados and intrados
    (3) Perpendicular distance between springing line and extrados
    (4) None of these

38. The vertical post placed at the top and bottom end of a flight supporting the hand rail is :
(1) Newel post
(2) Baluster
(3) Balustrade
(4) Railing

39. The opening left in flat roofs for lighting purposes is known as :
(1) Sky light
(2) Gable window
(3) Lantern
(4) Dormer window

40. The vertical faces of a door opening which support frame of the door is called :
(1) Hold fast
(2) Jamb
(3) Dado
(4) Reveals

41. Cavity wall is generally provided for :
(1) Heat insulation
(2) Damp proofing
(3) Sound insulation
(4) All of these

42. The mortar in which both cement and lime are used as binding materials, is called :
(1) Cement mortar
(2) Lime mortar
(3) Fire resistant mortar
(4) Gauged mortar

43. The moisture content in a well seasoned timber is :
(1) 5%
(2) 10%
(3) 15%
(4) 20%

44. The sum of interior angles of a closed traverse is :
(1) $(2n-4)90^{\circ}$
(2) $(2n-4)180^{\circ}$
(3) $(3n-4)90^{\circ}$
(4) $(3n-4)180^{\circ}$

45. The carry over factor in a prismatic member whose one end is fixed is :
(1) Zero – Pin/hinged
(2) $\frac{1}{2}$ – fixed
(3) $\frac{3}{4}$
(4) 1

46. In cantilever beam, slope and deflection at free end is :
(1) Zero
(2) Maximum
(3) Minimum
(4) None of these

47. Which of the following statements is/are true for a simply supported beam ?

(1) Deflection at supports in a simply supported beam is maximum

(2) Deflection is maximum at a point where slope is zero

(3) Slope is minimum at supports in a simply supported beam

(4) All of these

48. In moment distribution method, the sum of distribution factors of all the members at any joint is always :

(1) Zero

(2) <1

(3) 1

(4) >1

49. Which of the following methods of structural analysis is a force method ?

(1) Slope deflection method

(2) Column analogy method

(3) Moment distribution method

(4) None of these

50. The number of slope deflection equations available for a two span continuous beam :

(1) 2

(2) 3

(3) 4

(4) Unpredictable

51. The bending moment in an arch throughout the span will be zero, if :

(1) The arch is parabolic and carries udl throughout the span

(2) The arch is circular and carries udl throughout the span

(3) The arch is parabolic and carries udl on half of the span

(4) The arch is circular and carries udl on half of the span

52. In India, the type of traffic used to design pavement is :

(1) Low traffic

(2) Heavy traffic

(3) Mixed traffic flow

(4) Very low traffic

53. The value of ruling gradient in plains as per IRC recommendation is :

(1) 1 in 10

(2) 1 in 15

(3) 1 in 20

(4) 1 in 30

54. If the average centre to centre spacing of vehicles is 30 meters, then the basic capacity of the traffic lane at a speed of 60 kmph is :

(1) 2,000 vehicles per day
(2) 2,000 vehicles per hour
(3) 2,500 vehicles per hour
(4) 2,500 vehicles per day

55. The most efficient traffic signal system is :

(1) Simultaneous system
(2) Alternate system
(3) Flexible progressive system
(4) Simple progressive system

56. Which of the following is the hardest grade of bitumen ?

(1) 30/40
(2) 60/70
(3) 80/100
(4) 100/120

57. The resistance of a material to penetration is ;

(1) Toughness
(2) Hardness
(3) Fatigue
(4) Roughness

58. The shape of the stop sign according to IRC :

(1) Circular
(2) Triangular
(3) Rectangular
(4) Octagonal

59. Gauge is the distance between :

(1) Running faces of rails
(2) Centre of centre of rails
(3) Outer faces of rails
(4) Inner faces of rails

60. According to ICAO, all marking on runways of an airport are :

(1) Yellow
(2) White
(3) Black
(4) Red

61. The duty of a crop is 432 hectares per cumec and the base period of the crop is 100 days. The delta of the crop will be :

(1) 100
(2) 200
(3) 432
(4) 864

62. The method of irrigation used for orchards :

(1) Free flooding
(2) Borer flooding
(3) Check flooding
(4) Basin flooding

63. For irrigation purposes, the pH value of water should be :
(1) 3 to 6
(2) 6 to 8
(3) 8 to 11
(4) More than 11

64. A water-logged land is found suitable for cultivation due to :
(1) Ease of tillage for preparation of the field for optimum condition of germination
(2) Absence of aeration of soil from root zone of the plant
(3) Regular supply of water to plants from the water table by capillary action
(4) None of these

65. The main function of a diversion head works of a canal from a river is :
(1) To remove silt
(2) To control floods
(3) To store water
(4) To raise water level

66. As compared to gravity dams, earthen dams :
(1) Are costlier
(2) Are less susceptible to failure
(3) Require sound rock foundations
(4) Require less skilled labours

67. Flow irrigation involves construction of :
(1) Weir and barrage
(2) Canal system
(3) Dam
(4) All of these

68. What is the process by which water enters the small pore spaces between particles in soil or rock ?
(1) Transpiration
(2) Infiltration
(3) Precipitation
(4) Sublimation

69. In long and short wall method of estimation, the length of long wall is the centre to centre distance between the walls and :
(1) Breadth of the wall
(2) Half breadth of the wall on each side
(3) One-fourth breadth of the wall on each side
(4) None of these

70. Which of the following concrete work of the building of specified thickness is measured in square metres ?
(1) Floors
(2) D. P. C.
(3) Wall panels
(4) All of these

71. The most reliable estimate is :
(1) Cube rate estimate
(2) Preliminary estimate
(3) Detailed estimate
(4) Plinth area estimate

72. In gravity canals, F. S. L. is :
(1) Always at the ground level
(2) Always below the ground level
(3) Generally 4 to 5 meters above the ground level
(4) Only a few cm above the ground level

73. In P. W. D., who is the primary disbursing officer who is supplied with cheque books on district treasuries of India ?
(1) S. D. O.'s
(2) Divisional Officer
(3) Chief Minister
(4) Manager of Bank

74. The built up covered area of a building measured at floor level of any storey is :
(1) Covered area
(2) Carpet area
(3) Total area
(4) Plinth area

75. The Damp Proof Course (DPC) of uniform thickness in a building walls of different widths are measured in :
(1) m^4
(2) m^3
(3) m^2
(4) m

76. In the limit state design as per IS 456 : 2000, the shape of the compressive stress block of concrete is a combination of rectangular and :
(1) Elliptical shape
(2) Circular shape
(3) Parabolic shape
(4) Trapezoidal shape

77. What is the adoptable maximum spacing between vertical stirrups in an RCC beam of rectangular cross-section having an effective depth of 320 mm ?
(1) 320 mm
(2) 240 mm
(3) 160 mm
(4) 225 mm

78. How is the depth of footing for an isolated column governed ?
(1) By maximum bending moment
(2) By shear force
(3) By punching shear
(4) All of these ✓ (4)

79. Which of the following size of the bar cannot be used as longitudinal reinforcement of columns ?
(1) 10 mm ✓
(2) 12 mm (1)
(3) 16 mm
(4) None of these

80. The ratio of the diameter of reinforcing bars to thickness of slab is :
(1) 1/8 ✓ (1)
(2) 1/6
(3) 1/5
(4) 1/4

81. Tensile failure occurs in :
(1) Balanced section
(2) Under reinforced section ✓
(3) Over reinforced section (3)
(4) None of these

82. Determine the throat thickness (in mm) of a fillet weld of size 5 mm, when the angle between fusion face is 90 degree : (2)
(1) 4.5 mm
(2) 3.5 mm ✓
(3) 2.5 mm
(4) 1.5 mm

83. As per IS 800, the lacings of compression member shall be proportioned to resist a total transverse shear S equal to at least :
(1) 1% of axial load
(2) 1.5% of axial load (4)
(3) 2% of axial load
(4) 2.5% of axial load ✓

84. In a gusseted base, when the end of the column is machined for complete bearing on the base plate, then the axial load is assumed to be transferred to base plate :
(1) Fully by direct bearing
(2) Fully through fastenings
(3) 50% by direct bearing and 50% through fastenings ✓ (3)
(4) 75% by direct bearing and 25% through fastenings

85. The column splices is used to increase :
(1) The strength of the column ✓
(2) The rigidity of the column
(3) The length of the column ✓ (3)
(4) The cross-sectional area of the column

86. Web crippling in beams generally occurs at the points where :
(1) Concentrated load acts
(2) Bending moment is maximum
(3) Shear force is maximum
(4) Deflection is maximum

87. Net shear area of a 16 mm bolt at thread (in mm^2) is approximately equal to :
(1) 256
(2) 201
(3) 157
(4) 100

88. In which treatment unit Schmutzdecke layer is formed ?
(1) Sedimentation tank
(2) Rapid sand filter
(3) Coagulation tank
(4) Slow sand filter

89. Standard EDTA solution is used to determine the :
(1) Hardness in water
(2) Turbidity of water
(3) Dissolved oxygen in water
(4) Residual chlorine in water

90. The average rate of water consumption per head per day as per Indian Standard :
(1) 100 litres
(2) 135 litres
(3) 150 litres
(4) 175 litres

91. Activated carbon is used for :
(1) Removing hardness
(2) Removing odour
(3) Removing colour
(4) None of these

92. The correct sequence of treatment processes in a water treatment plant :
(1) Filtration – chlorination – sedimentation – coagulation
(2) Chlorination – filtration – sedimentation – coagulation
(3) Coagulation – filtration – sedimentation – chlorination
(4) Coagulation – sedimentation – filtration – chlorination

93. Sewerage treatment units are designed for :
(1) Maximum flow only
(2) Minimum flow only
(3) Maximum and minimum flow
(4) Average flow only

94. Most commonly used coagulant is :
(1) Alum
(2) Ferric sulphate
(3) Limestone
(4) Coal

95. A well oxidized sewage contains nitrogen mainly as :

(1) Nitrates
(2) Nitrites
(3) Free ammonia
(4) None of these

96. Biochemical Oxygen Demand (B. O. D.) of safe drinking water must be :

(1) Nil
(2) 5
(3) 10
(4) 15

97. The P_H of fresh and septic sewage can be :

(1) 3 and 9
(2) 9 and 3
(3) 3 and 6
(4) 8 and 9

98. In which system of water supply, water is supplied only during fixed hours of the day ?

(1) Continuous supply
(2) Fixed supply
(3) Intermittent supply
(4) Low supply

99. In which of the following distribution system, the clean water flows entirely under gravity ?

(1) Gravity system
(2) Pressure system
(3) Combined gravity and pumping system
(4) Pumping system

100. Grader is used mainly for :

(1) Trimming and finishing
(2) Shaping and trimming
(3) Finishing and trimming
(4) Finishing, trimming and shaping