

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 ✓ ④
2. The first stage of construction is :
(1) Preparation of estimate
(2) Survey of the site
(3) Initiation of proposal ✓ ③
(4) Preparation of tender
3. Time and progress chart of a construction is known as :
(1) Bar chart ①
(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
(3) Engineer ✓
(4) Assistant engineer
5. Low cost, higher volume items requires :
(1) No inspection
(2) Little inspection ✓ ⑤
(3) Intensive inspection
(4) 100% inspection

DC & TV
VIC & TV

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

(2)

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

(1)

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

(2)

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

(3)

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 ✓

(2)

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 ✓

(4)

$$V_1 + \frac{V^2}{2g(4-n)}$$

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
(2) Closer (4)
(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 ①
- (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 ✓ ②
- (3) 1 : 1 : 2
- (4) 1 : 3 : 6

23. Compound of cement responsible for early strength :

- (1) C_2S
- (2) C_3S ✓ ②
- (3) C_3A
- (4) C_4AF

24. Lime mortar is generally made with :

- (1) Quick Lime
- (2) Hydraulic Lime ✓ ②
- (3) Fat Lime ✗
- (4) White Lime ✗

25. An instrument used for setting out right angles :

- (1) Optical square ✗ ②
- (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 ②
- (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 ✓ ①
- (4) Levelling

28. The longest line in chain survey :

- (1) Base line ✓ ①
- (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° ✓ ①
- (2) 130°
- (3) 70°
- (4) 280°

Cross to each other - (4) ~~both~~ cave, overhangy

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) (3)

31. For a tachometer the additive and multiplying constants are respectively :

- (1) 0 and 100 ✓
- (2) 100 and 0 (1)
- (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 ✓ (3)
- (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 (4)

(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)
- (4) Chalk ✓

35. Turpentine oil is used in paint as a :

- (1) Base
- (2) Drier
- (3) Carrier (4)
- (4) Thinner ✓

36. Which is closest to the purest form of the iron ?

- (1) Cast iron
- (2) Wrought iron ✓ (2)
- (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 (2)
- (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 ✓ (1)
 - (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 ✓ (3)
 - (4) Dormer window
40. The vertical faces of a door opening which support frame of the door is called :
- (1) Hold fast (2)
 - (2) Jamb ✓
 - (3) Dado
 - (4) Reveals
41. Cavity wall is generally provided for :
- (1) Heat insulation
 - (2) Damp proofing
 - (3) Sound insulation (4)
 - (4) All of these ✓
42. The mortar in which both cement and lime are used as binding materials, is called :
- (1) Cement mortar (4)
 - (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)
 - (3) 15%
 - (4) 20%
44. The sum of interior angles of a closed traverse is :
- (1) $(2n-4)90^\circ$ ✓ (1)
 - (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 ✓ (2)
 - (3) $\frac{3}{4}$
 - (4) 1
46. In cantilever beam, slope and deflection at free end is :
- (1) Zero
 - (2) Maximum ✓ (2)
 - (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 ✓ (2)
- (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 ✓ (3)
- (4) > 1

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

- (1) Slope deflection method
- (2) Column analogy method ✓ (2)
- (3) Moment distribution method
- (4) None of these

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

- (1) 2 (3)

(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 ✓ (1)
- (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)
- (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 (4)
- (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) Border 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 ✓ (2)
 (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 ✓ (4)
65. The main function of a diversion head works of a canal from a river is :
 (1) To remove silt
 (2) To control floods (4)
 (3) To store water
 (4) To raise water level ✓
66. As compared to gravity dams, earthen dams : (4)
 (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 ✓ (4)
68. What is the process by which water enters the small pore spaces between particles in soil or rock ?
 (1) Transpiration
 (2) Infiltration ✓ (2)
 (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 : (3)
 (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. (4)
 (3) Wall panels
 (4) All of these ✓

71. The most reliable estimate is :

- (1) Cube rate estimate
- (2) Preliminary estimate
- (3) Detailed estimate ✓ (3)
- (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 ✗ ✓ (4)

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)
- (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 (4)
- (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 ✓ (3)
- (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 (3)
- (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)
- (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 :
- (1) 4.5 mm (2)
- (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 ✓ (1)
 - (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)
 - (3) 157
 - (4) 100
88. In which treatment unit Schmutzdecke layer is formed ?
- (1) Sedimentation tank
 - (2) Rapid sand filter ✓
 - (3) Coagulation tank (4)
 - (4) Slow sand filter ✓
89. Standard EDTA solution is used to determine the :
- (1) Hardness in water ✓ (1)
 - (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)
 - (2) 135 litres ✓
 - (3) 150 litres
 - (4) 175 litres
91. Activated carbon is used for :
- (1) Removing hardness
 - (2) Removing odour ✓
 - (3) Removing colour (2)
 - (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)
 - ✓ (4) Coagulation – sedimentation – filtration – chlorination ✗ ✓ (4)
93. Sewerage treatment units are designed for :
- (1) Maximum flow only
 - (2) Minimum flow only
 - (3) Maximum and minimum flow ✓
 - (4) Average flow only (4)
94. Most commonly used coagulant is :
- (1) Alum ✓ (1)
 - (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

①

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

- (1) Nil ✓
- (2) 5
- (3) 10
- (4) 15

①

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 ✓

②

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

③

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

①

100. Grader is used mainly for :

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

④

