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**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)  
(3) Initiation of proposal  
(4) Preparation of tender (4)
3. Time and progress chart of a construction is known as :  
(1) Bar chart (1)  
(2) Gantt chart
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 (3)  
(4) Assistant engineer
5. Low cost, higher volume items requires :  
(1) No inspection  
(2) Little inspection (2)  
(3) Intensive inspection  
(4) 100% inspection

20  
10  
10  
10  
10

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  $\text{N/mm}^2$  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

$$\sqrt{t} + \frac{v^2}{2g(f-n)}$$

12. Compared to a level surface, the stopping sight distance on a descending gradient is :

- Less
- More ✓ (2)
- Same
- Depends on the speed

13. The depth of water standing for crop, during the time, the crop grows in the field is defined as :

- Duty
- Crop ratio
- Delta ✓ (3)
- Base period

14. The bulking of sand occurs due to :

- Surface moisture ✓
- Air in voids
- Capillary action ✓ (1)
- Viscosity

15. The distance between two brass rings in a surveyor's chain is :

- 20 cm ✓ (1)
- 40 cm
- 1 cm
- 50 cm

16. Size of Venturimeter is specified by :

- 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 :

- Steady flow ✓ (1)
- Laminar flow
- Uniform flow
- Turbulent flow

18. A connection which is formed when a wall takes a turn :

- Lap
- Closer
- Bat
- Quoin ✓ (4)

19. The type of bond provided in brick masonry for carrying heavy loads is :

- Flemish bond
- English bond ✓ (2)
- Zigzag bond
- Dutch bond

20. A good building stone should not absorb water more than :

- 5% ✓ (1)
- 10%
- 15%
- 20%

21. The main ingredients of Portland cement are :

- Lime and Silica ✓
- Lime and Alumina ①
- Silica and Alumina
- All of these

22. Nominal proportion of M<sub>20</sub> grade of concrete :

- 1:2:4 ②
- 1:1.5:3 ✓
- 1:1:2
- 1:3:6

23. Compound of cement responsible for early strength :

- C<sub>2</sub>S
- C<sub>3</sub>S ✓ ②
- C<sub>3</sub>A
- C<sub>4</sub>AF

24. Lime mortar is generally made with :

- Quick Lime
- Hydraulic Lime ✓ ②
- Fat Lime ✗
- White Lime

25. An instrument used for setting out right angles :

- Optical square ✗ ②
- Cross staff ✓

(3) Prismatic compass

(4) Level

26. Line drawn through points of same declination :

- Agonic line
- Isogonic line ✓
- Aclinic line ②
- None of these

27. Which of the following is a permanent adjustment in compass survey instrument ?

- Adjustment of pivot points
- Focusing of prism
- Centring ✓ ①
- Levelling

28. The longest line in chain survey :

- Base line ✓
- Check line ①
- Tie line
- 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 :

- 110° ✓ ①
- 130°
- 70°
- 280°

Cross to each other - (1) ~~both~~ Cave, overhangs

30. Two contours of different elevation can unite to form one line only in the case of :

- Cave
- Overhanging drift
- Vertical drift  (3)
- Both (2) and (3)

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

- 0 and 100
- 100 and 0 (1)
- 0 and 0
- 100 and 100

32. What is Compound Curve ?

- Two or more arcs of same radii meeting each other at common tangent point
- Two or more arcs of same radii meeting each other at initial tangent point
- Two or more arcs of different radii meeting each other at common tangent point  (3)
- Two or more arcs of different radii meeting each other at different tangent points

33. Fly ash is an environment pollutant produced by :

- Oil refinery (4)
- Fertilizer plant
- Hydro electric power plant
- Thermal power plant

34. The base materials for distemper is :

- Lime
- Lime putty
- Cement wash (4)
- Chalk

35. Turpentine oil is used in paint as a :

- Base
- Drier
- Carrier (4)
- Thinner

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

- Cast iron
- Wrought iron  (2)
- Pig iron
- Steel

37. Height of arc is the :

- Vertical distance between springing line and intrados
- Perpendicular distance between extrados and intrados
- Perpendicular distance between springing line and extrados (2)
- None of these

38. The vertical post placed at the top and bottom end of a flight supporting the hand rail is :

- Newel post ✓
- Baluster ✓
- Balustrade
- Railing

39. The opening left in flat roofs for lighting purposes is known as :

- Sky light
- Gable window
- Lantern ✓
- Dormer window

40. The vertical faces of a door opening which support frame of the door is called :

- Hold fast
- Jamb ✓
- Dado
- Reveals

41. Cavity wall is generally provided for :

- Heat insulation
- Damp proofing
- Sound insulation
- All of these ✓

42. The mortar in which both cement and lime are used as binding materials, is called :

- Cement mortar

43. The moisture content in a well seasoned timber is :

- 5%
- 10% ✓
- 15%
- 20%

44. The sum of interior angles of a closed traverse is :

- $(2n-4)90^\circ$  ✓
- $(2n-4)180^\circ$  ✎
- $(3n-4)90^\circ$
- $(3n-4)180^\circ$

45. The carry over factor in a prismatic member whose one end is fixed is :

- Zero - *Pin/hinged*
- $\frac{1}{2}$  - *fixed* ✓
- $\frac{3}{4}$
- 1

46. In cantilever beam, slope and deflection at free end is :

- Zero
- Maximum ✓
- Minimum
- 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
- (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 ✓ 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 ✓
- (2) The arch is circular and carries udl throughout the span ①
- (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 :

- 2,000 vehicles per day 2
- 2,000 vehicles per hour ✓
- 2,500 vehicles per hour
- 2,500 vehicles per day

55. The most efficient traffic signal system is :

- Simultaneous system ✓ 3
- Alternate system
- Flexible progressive system ✓
- Simple progressive system

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

- 30/40 ✓ 1
- 60/70
- 80/100
- 100/120

57. The resistance of a material to penetration is ;

- Toughness
- Hardness ✓ 2
- Fatigue
- Roughness

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

- Circular
- Triangular
- Rectangular
- Octagonal ✓ 4

59. Gauge is the distance between :

- Running faces of rails
- Centre of centre of rails
- Outer faces of rails 1
- Inner faces of rails ✓

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

- Yellow ✓
- White ✓ 2
- Black
- 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 :

- 100
- 200 ✓ 2
- 432
- 864

62. The method of irrigation used for orchards :

- Free flooding
- Borer flooding
- Check flooding
- Basin flooding ✓ 4

63. For irrigation purposes, the pH value of water should be :

- 3 to 6
- 6 to 8 ✓ (2)
- 8 to 11 ✓
- More than 11

64. A water-logged land is found suitable for cultivation due to :

- Ease of tillage for preparation of the field for optimum condition of germination
- Absence of aeration of soil from root zone of the plant (2)
- 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 :

- To remove silt
- To control floods (1)
- To store water
- To raise water level ✓

66. As compared to gravity dams, earthen dams : (1)

- Are costlier
- Are less susceptible to failure
- Require sound rock foundations
- Require less skilled labours ✓

67. Flow irrigation involves construction of :

- Weir and barrage
- Canal system
- Dam
- All of these ✓ (4)

68. What is the process by which water enters the small pore spaces between particles in soil or rock ?

- Transpiration
- Infiltration ✓ (2)
- Precipitation
- 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 :

- Breadth of the wall (3)
- Half breadth of the wall on each side ✓
- One-fourth breadth of the wall on each side
- None of these

70. Which of the following concrete work of the building of specified thickness is measured in square metres ?

- Floors
- D. P. C. (4)
- Wall panels
- All of these ✓

71. The most reliable estimate is :

- Cube rate estimate
- Preliminary estimate
- Detailed estimate ✓ (3)
- Plinth area estimate

72. In gravity canals, F. S. L. is :

- Always at the ground level ✗
- Always below the ground level ✗
- Generally 4 to 5 meters above the ground level ✗
- 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 ?

- S. D. O.'s (2)
- Divisional Officer ✓
- Chief Minister
- Manager of Bank

74. The built up covered area of a building measured at floor level of any storey is :

- Covered area (1)
- Carpet area
- Total area
- Plinth area ✓

75. The Damp Proof Course (DPC) of uniform thickness in a building walls of different widths are measured in :

- $m^4$
- $m^3$
- $m^2$  ✓ (2)
- $m$

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 :

- Elliptical shape (3)
- Circular shape
- Parabolic shape ✓
- 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 ?

- 320 mm (2)
- 240 mm ✓
- 160 mm
- 225 mm

78. How is the depth of footing for an isolated column governed ?

- By maximum bending moment
- By shear force
- By punching shear
- All of these

79. Which of the following size of the bar cannot be used as longitudinal reinforcement of columns ?

- 10 mm
- 12 mm
- 16 mm
- None of these

80. The ratio of the diameter of reinforcing bars to thickness of slab is :

- 1/8
- 1/6
- 1/5
- 1/4

81. Tensile failure occurs in :

- Balanced section
- Under reinforced section
- Over reinforced section
- 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 :

- 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% of axial load
- 1.5% of axial load
- 2% of axial load
- 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 :

- Fully by direct bearing
- Fully through fastenings
- 50% by direct bearing and 50% through fastenings
- 75% by direct bearing and 25% through fastenings

85. The column splices is used to increase :

- The strength of the column
- The rigidity of the column
- The length of the column
- The cross-sectional area of the column

86. Web crippling in beams generally occurs at the points where :

- Concentrated load acts ✓ (1)
- Bending moment is maximum
- Shear force is maximum
- Deflection is maximum

87. Net shear area of a 16 mm bolt at thread (in  $\text{mm}^2$ ) is approximately equal to :

- 256
- 201 ✓ (3)
- 157
- 100

88. In which treatment unit Schmutzdecke layer is formed ?

- Sedimentation tank
- Rapid sand filter ✓
- Coagulation tank (4)
- Slow sand filter ✓

89. Standard EDTA solution is used to determine the :

- Hardness in water ✓ (1)
- Turbidity of water
- Dissolved oxygen in water
- Residual chlorine in water

90. The average rate of water consumption per head per day as per Indian Standard :

- 100 litres (2)
- 135 litres ✓

(3) 150 litres

(4) 175 litres

91. Activated carbon is used for :

- Removing hardness
- Removing odour ✓ (2)
- Removing colour
- None of these

92. The correct sequence of treatment processes in a water treatment plant :

- Filtration – chlorination – sedimentation – coagulation
- Chlorination – filtration – sedimentation – coagulation ✗
- Coagulation – filtration – sedimentation – chlorination ✗ (4)
- Coagulation – sedimentation – filtration – chlorination ✗ ✓ (4)

93. Sewerage treatment units are designed for :

- Maximum flow only
- Minimum flow only
- Maximum and minimum flow ✓ (4)
- Average flow only

94. Most commonly used coagulant is :

- Alum ✓ (1)
- Ferric sulphate
- Limestone
- 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 ✓

(1)