

Booklet No.

87110403

JEEDEC—2018

Subject : CIVIL ENGINEERING

Time : 2 hours

Full Marks : 100

Instructions

1. All questions are of objective type having four answer options for each. Only one option is correct. Correct answer will carry full marks 2. In case of incorrect answer or any combination of more than one answer, $\frac{1}{2}$ marks will be deducted.
2. Questions must be answered on OMR sheet by darkening the appropriate bubble marked A, B, C or D.
3. Use only Black/Blue ball point pen to mark the answer by complete filling up of the respective bubbles.
4. Do not make any stray mark on the OMR.
5. Write question booklet number and your roll number carefully in the specified locations of the OMR. Also fill appropriate bubbles.
6. Write your name (in block letter), name of the examination centre and put your full signature in appropriate boxes in the OMR.
7. The OMRs will be processed by electronic means. Hence it is liable to become invalid if there is any mistake in the question booklet number or roll number entered or if there is any mistake in filling corresponding bubbles. Also it may become invalid if there is any discrepancy in the name of the candidate, name of the examination centre or signature of the candidate vis-a-vis what is given in the candidate's admit card. The OMR may also become invalid due to folding or putting stray marks on it or any damage to it. The consequence of such invalidation due to incorrect marking or careless handling by the candidate will be sole responsibility of candidate.
8. Candidates are not allowed to carry any written or printed material, calculator, docu-pen, log table, any communication device like mobile phones etc. inside the examination hall. Any candidate found with such items will be reported against and his/her candidature will be summarily cancelled.
9. Rough Work must be done on the question paper itself. Additional blank pages are given in the question paper for Rough Work.
10. Hand over the OMR to the invigilator before leaving the Examination Hall.

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1. Mass haul diagram is related to the calculation of
 - (A) runoff in urban areas
 - (B) quantity of movement of ready mix concrete
 - (C) earthwork
 - (D) distance of movement of bituminous mix

2. If after every three or four stretchers, one header is used in a brick masonry wall, the bond so formed will be called as
 - (A) English garden wall bond
 - (B) Flemish garden wall bond
 - (C) Stretcher bond
 - (D) Herringbone bond

3. Frogs made in the bricks are
 - (A) to reduce weight of the brick
 - (B) to form a key for holding the mortar
 - (C) to indicate year and name of the manufacture
 - (D) to indicate top of the brick

4. For a bridge pier in very deep water, the foundation to be used should be
 - (A) well foundation
 - (B) pile foundation
 - (C) caisson foundation
 - (D) cofferdam

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5. The slow setting cement will have higher percentage of
- (A) tri-calcium aluminate (B) tri-calcium silicate
(C) gypsum (D) di-calcium silicate
6. Which of the following can be used for heat, sound and electric insulator?
- (A) Hard drawn copper (B) Asbestos
(C) Steam coal (D) Plaster of Paris
7. Two forces, whose magnitudes are P and $P\sqrt{2}$, act on a particle in directions inclined at an angle of 135° to each other. The magnitude of the resultant is
- (A) $\frac{P}{2}$ (B) P (C) $2P$ (D) $3P$
8. A point subjected to a number of forces will be in equilibrium if
- (A) algebraic sum of forces is zero
(B) algebraic sum of moment of the forces about the point is zero
(C) two resolved parts in any two directions at right angles are equal
(D) sum of resolved parts in any two directions at right angles are both zero
9. A shallow foundation
- (A) is resting on ground surface
(B) causes less settlement
(C) has a low bearing capacity
(D) has a depth of embedment less than its width
10. The force of 6 kg is just sufficient to move a body and the angle of friction of the body with the surface is 45° , the weight of the body will be
- (A) $6\sqrt{2}$ kg (B) $\frac{6}{\sqrt{2}}$ kg (C) 6 kg (D) 3 kg

11. A structure which consists of a number of members connected to each other to support external load without undergoing geometrical distortion in it, is called
- (A) beam (B) truss
(C) lintel (D) conjugate beam
12. The compression test is mainly done for testing
- (A) brittleness of the material (B) ductility of the material
(C) plasticity of the material (D) porosity of the material
13. Hooke's law holds good up to
- (A) elastic limit (B) yield limit
(C) breaking limit (D) plastic limit
14. If a material has identical properties in all directions, it is said to be
- (A) homogenous (B) isotropic
(C) elastic (D) orthotropic
15. If the magnetic bearing of a line is $60^{\circ}20'$ and the magnetic declination at the place is $2^{\circ}50'$ east, the true bearing of that line will be
- (A) $64^{\circ}70'$ (B) $60^{\circ}30'$
(C) $59^{\circ}30'$ (D) $65^{\circ}10'$
16. The combined correction due to refraction and earth's curvature is
- (A) zero (B) additive
(C) subtractive (D) progressive
17. True meridian passes through
- (A) magnetic north and magnetic south
(B) true north and true south
(C) equatorial line
(D) a fixed point

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18. In a plane table survey, plotting of inaccessible points can be conventionally done by
- (A) interpolation
 - (B) radiation
 - (C) traversing
 - (D) intersection
19. Separation of ingredients from concrete during transportation is known as
- (A) bleeding
 - (B) creep
 - (C) segregation
 - (D) shrinkage
20. Grade of steel is designated as Fe 415 if
- (A) the upper yield stress of the steel is 415 N/mm^2
 - (B) the ultimate stress of steel is 415 N/mm^2
 - (C) the characteristic strength is 415 N/mm^2
 - (D) the compressive strength is 415 N/mm^2
21. If the slump of a concrete mix is 6 cm, its workability is considered to be
- (A) very high
 - (B) high
 - (C) medium
 - (D) low
22. The degree of saturation in soil can be defined as the ratio of
- (A) water by weight to the dry soil weight
 - (B) volume of water to the gross volume of soil
 - (C) volume of water to volume of voids in soil
 - (D) weight of water to weight of soil
23. The bulk density of soil can be defined as
- (A) ratio of the weight of the solids to the volume of solids
 - (B) ratio of unit weight of soil to that of water
 - (C) unit weight of the soil under saturated condition
 - (D) unit weight of soil under dry condition

24. The maximum water content at which a reduction in water content will not cause a decrease in volume of a soil mass is known as
- (A) plastic limit (B) shrinkage limit
(C) liquid limit (D) consistency limit
25. Quick sand is
- (A) one that loses moisture rapidly
(B) a type of pure silica sand
(C) a condition where a cohesionless soil loses its strength because of upward flow of water
(D) a sand consisting of spherical particles only
26. A plot of rainfall intensity verses time is known as
- (A) hyetograph (B) mass flow graph
(C) duration curve (D) unit hydrograph
27. The flow in an open channel is called steady if
- (A) the channel always runs full
(B) the velocity of fluid remains constant with respect to time
(C) the discharge remains constant
(D) the head does not change with respect to time
28. The intensity of pressure at any point in a liquid is
- (A) directly proportional to the area of the vessel containing liquid
(B) directly proportional to the depth of liquid from the surface
(C) directly proportional to the length of the vessel containing liquid
(D) inversely proportional to the depth of liquid from the surface

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29. If for a fluid in motion, pressure at a point is same in all directions, the fluid is
- (A) a real fluid (B) a Newtonian fluid
(C) an ideal fluid (D) a non-Newtonian fluid
30. Colour of water is measured on
- (A) turbidity scale (B) silica scale
(C) platinum cobalt scale (D) threshold scale
31. Which one of the following is not a dissolved impurity in water?
- (A) Bacteria (B) Calcium carbonate
(C) Iron oxide (D) Carbon dioxide
32. pH value of fresh sewage is usually
- (A) zero (B) 1
(C) between 1 and 7 (D) between 7 and 14
33. A septic tank is
- (A) a physical method of solid waste treatment
(B) a physicochemical method of water treatment
(C) an aerobic method of sewage treatment
(D) an anaerobic method of sewage treatment
34. In a water treatment plant, dissolved iron and manganese can be removed from water by
- (A) aeration only
(B) aeration and coagulation
(C) aeration and flocculation
(D) aeration and sedimentation

35. Premix carpet is a type of
- (A) mosaic flooring
 - (B) thin bituminous wearing course
 - (C) root terracing
 - (D) mastic asphalt
36. A contraction joint is provided in concrete pavement when there is
- (A) temperature differential across depth of the pavement
 - (B) change in length of pavement due to change in temperature
 - (C) stop of construction due to any reason
 - (D) necessity of providing cross drain
37. The thin layer of bitumen coating between an existing bituminous layer and a new bituminous layer is
- (A) seal coat
 - (B) prime coat
 - (C) intermediate coat
 - (D) tack coat
38. The width of carriageway for an intermediate road as recommended by IRC is
- (A) 7.5 m
 - (B) 6.5 m
 - (C) 5.5 m
 - (D) 3.75 m
39. Gypsum is added in the manufacturing of cement to
- (A) reduce setting time of cement
 - (B) increase setting time of cement
 - (C) enhance strength of cement
 - (D) decrease grinding time

40. Ground coverage of any building is the ratio of
- (A) projected area of the building at ground level and the area of the plot
 - (B) area of the mandatory open space at ground level and total area of the plot
 - (C) area of the foundation trench of the building and projected area of the building
 - (D) area of the mandatory parking space at ground level and area of the mandatory open space
41. If G , B and M respectively are the centre of gravity, centre of buoyancy and metacentre of floating body, for stable equilibrium
- (A) G should be below M
 - (B) M should be below G
 - (C) G should be below B
 - (D) M should be below B
42. If forebearing of a line is observed to be $12^{\circ}24'$, then back bearing of the line should be
- (A) $77^{\circ}36'$
 - (B) $97^{\circ}36'$
 - (C) $167^{\circ}36'$
 - (D) $192^{\circ}24'$
43. Original cost of a property minus depreciation is
- (A) book value
 - (B) salvage value
 - (C) rental value
 - (D) obsolescence value
44. The resultant of two forces P and Q is R . If Q is doubled, the new resultant is perpendicular to P , this happens when
- (A) $P = Q$
 - (B) $Q = R$
 - (C) $Q = 2R$
 - (D) $Q = 3R$
45. When two forces acting at a point are such that, if the direction of one is reversed, direction of the resultant is turned through 90° , then the forces must be
- (A) equal in magnitude
 - (B) unequal in magnitude
 - (C) inclined at 0°
 - (D) inclined at 180°
46. Plaster of Paris is obtained from the calcination of
- (A) Bauxite
 - (B) Limestone
 - (C) Dolomite
 - (D) Gypsum

47. When plasticity index of a soil is zero, the soil is
- (A) clay (B) silt
(C) sand (D) silty sand
48. High COD to BOD ratio of an organic pollutant represents
- (A) presence of toxic material
(B) presence of free oxygen
(C) low biodegradability of the pollutant
(D) high biodegradability of the pollutant
49. A body of mass $2m$ moving with velocity $2v$ collides with another body of mass ' m ' moving with velocity ' v ' in the same direction. If the collision is perfectly elastic, the ratio of velocity of the blocks after impact will be
- (A) 4 : 4
(B) 4 : 5
(C) 4 : 6
(D) 4 : 7
50. For a beam subjected to pure bending
- (A) all fibres experience uniform stress
(B) the nature of the stress in all fibres is the same
(C) the stress intensity in any fibre is proportional to the distance of the fibre from the neutral axis
(D) the stress intensity in any fibre is proportional to the distance of the fibre from any end of the beam

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