Ph. D. Entrance Test – 2015

Subject: Civil Engineering (Construction Technology & Management)

Paper – I

Important: *Please consult your Admit Card/Roll No. slip before filling your Roll Number on the Test Booklet and Answer Sheet.*

Roll No.   *In Figure*   *In Words*

O.M.R. Answer Sheet Serial No.

Signature of Candidate: _____   *Signature of Invigilator:* _____

Time: 60 Minutes   Number of Questions: 50   Maximum Marks: 50

DO NOT OPEN THE SEAL ON THE BOOKLET UNTIL ASKED TO DO SO.

INSTRUCTIONS:

1. Write your Roll No. on the Questions Booklet and also on the OMR Answer Sheet in the space provided and nowhere else.
2. Enter the Question Booklet Serial No. on the OMR Answer Sheet. Darken the corresponding bubbles with **Black Ball Point/Black Gel Pen**.
3. Do not make any identification mark on the Answer Sheet or Question Booklet.
4. Please check that this Question Booklet contains **5**0 Questions. In case of any discrepancy, inform the Assistant Superintendent within 10 minutes of the start of Test.
5. Each question has four alternative answer (A,B,C,D) of which only one is correct. For each question, darken only one bubble (A or B or C or D), whichever you think is the correct answer, on the Answer Sheet with **Black Ball Point/Black Gel Pen**. There shall be no negative marking for wrong answers.
6. If you do not want to answer a question, leave all the bubbles corresponding to that question blank in the Answer Booklet. No marks will be deducted in such cases.
7. Darken the bubbles in the OMR Answer Sheet according to the Serial No. of the question given in the Question Booklet.
8. If you want to change an already marked answer, erase the shade in the darkened bubble completely.
9. For rough work only the blank sheet at the end of the Question Booklet be used.
10. The Answer Sheet is designed for computer evaluation. Therefore, if you do not follow the instructions given on the Answer Sheet, it may make evaluation by the computer difficult. **Any resultant loss to the candidate on the above account, i.e. not following the instructions completely, shall be of the candidate only.**
11. After the test, hand over the Question Booklet and the Answer Sheet to the Assistant Superintendent on duty.
12. In no case the Answer Sheet, the Question Booklet, or its part or any material copied/noted from this Booklet is to be taken out of the examination hall. Any candidate found doing so would be expelled from the examination.
13. A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any paper possibly of any assistant or found giving or receiving assistant or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent/Observer whose decision shall be final.
14. **Communication equipment such as mobile phones, pager, wireless set, scanner, camera or any electronic/digital gadget etc., is not permitted inside the examination hall. Use of calculators is not allowed.**
15. The candidates will not be allowed to leave the Examination Hall/Room before the expiry of the allotted time.

1. The Minimum compressive strength of first class brick should be

   A) $75 Kg/cm^2$ B) $90 Kg/cm^2$ C) $105 Kg/cm^2$ D) $120 Kg/cm^2$

2. The equivalent length of a column fixed at both ends is

   A) 0.5L   B) 0.7L   C) 2L   D) 1.5L

   Where L is the clear span between fixed ends.

3. For keeping the stress wholly compressive the load may be applied on a circular column within a concentric circle diameter

   A) d/2   B) d/3   C) d/4   D) d/8

   Where d is the diameter of the circular column.

4. A floating body attains stable equilibrium if the metacentre is

   A) At the Centroid   B) Above the Centroid
   C) Below The Centroid   D) Anywhere

5. The Detention time of a settling tank may be defined as the time required for

   A) A Particle to travel along its length
   B) A particle to travel from top surface to bottom sludge Zone
   C) The Flow of Sewage to fill the tank.
   D) None of These

6. The minimum grade of concrete for construction under sea water is

   A) M20   B) M30   C) M35   D) M15

7. The Max. Shear Stress q_{max} in a rectangular beam section is

   A) $1.25 q_{max}$ B) $1.5 q_{max}$ C) $2 q_{max}$ D) d.$2.5 q_{max}$

8. The Shear reinforcement in RCC is provided to resist

   A) Vertical Stress   B) Horizontal Shear
   C) Diagonal Compression   D) diagonal Tension

9. An outlet is said to be proportionalif its flexibility is

   A) Zero   B) Less than one   C) More than one   D) One

10. Bar charts are suitable for

   A) Minor Works   B) Major Works
   C) Very Large projects   D) All the above

11. The main principle of surveying is

   A) Part to whole   B) Whole to part   C) Traversing   D) Triangulation

12. The Length of a Standard arrow is

    A) 50cm   B) 40cm   C) 25cm   D) 45cm

13. The simplest type of surveying is the

    A) Plane Tabling   B) Chain Surveying
    C) Compass Surveying   D) None of the above

14. The horizontal angle between True North and Magnetic North at any place is known as

    A) Dip   B) Declination
    C) Bearing   D) None of the above

15. The vertical Axis,horizontal axis and the line of sight of a transit must meet in a point

    A) Always   B) Sometimes
    C) Never   D) None of the Above

16. Cement possesses the unique property of

    A) Settling   B) Decrease in Strength with age
    C) Increase in Strength with age   D) None of the above

17. Rocks formed by solidification of lava are known as

    A) Igneous Rocks   B) Sedimentary
    C) Limestone   D) None of the above

18. The traffic signs indicating Prohibitions are known as

    A) Warning Signs   B) Prohibitory Signs
    C) Mandatory Signs   D) None of the above

19. The limiting Gradient recommended in the plain area is

    A) 1in10   B) 1in 15   C) 1in 100   D) 1in20

20. The first railway was opened in Germany in

    A) 1887   B) 1935   C) 1835   D) 1897

21. The vertical cutting of the river bed is called

    A) Scour   B) Afflux   C) Ventway   D) None of these

22. The term Centroid is

    A) The same as centre of gravity   B) The point of suspension
    C) The point of Rotation   D) None of these

23. A steel bar of 5mm is heated from 15^0 to40^0c and it is free to expand. The bar will induce

    A) No stress   B) Shear Stress
    C) Tensile Stress   D) Compressive Stress

(2)

24. The planes,which carry no shear stress are known as

A) Principle Planes

B) Oblique Planes

C) Inclined Planes

D) None of the above

25. A beam of T-Section is subjected to a shear force of F. The Maximum Shear force will occur at the

A) Top of the Section

B) Bottom of the Section

C) Neutral Axis of the section

D) Junction of Web and Flange

26. A Column that fails due to direct stress is called

A) Short column
B) Long Column
C) Weak Column
D) Medium Column

27. Weigh Batching is done by

A) Spring Dial Scale

B) Platform Weighing balance

C) Portable Weigh Batchers

D) All the Above

28. The main beam is a beam, which supports

A) A floor construction

B) Joists

C) Secondary beam

D) None of these

29. Gantry girders are designed to resist

A) Lateral Load

B) Longitudinal Loads

C) Lateral &Longitudinal Loads

D) Lateral, Longitudinal and vertical Loads

30. The minimum Dissolved Oxygen required in water to save the aquatic life is

A) 1PPm
B) 2PPm
C) 4PPm
D) 8PPm

31. Traffic Actuated signals may be

A) Full traffic actuated Signals

B) Semi-Traffic Actuated signals

C) Speed control signals

D) All of these

32. In falling head permeability test the initial head of 1.0 m dropped to 0.35 m in 3 hours, the diameter of the stand pipe being 5 mm. The soil specimen was 200 mm long and of 100 mm diameter. The coefficient of permeability of the soil is:

A) 4.86×10^{-5}cm/s
B) 4.86×10^{-6}cm/s
C) 4.86×10^{-7}cm/s
D) 4.86×10^{-8} cm/s

33. Dowel bars in concrete pavement are placed along

A) The direction of traffic

B) Perpendicular to the direction of traffic

C) Along 45° to the direction of traffic

D) Can be placed along any direction

34. Rapid curing cutback bitumen is produced by blending bitumen with

A) Kerosene
B) Benzene
C) Diesel
D) Petrol

(3)

35. The revolutions of wheels of a vehicle without any forward or backward movement on the road is termed as

    A) Slipping   B) Skidding   C) Travelling   D) Turning

36. IRC has recommended that the least value of coefficient of frictional resistance (between road surface and tread of vehicle wheels) may be taken as

    A) 0.3   B) 0.25   C) 0.20   D) 0.15

37. The diameter of a rivet hole is made larger than the diameter of the rivet by 2mm for rivet diameters

    A) Upto12mm   B) Upto15mm
    C) Upto24mm   D) Exceeding 24mm

38. A Fillet weld stressed in transverse shear is known as

    A) Side Fillet Weld   B) End fillet weld
    C) Diagonal Fillet weld   D) All of these

39. In roof Trusses, the most frequently used section is
    A) Two-angle sections placed back to back
    B) Two- Channel sections placed back to back
    C) Two Channel section placed at a distance apart.
    D) Four angle section

40. In residential buildings, the rise of a stair may vary between

    A) 100m to 150mm   B) 150mm to 200mm
    C) 200mm to 250mm   D) 250mm to 300mm

41. According to Terzaghi, a foundation is said to be shallow if its depth is

    A) Equal to its width   B) Less than its width
    C) Greater than its width   D) Either A and B

42. The property of a material by which it can be beaten and rolled in plates is called

    A) Ductility   B) Malleability   C) Plasticity   D) Elasticity

43. D.O. Concentration falls down to zero anywhere in a naturaldrain,it indicates

    A) Zone of Degradation   B) Zone of active decomposition
    C) Zone of Recovery   D) Zone of clear Water

44. Expansion joints are provided if length of concrete structure exceeds

    A) 50m   B) 45m   C) 35m   D) 40m

45. The diameter of longitudinal bars of a column should never be less than

    A) 6mm   B) 8mm   C) 10mm   D) 12mm

46. In a sharda type fall, the rectangular crest may be used for discharge upto

  A) 6cumec   B) 10cumec   C) 14cumec   D) .20cumec

47. The object of surveying is

  A) The preparation of a map   B) Contouring
  C) Levelling   D) All the Above

48. Vision is obstructed in

  A) In Profile Levelling   B) Plane Tabling
  C) Indirect Ranging   D) None of the above

49. A couple produces
  A) Translatory motion
  B) Rotational Motion
  C) Combined Translatory and Rotational Motion
  D) None of the above

50. Actual performance of a task is called

  A) An Event   B) An Activity   C) A Duration   D) All of these

<center>x-x-x</center>