INSTRUCTIONS: Answers must be BRIEF, LEGIBLE and to the POINT

PART - A (60 Marks)

1. Draw the ELEVATION and SECTION of a COURSEd RUBBLE MASONRY wall.

2. Draw the ALTERNATE COURSES for a 30 cm × 30 cm BRICK PIER in
   (a) ENGLISH BOND
   (b) FLEMISH BOND

3. Draw the ELEVATION and SECTION of a LINTEL showing typical reinforcements

4. Draw the quadrant of a circle and mark the slopes (in degrees) for ladders, stairs and ramps

5. Draw the line diagram of a KING POST TRUSS

6. What is the unit of Fire resistance RATING? Which construction material has one of the highest rating?

7. How many DIVISIONS are there in MasterFormat? Within each division how many DIGIT CODE is used to identify each material?

8. What is LEED certification? What is its objective?

9. Order the following in descending order of size
   (a) silt   (b) sand   (c) boulder   (d) gravel   (e) cobble

10. Explain with sketches the method of constructing a slurry wall.

11. Sketch on UNCASED PEDESTAL PILE. How is it constructed?

12. Sketch the 3 types of failure of RETAINING WALLS.

13. Draw the Cross-section of a RETAINING WALL with “Crushed stone drainage layer” with a “Perforated drainage pipe”
14. Draw the cross-section of a CONCRETE SLAB with a RUBBER WATERSTOP across a construction joint. What is the function of the waterstop?
15. Draw the cross-section of a RAFT FOUNDATION.
16. What is the range of Carbon in Mild Steel? Draw the Stress-Strain diagram of mild steel.
17. Sketch the following shapes
   (a) angle section   (b) channel section
   (b) I – section     (d) T – section
18. What are the 3 methods of JOINING STEEL PLATES?
19. Explain the concept behind “TENSION CONTROL BOLT”
20. What is the idea behind a “DOG BONE” configuration?
21. What is a SHEAR WALL?
22. Draw the sketch of a “COPED BEAM-GIRDER CONNECTION”
23. Draw any two profiles of CORRUGATED STEEL DECKING.
24. What is the function of a SHEAR SHED? Explain with a diagram.
26. What is a CASTELLATED BEAM? Sketch and explain how it is manufactured.
27. What is HEAT OF HYDRATION?
28. Mention 4 different TYPES OF CEMENTS.
29. What is the RATIO of CYLINDER STRENGTH to CUBE STRENGTH of concrete.
30. Draw the CURVES showing the GROWTH OF COMpressive STRENGTH in concrete over time for
   (a) air-cured (concrete) for 28 days
   (b) moist cured (concrete) for 28 days
31. Sketch the SHEAR REINFORCEMENT around columns in a two-way flat plate
32. Explain how MONOLITHIC ACTION is ensured in bridge structures constructed of precast I-beams. Provide a sketch.
33. What is a COMPOSITE CONSTRUCTION. Give sketched examples.
34. When you concrete a hemi-spherical shell how will you ensure that the FRESH CONCRETE will not SLIDE DOWN the shutter during concreting and vibration.
35. What are the 3 FORMS OF VIBRATORS commonly used?
36. Distinguish between CARPET AREA and PLINTH area.
37. What is a CUL-DE-SAC CLUSTER?
38. What is FAR?
39. What is a MEZZANINE FLOOR? Explain with a suitable sketch.
40. What is a DRY RISER?
41. What is FIRE LOAD?
42. Mention any 4 Types of Facilities based on OCCUPANCY CLASSIFICATION as per NBC.
43. What is FIRE RESISTANCE RATING?
44. Construction Equipment can be classified into 7 categories. Mention any FOUR categories.
45. What is the difference between a BULLDOZER and an ANGLE DOZER?
46. What is the difference between a POWER SHOVEL and a FRONT-END LOADER?
47. What is the difference between a BULLDOZER and a SCRAPER?
48. Give a simple sketch of a DRAGLINE. Name of the important parts.
49. What is a CLAMSHELL?
50. What is the difference between a GRADER and a SCRAPER?
51. What is a GRADALL?
52. What is the difference between a HORIZONTAL BOOM CRANE and a LUFFING CRANE?
53. Sketch a TOWER CRANE with a HORIZONTAL BOOM.
54. How is the concrete pump CLEANED?
55. For what type of soil is a VIBRATING COMPACTOR used?
56. What is the difference between a FORM VIBRATOR and a NEEDLE VIBRATOR?
57. What is TRANSLOCATION?
58. How is cement classified according to Bureau of Indian Standards(BIS)?
59. What is a GREEN BUILDING?
60. What is the objective of TERI-GRIHA
PART-B (40 Marks)

1. State the requirements of a 2 - Bed roomed house. One bedroom must be in the first floor - 5

2. Mark the dimensions of all the rooms given in 1 - 5

3. Draw a line plan of the ground floor, staircase and first floor (with or without a ruler) - 10

4. Mark all doors/windows/ventilators - 5

5. Mark the dimensions on the line plans - 5

6. Calculate the F.A.R by assuming a suitable plot size. - 5

7. Draw the sectional view of the staircase showing all details (thickness; dimensions of tread & riser; landing slabs; reinforcement details; hand-rails.) - 5