[4061] – 105

F.E. (Semester – I) Examination, 2011
BASIC CIVIL AND ENVIRONMENTAL ENGINEERING
(2008 Pattern)

Time : 3 Hours Max. Marks : 100

Instructions *: 1) Answers to the **two** Sections should be written in **separate** books.*
*2) **Neat** diagrams must be drawn **wherever** necessary,*
*3) Black figures to the **right** indicate **full** marks.*
*4) **Use** of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is **allowed**.*
*5) **Assume** suitable data, if necessary.*
*6) Solve Q. **1** or Q. **2**, Q. **3** or Q. **4**, Q. **5** or Q. **6** from Section **I** and Q. **7** or Q. **8**, Q. **9** or Q. **10**, Q. **11** or Q. **12** from Section **II**.*

SECTION – I

1. a) Explain in brief the role of civil engineer in construction of dam. **6**

   b) State comparison between roadways (Highways) and Railways (any six points). **6**

   c) State and explain any four basic areas/branches of civil engineering, involved in a construction of fly over bridge. **4**

OR

2. a) Define valuation. State any four purposes of valuation. **6**

   b) Mention the name of construction work carried out by civil engineer in following branches of engineering.
      i) Mechanical engineering **4**
      ii) E and TC
      iii) Chemical engineering
      iv) Electrical engineering.

   c) State the two practical application of : **6**
      i) Geotechnical engineering
      ii) Remote sensing
      iii) Fluid mechanics.

P.T.O.

3. a) State the comparison between first class bricks and second class bricks. **4**

   b) Suggest the suitable stone/materials of construction for the following works : **4**

      i) Kitchen platform

      ii) Flooring

      iii) Footing (foundation)

      iv) Fine Aggregate in concrete

   c) Define foundation. Draw neat sketches of any two types of shallow foundations. **4**

   d) State any four fundamental requirements of masonry. **4**

OR

4. a) State the comparison between R.C.C. and P.C.C. **4**

   b) State and explain in brief the following loads. **4**

      i) Dead load ii) Live load.

   c) Write a short note on prestressed concrete (PSC). **4**

   d) Comment on the statement "Automation in construction is the replacement of manpower with machine power." **4**

5. a) What is Map ? State any four types of maps. **4**

   b) Following consecutive readings were taken with a dumpy level and 4 m levelling staff. 0.750, 1.435, 1.800, 0.400, 1.705, 1.525, 0.865 and 1.300. **6**

      The instrument was shifted after 3rd and 6th reading. The first reading was taken on a Arbitrary Bench Mark of R.L. 100.00 m. Calculate the reduced levels of remaining points by rise and fall method. Apply usual arithmetic check.

   c) What is GPS ? State any four applications of GPS. **4**

   d) Define the following terms used in levelling **4**

      1) Line of collimation

      2) Bench Mark

      3) Change point

      4) Fore sight reading (F.S.).

OR

6. a) Define surveying. Explain in brief the principle of 'working from whole to the part'. **4**

   b) The following staff readings were taken using dumpy level and 4 m levelling staff 2.150, 1.630, 1.450, 1.200, 1.500 and 1.450. The level was shifted after 3rd reading. Calculate the R.L.'s of the points by collimation plane method. The first reading was taken on a BM of RL 500 m. Apply usual arithmetic check. **6**

   c) Explain the functions of following keys of digital planimeter. **4**
      1) MEMO
      2) UNIT
      3) AVERAGE
      4) START

   d) State two applications of the following : **4**
      1) Total station
      2) G.I.S.

SECTION – II

7. a) State the various natural resources. What is the need of conserving natural resources ? **4**

   b) What is Environmental Impact Assessment ? State the various methods of carrying out EIA. (only names) **4**

   c) Explain in brief biotic and abiotic components of ecosystem. **4**

   d) List out the various methods of disposal of solid waste. Explain any one in brief. **4**

OR

8. a) Explain with a neat sketch Nitrogen cycle. **4**

   b) Comment on the statement, "Management of E-waste would be the biggest challenge" for the engineers. **4**

   c) Explain in brief the ill effects of technological advancement on environment. **4**

   d) Write a short note on carbon cycle. **4**

9. a) Explain with a neat sketch the following principles of building planning. **6**
   1) Horizontal circulation 2) Roominees
   b) Define setback distance. What are the limits of setback distance for industrial building and residential building. **6**
   c) Write a short note on eco-friendly materials in construction. **4**

OR

10. a) Write a short note on green building. **4**
   b) A residential building is to be constructed in a locality where FSI is 1.2. If the area of the open plot is 450 m^2, and the owner wants to construct a two storeyed building having a built up area on the ground floor as twice the built up area on the first floor. Calculate the maximum permissible built up area on each floor. **6**
   c) State with reason the desirable aspect for the following rooms. **6**
   1) Kitchen 2) Living
   3) Bed 4) Study room

11. a) Explain in brief, how green house gases are contributing to the global warming. **6**
   b) Define noise. Explain in brief various sources of noise. **4**
   c) Write a short note on wind energy. **4**
   d) Define land pollution. Explain in brief various sources of land pollution. **4**

OR

12. a) Explain in brief the ill effects of air pollution on men, materials and vegetation. **6**
   b) Explain in brief how urbanization and industrialisation is resulted into water pollution. **6**
   c) Write a short note on following : **6**
   1) Acid rain
   2) Ozone depletion.
