

Total No. of Questions : 12]

[Total No. of Printed Pages : 4

[3861]-155

F. E. (Semester - I) Examination - 2010

BASIC CIVIL AND ENVIRONMENTAL ENGINEERING

(2008 Pattern)

Time : 3 Hours]

[Max. Marks : 100

Instructions :

- (1) Solve Q. 1 or 2, Q. No. 3 or 4, Q. No. 5 or 6 from section I. and Q. No. 7 or 8, Q. No. 9 or 10, Q. No. 11 or 12 from section II.
- (2) Answers to the **two sections** should be written in **separate answer-books**.
- (3) Black figures to the right indicate full marks.
- (4) Neat diagrams must be drawn wherever necessary.
- (5) Use of logarithmic tables, slide rule, mollier charts, electronic pocket calculator and steam tables is allowed.
- (6) Assume suitable data, if necessary.

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### SECTION - I

- Q.1) (A) Explain general role of Civil Engineer in any construction work. [04]
- (B) Explain with a neat sketch working principle of Remote Sensing Technique. [04]
- (C) State comparison between Railways and Highways. [04]
- (D) Explain in brief the role of Civil Engineer in a Construction of Expressways. [04]

OR

- Q.2) (A) State any two applications of : [04]
- (a) Quantity Surveying
- (b) Earthquake Engineering
- (B) What do you mean by Infrastructure Development ? Enlist facilities to be provided for the same. [04]

(C) Define Fluid. State any four Practical Applications of Fluid Mechanics. [04]

(D) State any four applications of Environmental Engineering. [04]

**Q.3)** (A) Define Foundation. State any four functions of Foundation. [04]

(B) Enlist various types of Concretes. Write a short note on Prestressed Cement Concrete. [04]

(C) What is Cement ? State any two types of Special Cements. Also state their suitability. [04]

(D) What are Smart Materials ? Where they are used and why ? [04]

**OR**

**Q.4)** (A) Define Settlement. Explain with a neat sketch the Concept of Differential Settlement. [04]

(B) How will you check quality of cement in the field without sending sample of cement to the laboratory ? [04]

(C) What is the importance of Sand in construction ? State any four advantages of Artificial Sand. [04]

(D) Define Automation in Construction. What is the need of Automation in present era ? [04]

**Q.5)** (A) Define Surveying. State and explain any one Fundamental Principle of Surveying. [06]

(B) What is Map ? Enlist various types of Maps. Explain any one in brief. [04]

(C) Explain in brief various components of GPS. [04]

(D) What is Total Station ? State any four uses of Total Station. [04]

**OR**

**Q.6)** (A) State any four characteristics of Contour Lines. [04]

(B) Define the following terms used in levelling : [04]

(a) Station

(b) Level Surface

(c) Line of Collimation

(d) R.L.

- (C) The following is a Page of Level Field Book. Find out the missing readings (marked X) and complete page. Apply usual arithmetic checks :

[10]

| Sr. No. | B.S.  | I.S.  | F.S.  | H.I.    | R.L.    | Remarks |
|---------|-------|-------|-------|---------|---------|---------|
| 1.      | 2.450 |       |       | X       | X       | BM I    |
| 2.      | 3.280 |       | 0.375 | X       | X       | CP      |
| 3.      |       | X     |       |         | 453.805 |         |
| 4.      |       | 2.345 |       |         | X       |         |
| 5.      |       | 2.990 |       |         | 452.365 |         |
| 6.      | X     |       | 3.665 | 454.415 | X       | CP      |
| 7.      | 2.110 |       | X     | X       | 453.960 | CP      |
| 8.      |       | 1.370 |       |         | X       |         |
| 9.      |       |       | 1.425 |         | X       | BM II   |

## SECTION - II

- Q.7) (A) Explain with a neat sketch Carbon Cycle. [04]  
 (B) What is EIA ? State various methods of EIA. [04]  
 (C) Comment on the statement : "In coming future the disposal of E-waste would be the biggest problem." [04]  
 (D) Define Ecosystem. What are the various Components of Ecosystem. [04]

OR

- Q.8) (A) What do you understand by Sustainable Development ? State its importance in the present context. [04]  
 (B) What is Solid Waste ? State various methods of Disposal of Solid Waste. [04]  
 (C) Write short notes : [4x2=08]  
 (a) Hydrological Cycle  
 (b) Conservation of Natural Resources  
 Q.9) (A) Define the following terms : [04]  
 (a) FSI  
 (b) Built-up Area  
 (c) Carpet Area  
 (d) Building Line

(B) Write a short note on Use of Eco-friendly Materials in Construction. [04]

(C) Determine total carpet area of a three storeyed building from the following data : [04]

(a) Plot Area =  $40\text{m} \times 30\text{m}$

(b) FSI Allowed = 0.9

(c) Ratio of Built-up Area to Carpet Area = 0.8

(D) Write a short note on Green Building. [04]

**OR**

**Q.10)** (A) What is Circulation ? State its various types. What is the importance of Circulation in Building ? [04]

(B) Write a short note on Necessity of Building Bye-laws. [04]

(C) Explain with a neat sketch the following principles of Building Planning : [4x2=08]

(a) Aspect

(b) Privacy

**Q.11)** (A) Define Water Pollution. State various sources and causes of Water Pollution. [2+4=06]

(B) Explain in brief the role of Green House Gases in Global Warming. [04]

(C) Write short notes : [4x2=08]

(a) Wind Energy

(b) Geothermal Energy

**OR**

**Q.12)** (A) Explain in brief causes and ill effects of Noise Pollution. [04]

(B) What are the Sources of Land Pollution ? What measures would you like to suggest to minimise Land Pollution ? [06]

(C) Write short notes : [4x2=08]

(a) Renewable Sources of Energy

(b) Acid Rain