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Total No. of Questions : 12]

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[3561]-104

F. E. (Semester -I) Examination - 2009

BASIC CIVIL AND ENVIRONMENTAL ENGINEERING

(June 2008 Course)

Time : 3 Hours]

[Max. Marks : 100

Instructions :

- (1) Answer Q. 1 or Q. 2, Q. 3, or Q. 4, Q. 5 or Q. 6 from section I, Q. 7 or Q. 8, Q. 9 or Q. 10, Q. 11 or Q. 12 from section II.
- (2) Answer 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 stream tables is allowed.
- (6) Your answer will be valued as a whole.
- (7) Assume suitable data, if necessary.

SECTION - I

- Q.1) (A) Explain the role of Civil Engineer in Construction of Infrastructure Projects for 21st Century. [06]
- (B) Write a brief note on following and give practical application of each : [06]
- (1) Project Management
 - (2) Fluid Mechancis
- (C) Differentiate between Roadways and Railways. [04]

OR

- Q.2)** (A) Explain the importance of Quantity Surveying. [06]
(B) Enlist and briefly explain the Infrastructural Facilities required for the proper development of an area. [06]
(C) State and briefly explain any two adverse conditions under which the Civil Engineer has to execute the work. [04]
- Q.3)** (A) Explain causes of settlement of foundation and draw neat sketches of : [4+2=06]
(1) Trapezoidal Footing
(2) Strap Footing
(B) Enlist basic materials used in construction and give two uses of each. [06]
(C) Explain term : [04]
(1) Safe Bearing Capacity
(2) Differential Settlement

OR

- Q.4)** (A) Write a brief note on 'Smart Materials' in Construction Industry. [06]
(B) State advantages and disadvantages of Frame Structure with respect to Load Bearing Structures. [06]
(C) Explain the following terms and their uses : [04]
(1) P.C.C.
(2) P.C.
(3) R.C.C.
(4) P.S.C.

- Q.5)** (A) What are the Methods of Levelling. Explain in brief. [06]
(B) Explain the Axes of Dumpy Level. [04]
(C) The following staff readings were observed on continuously sloping ground along the centreline of a road, with the help of a dumpy level and 4m levelling staff, at 20m interval. The first reading was taken on starting point of road having R.L. 350.00 m, 0.540, 1.245, 2.375, 3.885, 1.245, 2.560, 3.780, 0.875, 1.625, 2.960.
(1) Enter the readings in a page of level book.
(2) Find R.L.'s by Rise and Fall Method. Apply usual checks.
(3) Determine Longitudinal Gradient of the Road. [08]

OR

- Q.6)** (A) With neat sketches, explain any four characteristics of Contour Lines. [04]
- (B) Explain in brief : G.I.S. and give two applications. [04]
- (C) What are the types of Bench Marks. [04]
- (D) During a fly levelling work, the staff readings were obtained at a regular interval of 25 meters. The readings were as under :
 B.S. → 0.565, 0.990, 2.775 and 2.350
 F.S. → 1.685, 1.350, 2.055 and 3.450
 The work was started from a point whose R. L. was known to be 255.555 m. Enter the readings for Rise and Fall Method to determine the RL's of all stations. Also, find the nature and magnitude of gradient. Apply usual checks. [06]

SECTION - II

- Q.7)** (A) Explain with suitable examples, Impact of Technological Advancements on the Environment. [06]
- (B) Explain with a neat sketch, "Hydrological Cycle". [2+4=06]
- (C) Explain in brief sources and classification of Solid Waste. [04]
- OR**
- Q.8)** (A) Explain the role of Engineers towards achieving sustainable development. [06]
- (B) Explain with a neat sketch :
 (1) Food Chain [1+2=03]
 (2) Food Web [1+2=03]
- (C) Comment on Mineral Resources in India. What are the adverse impacts of their over exploitation on the Environment ? [04]
- Q.9)** (A) Explain **any two** Principles of Planning from the principles given below. Draw suitable sketch.
 (1) Prospect [1+3=04]
 (2) Privacy [1+3=04]
 (3) Circulation [1+3=04]

- (B) On a plot of size 25m x 30m, the shorter side is facing the main road. The side margins are as follows : Front Margin : 3m, rear and side margins are all 2m; Earlier FSI allowed was 0.75. However, only ground storeyed construction after leaving the margins was built by the owner. Now, as per the new norms, FSI allowed is increased to 1.5. If 2 more storeys are proposed by the owner, find the additional area to be built on each floor. [08]

OR

- Q.10) (A)** A plot owner proposed G + 1 construction with 175 m² construction on each floor, on a plot of size 15m x 20m. If all margins are 2m and FSI allowed = 1,

Find :

- (1) Ground Coverage
- (2) FSI Consumed
- (3) Whether plan will be sanctioned or not.
- (4) If not, by how much amount the proposed area will be required to be reduced by the owner, so that the proposal will be sanctioned by the authorities. [08]

- (B) Explain the role of Building byelaws in regulating the environment. [06]

- (C) Enlist any two objectives of Environment Protection Act. [02]

OR

- Q.11) (A)** Explain with suitable examples, advantages and disadvantages of Conventional Sources of Energy. [06]

- (B) Explain with appropriate chemical equations, what is Acid Rain ? What are its adverse effects ? [06]

- (C) Explain with a suitable sketch, the working of a Biogas Plant. [2+4=06]

OR

- Q.12) (A)** Define Air Pollution as per I.S. [02]

- (B) Explain Stationary and Mobile Sources of Air Pollution. [02]

- (C) Explain : Primary and Secondary Air Pollutants. [2+2=04]

- (D) Explain in detail how Noise Pollution can be controlled ? [06]

- (E) Explain the importance of Non-conventional Energy Sources is increasing in 21st century. [04]