

Total No. of Questions : 12]

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[3761]-15

**F. E. Examination - 2010**  
**BASIC CIVIL ENGINEERING**  
**(2003 Course)**

Time : 3 Hours]

[Max. Marks : 100

**Instructions :**

- (1) Solve Q. 1 or 2, Q. 3 or 4, Q. 5 or 6 from section I and Q. 7 or 8, Q. 9 or 10, Q. 11 or 12 from section II.
- (2) Answers to the two sections must be written in separate books.
- (3) Figures in the bracket to the right indicate full marks.
- (4) Draw neat labelled diagrams wherever necessary.
- (5) Use of pocket size non-programmable calculator is allowed.
- (6) Assume suitable data if necessary and state it clearly.

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**SECTION - I**

- Q.1)** (A) Write four differences between each of the following in the form of columns : **[4x2=08]**
- (1) Roads - Railways
  - (2) Surveying - Levelling
- (B) What is meant by Infrastructure Development ? Explain various activities involved with an example (sketch). **[1+3=04]**
- (C) State two applications of : **[2+2=04]**
- (1) Transportation Engineering
  - (2) Quantity Surveying
- (D) Briefly mention the role of Civil Engineering for the branch of Chemical Engineering. **[02]**

**OR**

- Q.2)** (A) With a neat sketch, explain role of Civil Engineering for a new hydroelectric power plant set up. **[04]**
- (B) Write two applications of : **[08]**
- (1) Earthquake Engineering
  - (2) Fluid Mechanics
  - (3) Structural Engineering
  - (4) Environmental Engineering

- (C) State the significance and need of Infrastructure Development. Enlist the works and activities to be undertaken for Infrastructure Development. Give practical example. [06]

**Q.3)** (A) State two principles of Surveying. Explain the need of any one of them with neat sketch or sketches. [05]

(B) Write notes on : [06]

(1) Open Cross Staff

(2) Types of Bearings Based on Meridian

(Draw sketches also)

(C) A clockwise triangular traverse is an equilateral triangle with back bearing of line CA =  $149^{\circ} 30'$ . Find F. B. and B. B. of lines AB, BC and CA. Give your answer in tabular form. Show all calculations. [05]

**OR**

**Q.4)** (A) State the need of sign conventions for maps. Draw six standard sign conventions and name them. [04]

(B) Write a note on types of Offsets. Draw relevant sketch. [04]

(C) Observed bearings for a closed compass traverse are given in the table. Determine : [08]

(1) Stations affected by Local Attraction

(2) Interior Angles of Traverse and

(3) Corrected bearings of all lines of Traverse. Show all calculations and usual check.

Line	F. B.	B. B.
AB	$93^{\circ} 00'$	$268^{\circ} 00'$
BC	$37^{\circ} 30'$	$220^{\circ} 00'$
CD	$260^{\circ} 00'$	$80^{\circ} 00'$
DA	$160^{\circ} 00'$	$342^{\circ} 30'$

**Q.5)** (A) Draw neat labelled sketch of Dumpy Level. [04]

(B) Knowing that point A has R.L. of 340.560m and reading on it is 0.775m, determine rise or fall of next station B on which reading from the same level position is taken as 1.225m. Hence find its R.L. Write the formulae involved. [04]

(C) State four characteristic of Contours with sketches. [04]

- (D) State one application of : [04]
- (1) Digital Planimeter
  - (2) G.P.S.
  - (3) G.I.S.
  - (4) Digital Theodolite

OR

- Q.6) (A) State four uses of Contour Maps with sketches. [04]
- (B) State two uses of : [04]
- (1) Geographical Information System
  - (2) Electronic Total Station
- (C) The first reading in a levelling work was taken on a point of R.L. 370.560 meters and successive readings taken were recorded as : 2.490, 3.170, 1.455, 2.640, 2.190, 3.180 and 1.080. If dumpy level was shifted after second reading, enter the readings in appropriate columns for rise and fall method, calculate R.L. of remaining stations and show arithmetical check. [08]

## SECTION - II

- Q.7) (A) Write three differences between : [09]
- (1) P.C.C. – R.C.C.
  - (2) Dead Loads – Live Loads
  - (3) Natural Sand – Artificial Sand
- (B) Draw neat sketch of elevation of un-plastered brick wall. Why vertical joints should not be continuous in it ? State clearly. [03]
- (C) Write the steps in cast-in-situ concreting. (Do not explain) [04]
- (D) State four functions of Building Foundation. [02]

OR

- Q.8) (A) Draw plan and elevation of a trapezoidal combined column footing. State the situations when it is used. [04]
- (B) State two uses of : [04]
- (1) Sand
  - (2) P.C.C.
  - (3) Stones
  - (4) R.C.C.
- (C) Write a note on Pre-stressed Concrete, its types and uses. [04]

- (D) State two types of windows and their specific applications. Also state two types of doors and their specific applications. [04]
- (E) Show friction pile in a neat sketch. [02]
- Q.9)** (A) Write notes on : [08]
- (1) Necessity of Building Bylaws
  - (2) Privacy as Planning Principle
- Draw sketches wherever possible.
- (B) State the objectives of : [04]
- (1) Land Acquisition Act, 1894
  - (2) Environment Protection Act, 1986
- (C) On a plot of 12m × 20m, a bungalow is constructed with ground floor area 80m<sup>2</sup>. Find F.S.I. utilized. If all margins are 2m each, find maximum ground coverage. [04]
- OR**
- Q.10)** (A) Explain the following with neat sketches : [06]
- (1) Roominess
  - (2) Open Spaces and Setback Distance
- (B) Define : [05]
- Carpet Area, F.S.I., Built up Area, Ground Coverage and Plinth.
- (C) Explain with sketch or example five factors you will consider for selecting a plot for residential building. [05]
- Q.11)** (A) State the meaning and examples of Biotic and Abiotic Factors of the Environment. [04]
- (B) State four advantages of Non-conventional Sources of Energy. [04]
- (C) State four drawbacks or disadvantages of Conventional Energy Sources. [04]
- (D) Enumerate the sources of Air Pollution. State two effective ways to control or abate air pollution. [04]
- OR**
- Q.12)** (A) Explain the effect of exploitation of Conventional Energy Sources on the Natural Environment. [04]
- (B) State the ill-effects of Noise Pollution on Humans. [04]
- (C) Write notes on : [08]
- (1) Solid Waste Disposal
  - (2) Sources and Effects of Water Pollution