Total No. of Questions—12]     [Total No. of Printed Pages—4+1

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**[4856]-15**

F.E. (Common) (First Semester) EXAMINATION, 2015

BASIC CIVIL AND ENVIRONMENTAL ENGINEERING

(2008 PATTERN)

Time : Three Hours                    Maximum Marks : 100

**N.B. :—** (i)   Answer Q. No. **1** or Q. No. **2**, Q. No. **3** or Q. No. **4**,
Q. No. **5** or Q. No. **6** from Section I; Q. No. **7** or
Q. No. **8**, Q. No. **9** or Q. No. **10**, Q. No. **11** or Q. No.
**12** from Section II.

(ii)  Answer to the two sections should be written in separate
answer-books

(iii) Figures to the right indicate full marks.

(iv)  Use of logarithmic tables, slide rule, Mollier charts, electronics
pocket calculator and steam tables is allowed.

(v)   Assume suitable data if necessary.

(vi)  Neat diagrams must be drawn wherever necessary.


**SECTION I**

1.  (a)  Explain in brief the general role of civil engineer in any construction
         work.                                                          [6]

    (b)  State advantages and limitations of water transportation.[4]

    (c)  State any *six* practical applications of fluid mechanics.[1×6]

                                                                    P.T.O.

*Or*

2. (*a*) Explain in brief the role of civil engineer in construction of industrial building. [1×6]

(*b*) Define fluid mechanics. State any *three* practical applications of fluid mechanics. [1+3]

(*c*) Explain in brief the following branches of civil engineering : [3+3]

(1) Geotechnical Engineering

(2) Environmental Engineering.

3. (*a*) State comparison between first class bricks and second class bricks. [1×6]

(*b*) Draw a neat labelled sketches of the following : [2+2]

(1) Combined footing

(2) Cantilever footing.

(*c*) Explain with a neat sketch the following : 3+3

(1) Uniform settlement

(2) Differential settlement

*Or*

4. (*a*) State any *three* types of cement. Also state their uses. [3+3]

(*b*) State any *four* characteristics of First Class Bricks [1×4]

(*c*) Write a short note on automation in construction. [6]

**5.** (*a*) The following consecutive readings were taken on continuously sloping ground with a level and 4 m leveling staff, at an interval of 20 m. The readings are 0.785, 1.326, 2.538, 3.435, 1.367, 2.328, 2.657 and 2.834. The first reading was taken on starting point of RL 200.00 m. Calculate the reduced levels of staff stations by rise and fall method. [6]

(*b*) Define the following : [2+2+2]

(1) Back sight reading

(2) Vertical axis of level

(3) Datum surface.

(*c*) Draw a neat sketch of the contours with reduced levels showing the following features : [3+3]

(1) Pond

(2) An overhanging Cliff.

*Or*

**6.** (*a*) State any *six* civil engineering works/situations where use of modern surveying equipments is necessary. [6]

(*b*) State various axes of dumpy level. Also state the desired relationships between them. [3+3]

(*c*) The following consecutive readings were taken with a level and 4 m leveling staff. The readings are 0.785, 1.326, 2.538, 3.435, 1.367, 2.328, 1.234 and 1.657. The first readings was taken on permanent bench mark of RL 100.00 m and and the level was shifted after fourth reading. Calculate the reduced levels of staff stations by collimation plane method. Apply usual arithmetic check. [6]

## SECTION II

**7.** (*a*) Discuss in brief the components of Desert Ecosystem. [6]

(*b*) Explain in brief the need of conservation of natural resources. [6]

(*c*) Write a short note on various natural resources. [4]

*Or*

**8.** (*a*) What do you understand by sustainable development ? State the importance of sustainable development. [2+4]

(*b*) Write a short note on solid waste management. [6]

(*c*) Explain with a neat sketch of hydrological cycle. [4]

**9.** (*a*) State any *six* points to be considered while selecting a site for residential building. [6]

(*b*) A plot owner wants to construct a bungalow with G+1 floor, on a square plot whose perimeter is 80 m. Find the ground coverage and area on first floor, if the side margin is 2 m for all the sides. As per the rules FAR allowed is 1.2. [6]

(*c*) Explain in brief the necessity of building line. [4]

*Or*

**10.** (*a*) A plot owner wants to construct a bungalow with G+1 floor, on a square plot whose perimeter is 80 m. Find the ground coverage and area on first floor, if the side margin is 2 m for all the sides. As per the rules FAR allowed is 1.2. [6]

*(b)* State the various points to be considered while selecting a site for industrial building. [1×6]

*(c)* Explain in brief the "Circulation" as a principle of building planning. [4]

**11.** *(a)* Write a short note on Green–house Gases. [6]

*(b)* Explain in brief the need of harnessing various non-conventional energy resources. [6]

*(c)* Explain in brief the mechanism of production of biogas energy. [6]

*Or*

**12.** *(a)* Write a short note on primary and secondary Air Pollutants. [6]

*(b)* Explain in brief the various sources of Air Pollution. [6]

*(c)* As a responsible member of the Civil Society, how will you contribute yourself to reduce water pollution ? [6]