

Total No. of Questions—12]

[Total No. of Printed Pages—4+2

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[4756]-15

**F.E. (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 and Q. No. 5 or Q. No. 6 from Section I, Q. No. 7 or Q. No. 8, Q. No. 9 or Q. No. 10 and Q. No. 11 or Q. No. 12 from Section II.
- (ii) Answers 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, electronic 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 role of civil engineer in construction of a Expressway. [6]

P.T.O.

(b) State comparison between Rigid and Flexible Pavement. [4]

(c) State any *six* Practical Applications of Quantity Surveying. [6×1]

*Or*

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

(i) Surveying.

(ii) Structural Engineering.

3. (a) State comparison between Load Bearing Structure and Framed Structure. [6]

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

(i) Friction Pile

(ii) Wall Footing.

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

(i) Uniform Settlement

(ii) Differential Settlement.

Or

4. (a) State any *three* types of mortars. Also state their uses. [3+3]
- (b) State any *four* characteristics of First Class Bricks. [4×1]
- (c) Write a short note on automation in construction. [6]
5. (a) The following consecutive readings were taken with a level and 4 m leveling staff. The readings are 2.350, 1.915, 3.210, 2.650, 1.445, 3.955 and 0.345. The first reading was taken on Permanent Bench of RL 975.850 m and the level was shifted after third and fifth reading. Calculate the reduced levels of remaining staff stations by Height of Instrument method. Apply Usual Arithmetic Check. [6]
- (b) Define the following : [2+2+2]
- (i) Line of Collimation
- (ii) Reduced Level
- (iii) Change Point.
- (c) State with a neat sketch any *three* characteristics of contour lines. [3+3]

*Or*

6. (a) Write a short note on EDM. [6]
- (b) State any *three* practical applications of the GPS and GIS. [3+3]
- (c) The following consecutive readings were taken with a level and 4 m leveling staff. The readings are 2.350, 1.915, 3.210, 2.650, 1.445, 3.955 and 0.345. The first reading was taken on Permanent Bench of RL 975.850 m and the level was shifted after third and fifth readings. Calculate the reduced levels of remaining staff stations by Rise and Fall Method. Apply usual Arithmetic check. [6]

## **Section II**

7. (a) Explain in brief the components of Aquatic Ecosystem. [3+3]
- (b) State and explain the components of Forest Ecosystem. [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 Environmental Impact Assessment. [6]
- (c) Explain with a neat sketch Hydrological Cycle. [4]

9. (a) Explain in brief the following principles of building planning : [3+3]
- (i) Roominess
- (ii) Circulation.
- (b) Write a short note on Sustainable Building. [6]
- (c) Explain in brief the following : [4]
- (i) Building Line
- (ii) Control Line.

*Or*

10. (a) A plot owner wants to construct a bungalow with G + 1 floor, on a plot size of 14 m × 19 m. He proposes 150 m<sup>2</sup> construction on each floor. Find the ground coverage and FSI consumed, if the side margin is 2 m for all the sides. As per the rules FAR allowed is 1.0. State with reasons whether the plan will be sanctioned or not ? [6]
- (b) State the various points to be considered while selecting a site for Industrial Building. [6]
- (c) Explain in brief the “Privacy” as a principle of building planning. [4]

11. (a) Write a short note on Global Warming. [6]
- (b) State comparison between Conventional and Non-conventional sources of energy. [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 Water Pollution. [6]
- (c) As a responsible member of the Civil Society, how will you contribute yourself to reduce the pollution due to Automobiles. [6]