

Total No of Questions: [10]

SEAT NO. :

[Total No. of Pages : 2]

FE Common [2008 Pattern]

Basic Civil And Environmental Engineering

Time: 3 Hours

Max. Marks : 100

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate answer books.
- 2) Answer any three questions from each section.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Figures to the right side indicate full marks.
- 5) Use of Calculator is allowed.
- 6) Assume Suitable data if necessary

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|-----|----|--|-----|
| Q.1 | a) | Explain in brief the role of civil engineer in Construction of a Dam | [6] |
| | b) | Define the term Gauge. Draw a neat labeled diagram of Cross section of a Railway Track / Permanent Way | [4] |
| | c) | State any Six Practical Applications of Irrigation engineering | [6] |
| | | OR | |
| Q.2 | a) | Explain in brief the role of civil engineer in Planning and construction of an Industrial Building | [6] |
| | b) | State the classification of Roads / Highways | [4] |
| | c) | Explain in brief the following branches of civil Engineering 1.Quantity surveying 2.Surveying | [6] |
| Q.3 | a) | State comparison between RCC and PCC | [6] |
| | b) | Draw a neat labeled sketches of following: 1.Pile Foundation 2. Isolated Column Footing | [4] |
| | c) | Explain in brief the following: 1.Dead Load 2. Live Load 3. Earthquake Load or Force | [6] |
| | | OR | |
| Q.4 | a) | State the various types of steel used in civil engineering Works. | [6] |

| | | Also state the use of each | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--------------|---|---------------|--------------|-------------|----------------|-----------------------|-------------|-----------|----------------|-----------|----------|--|--|--|--|----------------|--------------|-----------|--|----------|--|--------------|--|----------|--|-----------|--------------|--|--------------|--|----------|----------|-----------------------|-----------|----------|--|--------------|--|----------|----------------|-----------------------|-----------|--|--|--------------|----------|--|----------------|--------------|--|
| | b) | State any four characteristics of First class Brick | [4] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | c) | Write a short note on automation in Construction | [6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.5 | a) | The following consecutive readings were taken with a level and 4 m leveling staff at a common interval of 20 m. The readings are, 0.775, 1.225, 1.405, 0.685, 1.665, 1.435, 1.585, 0.635, 0.995. The level was shifted after Third and seventh reading. The first reading was taken on Permanent Bench Mark. The RL of last point was found to be 98.110 m. Calculate The Reduced Levels of remaining Staff stations by Collimation Plane Method. Apply Usual Arithmetic check. | [6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | b) | Define the Following: 1. Contour Interval 2. Horizontal Equivalent 3. Gradient | [6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | c) | Explain in brief the Temporary Adjustments of Dumpy Level | [6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | OR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q.6 | a) | Define The following Terms used in leveling: 1. Bench Mark 2. Line of Collimation 3. Reduced Level | [6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | b) | State any three Practical Applications of the GPS And GIS | [6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | c) | During a surveying practical on Fly Leveling ,Following readings were taken with a dumpy level and 4 m Leveling staff. While determining the reduced levels it was found that, some of the readings are Missing. Calculate the Missing readings marked as "X" Also Apply the usual Arithmetic Check | [6] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Sr.No.</th> <th>BS</th> <th>IS</th> <th>FS</th> <th>Rise</th> <th>Fall</th> <th>RL</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td>463.875</td> <td>TBM 1</td> </tr> <tr> <td>2.</td> <td></td> <td>X</td> <td></td> <td>0.550</td> <td></td> <td>X</td> <td></td> </tr> <tr> <td>3.</td> <td>0.965</td> <td></td> <td>3.655</td> <td></td> <td>X</td> <td>X</td> <td>Change Point 1</td> </tr> <tr> <td>4.</td> <td>X</td> <td></td> <td>1.400</td> <td></td> <td>X</td> <td>461.885</td> <td>Change Point 2</td> </tr> <tr> <td>5.</td> <td></td> <td></td> <td>1.025</td> <td>X</td> <td></td> <td>463.875</td> <td>TBM 1</td> </tr> </tbody> </table> | Sr.No. | BS | IS | FS | Rise | Fall | RL | Remarks | 1. | X | | | | | 463.875 | TBM 1 | 2. | | X | | 0.550 | | X | | 3. | 0.965 | | 3.655 | | X | X | Change Point 1 | 4. | X | | 1.400 | | X | 461.885 | Change Point 2 | 5. | | | 1.025 | X | | 463.875 | TBM 1 | |
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| | | Section II | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Q.7 | a) | Explain with a neat sketch Grass Land Ecosystem | [6] |
| | b) | What is Environmental Impact Assessment? Why it is mandatory for Big Projects. | [6] |
| | c) | Explain in brief the sources and classification of Solid Waste | [4] |
| | | OR | |
| Q.8 | a) | What is Solid waste? How solid Waste of a Town is collected and Disposed | [6] |
| | b) | Write a short note E-Waste | [6] |
| | c) | Explain with a neat sketch Hydrological Cycle | [4] |
| Q.9 | a) | Explain in brief the following Principles of building Planning: 1. Circulation 2. Aspect | [6] |
| | b) | Write a short note on Green Building | [6] |
| | c) | Define Set-Back distance. Why it is necessary ? | [4] |
| | | OR | |
| Q.10 | a) | A plot owner has a Square Plot of Area, 420.50 m² · He wants to construct Ground + One storeyed bungalow. As per Rules Permissible FSI is 1.50 , Front Margin is 3 m and all other margins are 2.0 m, Calculate the possible construction on Ground Floor and First Floor | [6] |
| | b) | How will you achieve the filling of more space under restricted conditions of planning | [6] |
| | c) | Explain brief the Sanitation as a principle of building planning | [4] |
| Q.11 | a) | Write a short note on Ozone Depletion | [4] |
| | b) | Explain in brief why we prefer to use Non-Renewable Energy resources | [6] |
| | c) | Explain in brief the Mechanism of production of Biogas energy | [6] |
| | | OR | |
| Q.12 | a) | Write a short note on Water Pollution | [4] |
| | b) | Explain in brief the various causes of Land Pollution | [6] |
| | c) | As a responsible Member of the Civil Society, How will you contribute yourself to reduce the Air Pollution | [6] |

