



## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

**Third Semester, B.E. - Civil Engineering**

**Semester End Examination; Dec - 2017/Jan - 2018**

**Applied Engineering Geology**

Time: 3 hrs

Max. Marks: 100

*Note:* i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.  
ii) Write figure wherever necessary.

### UNIT - I

- |      |  |    |
|------|--|----|
| 1 a. | With a neat sketch, explain the internal structure of the earth based on unconformities and add a note on its composition. | 10 |
| b.   | What is geology? Discuss in what way the geological knowledge is useful in the field of civil engineering?                 | 10 |
| 2 a. | What is a texture? With a neat sketch, describe the textures of igneous rocks.   | 7  |
| b.   | Discuss in brief the classification of sedimentary rocks.  | 7  |
| c.   | What is metamorphism? Describe the types of metamorphism.  | 6  |

### UNIT - II

- |      |   |   |
|------|---|---|
| 3 a. | What are geological agents? Write a note on Epigene and Hypogene geological agents with examples. | 6 |
| b.   | What are landslides? Write a brief note on causes of landslides.                                  | 8 |
| c.   | With a neat sketch, add a note on seismograph.  | 6 |
| 4 a. | Give an account of classification of earthquakes on the basis of depth of focus.                  | 6 |
| b.   | What is an epicenter? Add a note on seismic resistant structures.                                 | 8 |
| c.   | Write a note on rock falls and subsidence with neat sketch.                                       | 6 |

### UNIT - III

- |      |   |   |
|------|---|---|
| 5 a. | Explain compass clinometer with a neat sketch.  | 5 |
| b.   | What are folds? Explain anticlinal and synclinal folds along with inlier and outlier structures.  | 7 |
| c.   | What are joints? With a neat sketch, explain mural joints and master joints.  | 8 |
| 6 a. | A sandstone bed has 200 m width of outcrop. The dip is 17° east and slope is 9° west. Find out its true thickness and vertical thickness. (Graphical method) (Scale 1 cm = 40 m). | 4 |
| b.   | A bed of limestone dips 17° along N10°E and 22° along N85°E. Find the amount and direction of true dip and true strike direction.   | 6 |

- c. Three boreholes were sunk at three points of an equilateral triangle having sides of 480 M. The joint 'P' is west of 'Q' and point 'R' is north of midpoint between 'P' and 'Q'. These boreholes 'P', 'Q' and 'R' intersect the upper bedding plane of rich coal seam at 100 m, 220 m and 260 m respectively. 10
- i) Determine the attitude (dip and strike) of coal seam
- ii) Another borehole 'S' is sunk at midpoint of 'Q' and 'R'  
 Determine at what depth the borehole 'S' meets the upper bedding plane of coal seam.  
 (Scale: 1 cm = 60 m) (Gradient Scale: 1 cm = 1 unit).

**UNIT - IV**

- 7 a. What is silting of reservoir? Add a note on its control. 10
- b. Describe how geological investigation is carried out for selection of sites for dam's foundation. 10
8. With a neat sketch, explain the tunneling through folded beds. 20

**UNIT - V**

9. Write short notes on the following : 20
- a) Hydrologic cycle
- b) Geographical information system
- c) Rainwater harvesting
- d) Unconfined aquifer.
- 10 a. What is remote sensing technique? Write the applications of remote sensing in civil engineering projects. 6
- b. Explain the electrical resistivity method of exploration of ground water. 8
- c. What is water table? Add a note on confined aquifer. 6

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