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53 (CE 305) ENGE

2018

## ENGINEERING GEOLOGY

Paper : CE 305

Full Marks : 100

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

***Answer question no. 1 and any four from the rest.***

1. (a) What is the basic difference between —  
10

- (i) Acidic and basic rocks
- (ii) Phacolith and locolith rocks
- (iii) Dynamic and thermodynamic metamorphism
- (iv) Foliated and non-foliated rocks
- (v) Disintegration and decomposition of rocks ?

*Contd.*

(b) Fill in the blanks : 5

(i) A mineral consisting of heavier and closely spaced atoms, will have a \_\_\_\_\_ specific gravity.

(ii) \_\_\_\_\_ mineral does not split up evenly with an average force.

(iii) When a mineral has a thread like structure it is known as \_\_\_\_\_.

(iv) \_\_\_\_\_ mineral has lustre like diamonds.

(v) \_\_\_\_\_ is a movement in which the top surface of a mass flows from one place to another through a small distance.

(c) Give the Mohs' scale of hardness. 5

2. (a) Enlist the properties of quartz and diamond. 8

(b) Define the various terms used in identification of a mineral in order of decreasing amount of lustre. 6

(c) What is crystallography? Enlist the various groups of crystal system. Discuss any four crystal systems. 6

3. (a) What do you understand by the terms structure and texture of a rock? Discuss the various types of structure of igneous rocks. 2+6=8

(b) How metamorphism process takes place in rocks? Which metamorphism and what kind of metamorphic rocks are formed from the following rocks?

(i) Shale

(ii) Sandstone

(iii) Limestone. 2+3=5

(c) Classify igneous rocks as the mode of solidification of magma. 7

4. (a) What do you understand by structural features of the underlying rocks? How these structural features plays an important role in the selection of a dam site? 2+8=10

(b) How deflation and abrasion takes place in erosion process of wind? 6

(c) With the help of a suitable diagram, show all the parts of a fault. 4

5. (a) Describe the causes and geological effects of earthquake. What means are to be adopted in the construction of buildings in earthquake zones ?  
2+2+4=8
- (b) Describe the yielding capacity of igneous, sedimentary and metamorphic rocks.  
6
- (c) Explain the causes of joints in rocks.  
3
- (d) Give *any three* roles of geology in the field of Civil Engineering.  
3
6. (a) Define fold. How do they originate ? Enlist the various types of folds. Explain *any two* with suitable diagrams.  
2+2+2+4=10
- (b) In what ways water content and structural features plays an important role in landslide ?  
4
- (c) What is a dip and what are its types ? Explain.  
2+4=6

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