

CODE NO: 07A50905

R07

SET - 1

**III B.TECH - I SEMESTER EXAMINATIONS - MAY, 2011**  
**ENGINEERING GEOLOGY**  
**(CIVIL ENGINEERING)**

**Time: 3hours****Max. Marks: 80**

**Answer any FIVE questions**  
**All Questions Carry Equal Marks**

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1. Explain the importance of study of physical Geology, petrology and structural geology from Civil Engineering point of view. [16]
2. Define a mineral. Briefly discuss the importance of different physical properties of minerals, Quote at least two mineral examples for each physical property in this context. [16]
3. Define a rock. Give an account of geological classification of rocks. Add a note on the distinguishing megascopic features of different groups of rocks. Give two examples of rocks for each group. [16]
- 4.a) Draw a neat sketch of a "Normal Fault" and label the parts.  
b) Why faults are more dangerous than other geological structures from civil Engineering point of view?  
c) Describe the relevance of study of faults with reference to dams and tunnels. [4+2+8]
5. Give a brief account of geological, geophysical and hydrological investigations made in ground water exploration. [16]
6. Write short notes on any four of the following.  
a) Isoseismals and coseismals  
b) Seismic shadow zone.  
c) Intensity and magnitude of earthquakes.  
d) Reservoir induced seismicity.  
e) Improvement of competence of faulted sites  
f) Living in tunnels. [16]
7. Write short notes on any four of the following.  
a) Exploration Geophysics                      b) Geophysical anomaly  
c) Geophone    d) Well logging  
e) Self potential method                      f) Hodographs. [16]
8. Give an account of various geological considerations in the selection of a dam site. [16]

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- 1.a) Explain how decomposition of rocks occur in nature.
- b) Give an account of weathering of "Granite". [8+8]
  
2. Write short notes on any four.
  - a) Fracture and cleavage in minerals.
  - b) Role of streak in mineral identification.
  - c) Moh's scale of hardness.
  - d) Special properties in minerals.
  - e) Common differences between ore minerals and rock forming minerals.
  - f) Definition of mineral and crystal. [16]
  
3. Describe the structure, texture, mineral content of any four of the following rock. Add a note on their suitability for constructional purpose.
 

a) Pegmatite	b) Dolerite	c) Late rite
d) Lime stone	e) Gneiss	f) Slate.

[16]
  
- 4.a) Draw a neat sketch of a "Fold" and label the parts.
- b) How folds are classified?
- c) Importance of folding of rocks from civil engineering point of view. [16]
  
5. Write short notes on any four:
  - a) Role of water in land slide occurrence.
  - b) Seismic belts and shield areas
  - c) Seismic waves
  - d) Vadose and soil water
  - e) Measures to prevent land slide occurrence
  - f) Richter scale. [16]
  
6. Explain any two of the following geophysical methods with suitable sketches. Add a note on their importance.
 

a) Electrical resistivity method.	b) Seismic refraction method.
c) Self potential method.	d) Electro magnetic method.
e) Induced polarisation method.	

[16]
  
- 7.a) Give a brief account failures of any three dams in the past, you know due to geological causes.
- b) Explain the role of geology of site in the selection of gravity dam /buttress dam/ arch dam/ earth dam. [8+8]
  
8. Based on your geological knowledge analyze the suitability or unsuitability of common igneous, sedimentary and metamorphic rocks for tunneling. [16]

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- 1.a) Explain how disintegration and decomposition of rocks reduce the competence of rocks.
- b) Explain spheroidal weathering and frost wedging in rocks. [6+10]
2. Describe the physical properties including special and distinguishing properties of any four of the following minerals.
 

a) Muscovite	b) Olivine	c) Chlorite
d) Magnetite	e) bauxite	f) Pyrolusite.

 [16]
3. Describe the structure, texture, mineral content of any four of the following rocks. Add a note on their suitability for constructional purpose.
 

a) Granite	b) Basalt	c) Sand stone
d) Shale	e) Marble	f) Schist.

 [16]
4. Write short notes on any four.
 

a) Drag folds	b) Inliers and outliers	c) Strike faults and strike slip faults
d) Slickensides	e) Mural joints, rift and grain	f) Angular unconformity.

 [16]
5. Give an account of causes and effects of earthquakes. Add a note on precautions to be taken in building construction in seismic areas. [16]
- 6.a) What is exploration geophysics
- b) Give an account of classification of geophysical methods in to six types, add a note their controlling property. [8+8]
7. Give an account of role of lithology, geological structures and ground water conditions in the selection of a reservoir site. [16]
8. Give an account of:
  - a) Purposes of tunneling
  - b) Tunneling through hard / soft rocks.
  - c) Over break in tunneling due to geological causes.
  - d) Effects of tunneling on the ground. [16]

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1. What is meant by weathering of rocks? Explain why weathered rocks are unsuitable for location of dams, reservoirs and tunnels. [16]
- 2.a) What are the advantages of study of minerals by their physical properties in mineral identification.  
 b) "Economic minerals by virtue of their utility and inherent value are very importance, but from civil engineering point of view they are irrelevant and study of rock forming minerals is very much necessary" explain why it is so?  
 c) What is the importance of distinguishing physical properties in mineral identification? Quote mineral example.  
 d) How do you recognize an unknown mineral as an ore mineral or rock forming mineral? [16]
3. Write short notes on any four:  
 a) Sills and dykes                      b) Vesicular and amygdaloidal structure  
 c) Normal and cross bedding      d) Ripple marks                      e) Foliation and lineation  
 f) Gneissose structure. [16]
4. What is an unconformity? How it occurs? What are the different types of unconformities? What is the importance of an unconformity from civil engineering point of view? [16]
5. Write short notes on any four:  
 a) Water table and perched water table                      b) Cone of depression  
 c) Artesian spring                      d) Geological controls in ground water movement  
 e) Effects of excessive tapping of ground water.  
 f) Aquifers, aquifuges, Aquicludes, Aquitards. [16]
- 6.a) What are geophysical methods of investigation? Why are they required?  
 b) What is geophysical anomaly? With simple sketches explain this with reference to lithology, geological structure and ores. [8+8]
- 7.a) What are effluent rivers? What is their importance in the selection of a reservoir site?  
 b) Based on your geological knowledge analyze which of the common igneous, sedimentary and meta morphic rocks are suitable or unsuitable at reservoir site. [8+8]
8. Give an account of various geological considerations for successful tunneling. [16]

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