B. Tech.

(SEM. IV) EXAMINATION, 2007

EARTH SCIENCE & GIS

Time : 3 Hours] [Total Marks : 100

Note :
(i) Attempt all questions.
(ii) Be precise in your answer.

1 Attempt any two parts of the following : \(10 \times 2 = 20\)
   
a) Define geology. Give a brief account of the scope of the subject of geology and of its different branches.
   
b) Enumerate various hypothesis of the origin of the earth. Describe the Nebular and Gaseous tidal hypothesis.
   
c) What do you understand by subsidence? Describe the various causes of subsidence. Suggest some precautionary measures for it.

2 Attempt any two parts of the following : \(10 \times 2 = 20\)
   
a) How will you distinguish between the following :
      i) Haematite and magnetite
      ii) Calcite and barite
      iii) Pyrolusite and psilomelane
      iv) Kyanite and Bauxite.

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b) Discuss the geological work of wind in respect of erosion, transportation and deposition. Describe briefly its erosional and depositional features. Explain its importance in civil engineering.

c) Explain any four of the following:-
   i) Accessory plates
   ii) Pleochroism
   iii) Extinction angle
   iv) Weathering
   v) Refractive index.

3 Attempt any two parts of the following: 10x2=20
   a) What is fault? Describe with the help of neat sketches different parts of a fault give a short account of different types of fault. Enumerate significance of faults in civil engineering works.
   b) Explain the following:
      a. DIP and Strike
      b. Joints.
   c) How will you distinguish between the following:-
      i) Axial plane and axis of fold
      ii) Asymmetrical and overturned fold
      iii) Dome and basin
      iv) Plunging fold and drag fold.

4 Attempt any two parts of the following: 10x2=20
   a) Compare the surface water and ground water for their quality, quantity and collection aspects.

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b) What is the salinity of soil? What are the causes of salination? Also suggest measures adopted to prevent soil pollution.

c) Give an account of effect of sedimentary rocks on the quality of groundwater.

5 Attempt any **two** parts of the following:  **10×2 = 20**

a) What are various plateforms for remote sensing? Explain their necessity.

b) Explain the atmospheric absorption of electromagnetic radiation. What are atmospheric windows?

c) List the advantages and disadvantages of vector data structure and raster data structure.