

Code : 011305

B.Tech. 3rd Semester Exam., 2014

ENGINEERING GEOLOGY

Time : 3 hours

Full Marks : 70

Instructions :

- (i) The marks are indicated in the right hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Choose the most appropriate option of the following (any seven) : $2 \times 7 = 14$

- (a) Loess is the name given to
- (i) heaps of sand accumulated in and around a town due to wind transport
 - (ii) extensive deposits of silt and clay made by wind in many areas over the years
 - (iii) a depression in a desert where groundwater has appeared due to excessive erosion
 - (iv) None of the above

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18 Turn Over

(2)

- (b) A fault is essentially a fracture
- (i) with or without a relative displacement having taken place at its surface
 - (ii) along with some definite amount of relative displacement
 - (iii) the opening without a relative displacement
 - (iv) None of the above

- (c) Streak of a mineral is
- (i) its appearance in diffused light obtained by rotating it
 - (ii) its appearance in thin section as seen under a polarizing microscope
 - (iii) colour of the powder of a coloured mineral as obtained by rubbing it on a porcelain plate
 - (iv) None of the above

- (d) Felspars are formed by
- (i) process of crystallization from igneous matts
 - (ii) condensation of vapours from volcanic emanations
 - (iii) evaporation and precipitation from saturated solutions over the surface of the earth
 - (iv) None of the above

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- (e) Flint is a variety of sedimentary rocks formed by
- (i) mechanical processes like erosion, transport, deposition and welding
 - (ii) organic process like accumulation of remains of siliceous-bodied animals
 - (iii) chemical process of precipitation from seawater rich in amorphous silica
 - (iv) None of the above
- (f) Coal deposits are formed due to
- (i) thermal metamorphism of organic source material
 - (ii) accumulation of vegetable matter in a proper sedimentary environment and its subsequent biochemical and mechanical transformation
 - (iii) some undefined igneous process which is yet to be understood
 - (iv) None of the above
- (g) An aquifer is a rock formation which is
- (i) porous and not necessarily permeable
 - (ii) highly porous and impermeable
 - (iii) porous and essentially permeable
 - (iv) None of the above

- (h) The stratified rocks are more likely to fail, when other things being same, the dip is
- (i) towards the free side of the valley or road cut
 - (ii) backwards, deep into the hills
 - (iii) parallel with the road cut
 - (iv) None of the above
- (i) Rock quality designation (RQD) indicates
- (i) velocity of seismic waves in rock
 - (ii) resistivity to electric current in rocks
 - (iii) percentage recovery of unbroken solid cone from a borehole
 - (iv) None of the above
- (j) A geological formation, which is essentially impermeable for flow of water even though it may contain water in its pores, is called
- (i) aquiclude
 - (ii) aquifer
 - (iii) aquifuge
 - (iv) equipflow

2. What do you understand by weathering of rocks? Define mechanical weathering and discuss briefly various agencies of mechanical weathering. 14

3. Discuss briefly the theory of 'plate tectonics'. What are the types of movement? Explain. 14

4. Explain the textures of igneous rocks. Discuss briefly the factors which define the texture. List out the types of texture. 14

5. With neat sketches, explain the following :
5+5+4=14

- (a) Normal faults
- (b) Reverse faults
- (c) Dip faults

6. What is electrical resistivity method of investigation? Discuss briefly. List its applications in civil engineering. 14

7. Give a general account of geological characters that have to be known for location of a 'dam'. 14

8. Write notes on the following :
5+5+4=14

- (a) Granite
- (b) Sandstone
- (c) Marble

9. Define GIS. What are the software components of GIS? List them. 14
