U.G. 6th Semester Examination - 2020

GEOLOGY

Course Code : BGELDSHT6

Course Title : Introduction to Geophysics

Full Marks : 40 Time : 2 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **ten** questions: 1×10=10

a) Define Bode's law.

b) Why Gravity is more at poles, not at equator?

c) Name different types of Gravity measurements.

d) What is Bouguer anomaly?

e) What is an isostatic gravity anomaly?

f) What are the Lame constants in seismic theory?

g) What is the geoid?

h) What is the reference ellipsoid?

i) What is aureole?

j) Write Laplace's equation.

k) Define reflection coefficient.

l) What is seismic risk?

m) What is Terrain correction?

n) Name of geophysical method for groundwater exploration.

o) What is resistivity sounding?

2. Answer any **five** questions: 2×5=10

a) Explain the difference between earthquake intensity and magnitude.

b) If the magnitude of an earthquake is 0.5 greater than that of another, how much greater is the amount of energy it releases?

c) Name of two geophysical well log tools used to determine formation porosity.

d) Explain different between critical and crossover distance in seismic method.

e) Name of different type of survey for oil and gas exploration.

f) Describe geochemical survey for oil and gas exploration.

g) What is an outcrop?

h) A coal seam dips at 11^0 in the direction due north. What will be its apparent dip in the direction $N60^0E$?

3. Answer any **two** questions : 5×2=10

a) Deescribe the electrical methods in details.

b) Explain principle and application radiometric survey.

c) Describe in detail the method of doing geological fieldwork in region.

4. Answer any **one** of the following : 10×1=10

a) A seismic survey is conducted over level ground consisting of two horizontal layers. Sketch a travel-time diagram that shows the arrivals of the direct wave, the reflected wave, and the doubly refracted wave. How can the seismic velocity of each layer be determined from the diagram?

b) Briefly discuss the Primary calibration of natural gamma ray logging tools diagram.

c) Describe the specific methods of geophysical exploration used in groundwater survey.

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