This question paper contains 2 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **8594**

Unique Paper Code : **219503** **C**

Name of the Paper : **GEHT 502 : Geophysics**

Name of the Course : **B.Sc. (Hons.) Geology Part III**

Semester : **V**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Answer any *five* questions.

All questions carry equal marks.

1. What is a lithospheric plate? With suitable diagrams discuss the concepts of sea floor spreading and continental drift. How can you justify the occurrence of hotspots in plate tectonic paradigm ?

2. Define magnetic susceptibility. How can the minerals be categorized using their magnetic susceptibility? What are Inclination and Declination? What sort of change in magnetic inclination of a compass needle you would expect if it is taken from North Pole to South Pole through magnetic equator? Would a magnetic compass manufactured in Canada function properly in New Zealand? Justify your answer.

3. Gravity is most suitable geophysical exploration method for chromite and evaporite exploration– Justify. Discuss briefly with sketch the working principle of a gravimeter.

P.T.O.

4. What is the 'intercept time' in seismic prospecting? Derive intercept time for a 2-media case considering velocities of seismic waves as V_0 and V_1 in the upper and lower layers respectively ($V_1 > V_0$). Derive depth of interface from the crossover distance in such case.

5. What is self potential? Discuss the theory and applicability of gradient method and total field method in SP surveying. List the mineral prospects where this method is commonly used.

6. Discuss the corrections required for reducing the 'raw' gravity data before it is used for interpretation.

7. What is a geophysical anomaly? Discuss and justify with proper diagram the geophysical anomaly pattern you will expect across a arc-trench subduction system.

8. Define Isostasy. Discuss with figure the Airy model of Isostasy. Calculate the thickness of root that is needed to support 5 km thick Tibetian plateau. Find out the crustal thickness of the region given in figure assuming density of crust and mantle as 2800 kg m^{-3} and 3100 kg m^{-3}. Average thickness of crust is 30 km.