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S. No. of Question Paper

Unique Paper Code

: 219503

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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.)

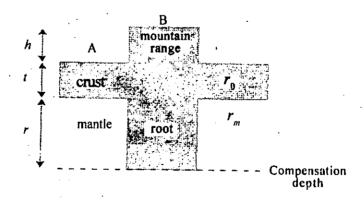
Answer any five questions.

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<sub>0</sub> and V<sub>1</sub> in the upper and lower layers respectively (V<sub>1</sub>>V<sub>0</sub>). 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<sup>-3</sup> and 3100 kg m<sup>-3</sup>. Average thickness of crust is 30 km.



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