

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

APPLIED PHYSICS DEPARTMENT

GLOBAL TECTONICS SUPPLEMENTARY EXAMINATION

MSc. GEOPHYSICS: JULY 2014

DURATION: 4 HOURS

ANSWER ALL QUESTIONS IN THIS PAPER.

TOTAL MARKS 120

1. Discuss the differences between the lithosphere and asthenosphere. [10]
2. Using Figure 1 as a starting model for addition or removal of an extra mass, discuss the theory of isostatic rebound.

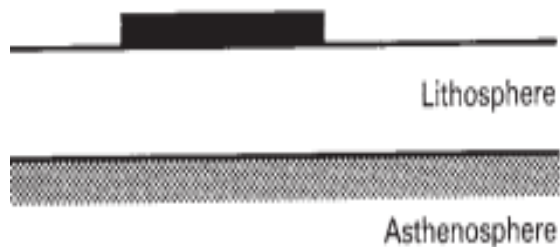


Figure 1 [10]

3. What are focal mechanisms, explain why focal mechanisms are ambiguous. [10]
4. (a) What are ophiolites? [4]
(b) Why is the study of ophiolites important when studying the earth's structure? [6]
5. Explain evidence from the following aspects is used to support the theory of continental drift and support of plate tectonic theory:
 - (a) Paleoclimatology [10]
 - (b) Paleomagnetism. [10]
7. Discuss how marine magnetic anomalies and geomagnetic reversals can be used to support sea floor spreading. [15]
8. Discuss the relevance of Vine-Matthews hypothesis in sea floor spreading. [15]
9. Using the theory of Heiskanen and Vening Meinesz (1958) as your starting point, describe how a continental rift is formed. [14]

10. Differentiate between the True Polar Wander (TPW) and the Apparent Polar Wander (APW) with reference to plate motions. [10]
11. With the aid of diagrams, discuss the mechanism of formation of accretionary prisms. [6]

END OF PAPER