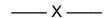
- (j) How did the ozone layer form on earth?
- (k) How do you define trace fossil?
- (I) Name the major processes of fossilization.
- (m) Why are microbial mats younger than Precambrian found restricted to extreme conditions?
- (n) How did amino acid form on early earth?
- (o) What are the hyperthermophiles?
- (p) What are the Photoautotrophs?



BACHELOR OF SCIENCE EXAMINATION, 2017

(1st Year, 1st Semester)

GEOLOGICAL SCIENCES

Paper: IH

Introduction to Geology

Time: Two hours Full Marks: 50

Use separate Answer scripts for each group.

GROUP - A (25 marks)

1. Answer any *five* questions.

5x5 = 25

- (a) Why is Mars terrestrial planet, but not Uranus? How does the 'Nebular Hypothesis' explain the evolution of the Solar System?
- (b) 'Earth is a layered planet'-how do we know this?
 Write with neat sketches.
- (c) Do you think that the Earth's continental lithosphere and the oceanic lithosphere are similar? Justify your answer. Define "geothermal gradient".
- (d) 'Oceanic crust should be, in effect, a very slowly moving magnetic tape recorder—Explain. How does a continent split? Explain the process of formation of a back-arc basin.

(Turn Over)

(3)

- (e) 'Magma viscosity depends on temperature and composition especially the SiO₂ content–Explain why does eruption of a basaltic magma open in general nonexplosive?
- (f) What are dikes, sills, laccoliths and batholiths? Answer with neat sketches.
- (g) 'A close relationship exists between plate tectonics and the volcano locations'—Explain. What is 'Andesite Line'?
- (h) Write the differences between regional and contact metamorphism. What are schistose and gneissic structures?

GROUP - B (25 marks)

Answer all questions.

- 2. Answer any *five* of the following: 3x5=15
 - (a) How did oxygen-rich atmosphere evolve on the earth?
 - (b) What are the major factors controlling weathering of rocks?
 - (c) What are the essential components of life?
 - (d) What are the different soil horizons?

- (e) What are the major clues that support the hypothesis of oxygen-poor early atmosphere?
- (f) What are the major boundaries present in the geological time-scale?
- (g) What are the major differences between Prokaryotic and Eukaryotic organisms?
- (h) How do you define allochemical sediment?
- 3. Answer any *ten* questions.

1x10=10

- (a) Name a sedimentary rock that is not a product of weathering of pre-existing rocks.
- (b) What is insolation?
- (c) Explain temporary base level?
- (d) Where do you expect more erosion on a land of 800m high and a land of 100m high from the sea level and situated in similar climate?—Justify you answer.
- (e) How does tectonism control sedimentation?
- (f) What are the agents of erosion and transportation?
- (g) What are terrigenous deposits?
- (h) Why are grains in aeolian sediments more rounded than those in fluvial sediments?
- (i) What is the age of the oldest rock on earth?

(Turn Over)