(j) How did the ozone layer form on earth ?

(k) How do you define trace fossil ?

(l) 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 ?

—— X ——

Ex./IG/1/9/2017

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.

(e) 'Magma viscosity depends on temperature and composition especially the SiO_2 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 ?