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1 SEM TDC GEGL (CBCS) GE 1 (A/B/C)

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(March)

GEOLOGY

(Generic Elective)

Paper : GE-1

Full Marks : 53

Pass Marks : 21

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

Paper : GE-1 (A)

(INTRODUCTION TO GEOLOGY)

UNIT—I

(Solar System and Earth)

(Marks : 9)

1. Write a note on determination of the age of the Earth.

5

Or

Describe in brief on evolution of life on the Earth.

2. Write very briefly on any *one* of the following : 3

(a) Core

(b) Saturn planet

3. Fill in the blanks : 1

The word Sima is derived from _____ and _____ minerals.

UNIT—II

(Principles of Geology)

(Marks : 7)

4. Write names (five each) of the igneous, metamorphic and sedimentary rocks. 2

5. Answer any *one* of the following : 5

(a) Write about the theories of uniformitarianism and catastrophism.

(b) Define mineral and rock. Write on the rock forming minerals.

UNIT—III

(**Earth's Exogenic Processes**)

(Marks : 10)

6. Describe the geomorphic environment associated with *either* glacier or desert. 6
7. Write a note on any *one* of the following : 3
- (a) Types of volcanic eruptions
 - (b) Weathering and mass wasting
8. Fill in the blank : 1
- The Himalayas are classified into _____ parallel and longitudinal zones (Give the number).

UNIT—IV

(**Earth's Dynamic and Endogenic Processes**)

(Marks : 9)

9. Write short notes on any *two* of the following : 4×2=8
- (a) Plate tectonics
 - (b) Transform faults
 - (c) Island arc
10. Fill in the blank : 1
- Trenches are associated with _____ zone.

(4)

UNIT—V

(Genesis of Rock)

(Marks : 9)

11. Define clastic and non-clastic rocks and write on their origin. 6

Or

Write on intrusive bodies.

12. Write a short note on any one of the following : 3
- (a) Metasomatism
- (b) Types of lava

UNIT—VI

(Introduction to Palaeontology)

(Marks : 9)

13. Define and differentiate palynology and palaeobotany. Write on their applications. 2
14. Write on different modes of preservation of fossils. 6

Or

Write on use of fossils in stratigraphic correlation and age determination.

15. Fill in the blank : 1
- Fossils found in one strata which was preserved in an older strata are called _____ fossils.

Paper : GE-1 (B)

(**ROCKS AND MINERALS**)

UNIT—I

(Marks : 8)

1. (a) Why are native elements rare? Give examples. 2+1=3
- (b) Define hardness of mineral. How is it measured? Describe Moh's hardness scale. 5

UNIT—II

(Marks : 9)

2. (a) Write about the type of minerals of the normal class of all the systems. 2
- (b) Describe the ino-silicate or chain silicate structure with examples. 3
- (c) With a neat sketch write in brief about the internal structure of the Earth. 4

UNIT—III

(Marks : 9)

3. (a) What is the nature of light and how it propagates? 2
- (b) How can ordinary light be converted into polarized light? 3
- (c) Describe *either* interference colour or extinction phenomenon under petrological microscope. 4

UNIT—IV

(Marks : 27)

4. Why are igneous rocks called primary rocks? Write about the degree of crystallinity and mode of formation of igneous rocks. Write in brief about the generation of magma. $1+2+4=7$
5. Answer any *four* from the following : $5 \times 4 = 20$
- (a) Describe the processes of formation of sedimentary rock.
- (b) What is size scale? How are sedimentary rocks classified on the basis of size of the grains?
- (c) Define metamorphism. Describe the processes of formation of metamorphic rocks.
- (d) How is plate tectonics related to magmatism and metamorphism?
- (e) How would you identify igneous, sedimentary and metamorphic rock in the field?

(7)

Paper : GE-1 (C)

(PHYSICS AND CHEMISTRY OF EARTH)

UNIT—I

(Marks : 5)

1. Fill up the blanks : 1×3=3

(a) Equatorial circumference of the Earth is _____ km.

(b) Surface area of total landmass over the Earth's surface is of _____ km².

(c) A portion of continent submerged under self sea is called _____.

2. Write a short note on the following (any one) : 2

(a) Active continental margin

(b) Atlantic ocean

(c) Passive continental margin

(8)

UNIT—II

(Marks : 11)

3. Define any *three* of the following : 1×3=3
- (a) Surface wave
 - (b) Gutenberg discontinuity
 - (c) Hot spot
 - (d) Isostasy
4. What is the cause of existence of the Earth's magnetic field? 2
5. Write briefly on any *two* of the following : 3×2=6
- (a) Airy and Pratt model
 - (b) Seismic waves
 - (c) Internal structure of Earth

UNIT—III

(Marks : 9)

6. Choose the correct one : 1×3=3
- (a) The Earth's magnetic field protects us from UV rays/ solar wind.

(b) An isoclinic / isobaric map can show the Earth's magnetic field.

(c) A solar cycle is completed in 11/200 years.

7. What do you mean by secular variation? Write briefly on westward drift of magnetic field. 2+4=6

Or

What is the Earth's magnetic field? Explain briefly the different components of the Earth's magnetism. 1+5=6

UNIT—IV

(Marks : 17)

8. Fill up the blanks : 1×2=2

(a) First element that appeared in the universe is _____.

(b) _____ is the process that is hypothesized to produce baryonic asymmetry, i.e, the imbalanced baryons and antibaryons.

(10)

9. Write short notes on any *three* of the following : 4×3=12

- (a) Recombination epoch
- (b) Planetary accretion
- (c) Lithophile elements
- (d) Chalcophile elements
- (e) Application of oxygen isotopes

10. What is isotope? Write about the applications of isotopes in geology. 1+2=3

UNIT—V

(Marks : 11)

11. Fill up the blanks : 1×2=2

(a) Absorption of water molecules by mineral structure is called _____.

(b) The full form of IAEA is _____.

12. Write briefly on deep geological repository. 3

13. Write shortly on any *two* of the following :

3×2=6

- (a) Health effects associated with lead exposure
- (b) Environmental effects of radioactive wastes
- (c) Disposal of nuclear wastes
