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1 SEM TDC GEON (CBCS) DSC 1 (A/B/C)

2019

(December)

GEOLOGY

(Discipline Specific Course)

Paper : DSC-1

Full Marks : 53

Pass Marks : 21

Time : 3 hours

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

Paper : DSC-1 (A)

(INTRODUCTION TO GEOLOGY)

UNIT—I

(Solar System and Earth)

(Marks : 9)

1. Fill in the blank :

1

Average density of earth is _____.

(2)

2. Write briefly about the interior of the earth with neat sketches. 4+1=5

Or

Write about the origin of the earth. 5

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

(a) Solar system

(b) Earth magnetic field

(c) Evolution of life on earth

UNIT—II

(Principles of Geology)

(Marks : 6)

4. Write short notes on any *two* of the following : 2×2=4

(a) Uniformitarianism

(b) Actualism

(c) Catastrophism

5. What are the different types of rocks? Give examples of each rock type. 1+1=2

(3)

UNIT—III

(Earth's Exogenic Processes)

(Marks : 11)

6. What is soil? How is soil formed? 1+4=5

Or

What is weathering? What are the various types of weathering? 1+4=5

7. Write the names of physiographic divisions of Indian Subcontinent. What is the difference between physiographic and tectonic subdivisions? 3+1=4

8. Fill in the blanks : 1+1=2

(a) Natural levee is an example of _____ deposit.

(b) Disintegration and decomposition together known as _____.

UNIT—IV

(Earth's Dynamics and Endogenic Processes)

(Marks : 9)

9. Write the names of major earthquake belts of the world. 1

10. What is plate tectonics? What are different plate boundaries? 2+3=5

Or

Write briefly on the origin of oceans and continents. 5

11. What is the age of the oldest oceanic crust? Where from the oceanic crust is created? 1+2=3

UNIT—V

(Genesis of Rock)

(Marks : 9)

12. Choose the correct option/Fill in the blank : 1×3=3

(a) Limestone is a (clastic/non-clastic) sedimentary rock.

(b) Granite is a (plutonic/volcanic) igneous rock.

(c) The parent rock of slate is _____.

13. What is magma? Write on the physical and chemical properties of magma. 1+5=6

Or

What is a volcano? Write briefly on the various types of volcanoes. 6

(5)

UNIT—VI

(Introduction to Palaeontology)

(Marks : 9)

14. Fill in the blanks/Choose the correct option :

1×3=3

- (a) Fossils are remains of _____ organisms preserved in _____ rocks.
- (b) Palynofossils are studied under _____.
- (c) (Arca/Nautilus/Ptillophyllum) is a plant fossil.

15. Define a fossil. What are the different modes and conditions of fossilization?

1+5=6

Or

Discuss in detail the various applications of fossils in geological sciences.

6

Paper : DSC-1 (B)

(CRYSTALLOGRAPHY AND MINERALOGY)

UNIT—I

(Crystallography)

(Marks : 23)

1. Choose the correct option/Fill in the blanks :

1×4=4

- (a) The intersection of three faces is called (edge/solid angle).

(6)

- (b) Trapezohedron is a form that occurs in _____ system.
- (c) Tetrahexahedron form has _____ number of faces.
- (d) In normal class of isometric system, there are (6, 7, 8, 9) symmetry planes.

2. Write short notes on any *three* of the following : 2×3=6

- (a) Law of constancy of interfacial angle
- (b) Miller indices
- (c) Definition of crystal
- (d) Law of constancy of symmetry

3. Describe the following briefly (any *two*) : 4×2=8

- (a) Symmetry elements of isometric system
- (b) Point group and space group
- (c) Orthorhombic system

(7)

4. What do you understand by the term 'twinning'? Describe the different types of twins in crystal. 5

Or

Describe the causes of twinning. What are the various laws of twinning? 5

UNIT—II

(**Mineralogy**)

(*Marks : 30*)

5. Answer the following as directed : 1×4=4

(a) Differentiate between mineral and mineraloid (explain briefly).

(b) Hardness of quartz and calcite is _____ and _____ respectively.

(Fill in the blanks)

(c) Diamond shows _____ lustre.

(Fill in the blank)

(d) Labradorite is a member of (K-feldspar/ plagioclase feldspar).

(Choose the correct option)

6. Write short notes on any *three* of the following : 2×3=6

- (a) Cleavage and parting
- (b) Mohs scale of hardness
- (c) Types of lustre
- (d) Rock-forming and ore-forming minerals with examples

7. Describe the following briefly (any *two*) : 3×2=6

- (a) Form and habit of mineral
- (b) Isomorphism and polymorphism
- (c) Inosilicate and phyllosilicate

8. Describe briefly about the silicate structure of minerals. 7

9. Describe the relationship between the physical properties of mineral with its atomic structure. 7

Paper : DSC-1 (C)

(**GEOCHEMISTRY AND OPTICAL MINERALOGY**)

UNIT—I

(**Concept of Geochemistry**)

(Marks : 27)

1. Fill in the blank : 1
The crust of the earth consists of about _____% of silicate minerals.

 2. Write an essay on geochemical classification of elements. 6
- Or*
- Write in detail about geochemical environment. 6
3. Fill in the blank : 1
Meteorites composed entirely of metals (nickel-iron) are called _____.

 4. Write briefly on the geochemical composition of the earth's crust. 5

 5. Write the composition of meteorites. 6

6. Write briefly on the geochemical behaviours of any *two* of the following elements : $4 \times 2 = 8$

- (a) Si
- (b) Al
- (c) K
- (d) Na

UNIT—II

(Optical Mineralogy)

(Marks : 26)

7. Choose the correct option/Fill in the blank :

- (a) Garnet is an (isotropic/anisotropic) mineral. $1 \times 4 = 4$
- (b) When microscope tube is raised and the Becke line moves towards the mineral, the refractive index of the mineral is (high/low).
- (c) Extinction angle of augite is ($15^\circ/18^\circ/43^\circ$).
- (d) The direction along which no double refraction takes place in an anisotropic mineral is called _____.

8. What are isotropic and anisotropic minerals?
Give examples. 2
9. How can the optic sign of a biaxial mineral be
examined using gypsum and mica plate? $3+3=6$
10. Write notes on the chemical composition,
physical and optical properties of any *two* of
the following : $3 \times 2 = 6$
- (a) Orthopyroxenes
 - (b) Plagioclases
 - (c) Kyanite
 - (d) Clinopyroxenes
 - (e) Potash-feldspars
11. Write short notes on any *two* of the
following : $3 \times 2 = 6$
- (a) Nicol prism
 - (b) Extinction and extinction angle
 - (c) Refractive index
 - (d) Pleochroism in minerals

(12)

12. Fill in the blanks :

1+1=2

(a) Crosshatch twinning is seen in _____
feldspars.

(b) Corona reaction rim is formed by _____
and _____ minerals.
