

Name :

Roll No. :

Invigilator's Signature :

CS/B.TECH (CT-OLD)/SEM-3/CT-302/2011-12

2011

GEOLOGY

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

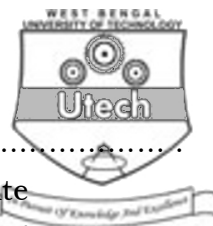
GROUP – A

(Objective Type Questions)

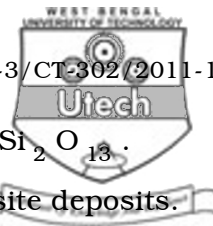
1. Answer any *one* of the following. 1 × 10 = 10

A) Fill in the blanks with correct answers from the parentheses : 10 × 1 = 10

- i) Calcite crystallizes in the system.
 - a) Cubic
 - b) Hexagonal
 - c) Orthorhombic
 - d) Monoclinic.
- ii) When polymorphic substances are interchangeable it is known as
 - a) Monotropy
 - b) Enantiotropy
 - c) Alteration
 - d) Replacement.
- iii) SiO₂ content of Dacite is
 - a) 55 - 66%
 - b) < 66%
 - c) > 66%
 - d) < 55%.



- iv) Pyrophyllite is abrasive due to
 a) Quartz b) Sericite
 c) Zircon d) Corundum.
- v) Lohardaga is important for the mineral
 a) Magnesite b) Bauxite
 c) Sillimanite d) Andalusite.
- vi) Quartz transforms into at 1470°C.
 a) Chrystobalite b) Mullite
 c) Tridymite d) Zeolite.
- vii) is an impure variety of Talc.
 a) Steatite b) Soapstone
 c) Brunnerite d) Brug.
- viii) Orthorhombic system has binary axes of symmetry.
 a) 4 b) 2
 c) 3 d) 6.
- ix) Gondwana coals of India were deposited during the Period.
 a) Carboniferous b) Permian
 c) Jurassic d) Eocene.
- x) Breccia is a/an sedimentary rock.
 a) Arenaceous b) Rudaceous
 c) Argillaceous d) Organic.
- B) Write **T** for true or **F** for false against the statements :
 10 × 1 = 10
- i) Alabaster is a variety of Magnesite.
 ii) SiO₂ -content of Nepheline-Syenite is > 66%.
 iii) Hardness of Apatite according to Mohs' scale is 4.
 iv) Mohorovicic discontinuity separates mantle from the core of the earth.
 v) Lithotype of coal that soils hand is Fusain.



- vi) Molecular formula of Mullite is $\text{Al}_6\text{Si}_2\text{O}_{13}$.
- vii) Salem is important for good magnesite deposits.
- viii) Albite is a polymorph of anorthite.
- ix) The Fe-rich magnesite is known as brunnerite.
- x) Macerals of coal were classified by Stopes in 1935.

GROUP – B

(Short Answer Type Questions)

Answer any *one* question of the following.

$$1 \times 15 = 15$$

2. Write short notes on any *three* of the following : 3 \times 5
 - a) Index minerals
 - b) Heavy minerals
 - c) Polymorphism
 - d) Dyke and sills
 - e) Hexagonal system.
3. Answer the following questions :
 - a) i) Andalusite has got an advantage over Kyanite in its use as refractory material. Why ? 2
 - ii) Nepheline-Syenite has a long firing range. Why ? 3
 - b) i) Indian Gondwana coals are in general of high ash content. Why ? 2
 - ii) Woolastonite is used as an extender in oil and water paints and in producing wall-boards. Why ? 3
 - c) i) Dolomite is used in glass industry. Why ? 2
 - ii) Potash feldspar is preferred in ceramic bodies and soda feldspar in glazes. Why ? 3

(Long Answer Type Questions

$$3 \times 15 = 45$$

- $$4 \times 2\frac{1}{2}$$

- b) Write the varieties and characteristics of magnesite.

$$2 + 3$$

- 2

- 1

 $8 + 4$

- 1

$$6 + 2$$

- d) What is hemihydrate ? 1