G-3/368/22

Roll No. .....

III Semester Examination, January 2022

M.Sc.

GEOLOGY

Paper II

(Mineral Exploration)

Time : 3 Hours] [Max. Marks : 80

Note : *All questions are compulsory. Question Paper comprises of 3 Sections. Section A is objective type/multiple choice questions with no internal choice. Section B is short answer type with internal choice. Section C is long answer type with internal choice.*

SECTION A **1×10=10**

(Objective Type/Multiple Choice Questions)

Choose the correct answer :

1. Choose the correct stages of prospecting activity :

(a) Detailed prospecting, Preliminary prospecting and Reconnaissance prospecting

(b) Preliminary prospecting, Reconnaissance prospecting and detailed prospecting

(c) Reconnaissance prospecting, Preliminary prospecting and detailed prospecting

(d) Preliminary prospecting, detailed prospecting and reconnaissance prospecting

2. Name any *three* surface exploration methods :

(a) ???

(b) ???

(c) ???

(d) ???

3. Under the geochemical prospecting which data is best target for exploration :

(a) Threshold value (b) Back ground value

(c) Anomalous value (d) None of these

4. The search for hidden mineral deposit by measurement of certain physical properties of the earth's surface is known as ..... prospecting method.

5. Match the following :

(A) Pitting	(i) The rock is ground away by abrassive action
(B) Trenching	(ii) The rock is broken by repetitive impaction

(C) Percussive drilling (iii) a method effectin when the deposits are widely exposed and relatively thin

(D) Attritive drilling (iv) a method valuable where the outerop is narrow and linear

(a) (A) (i), (B) (ii), (C) (iii), (D) (iv)

(b) (A) (iii), (B) (iv), (C) (ii), (D) (i)

(c) (A) (iv), (B) (iii), (C) (ii), (D) (i)

(d) (A) (iii), (B) (iv), (C) (i), (D) (ii)

6. In Gravity method of geophysical prospecting, which of the following factor is significant ?

(a) Lattitude

(b) Longitude

(c) Elevation

(d) Variation in density in the subsurface

7. In precious metal mining the consistency is known as ..... .

8. When the volume in cubic meters is multiplied by specific gravity we get :

(a) Grade (b) Tonnage

(c) Assay (d) None of these

9. Name the type of clay used as a drilling mud ..... .

10. Match the followings :

(A) Percussive drilling (i) Rocks are fragmented by wedge action

(B) Attritive drilling (ii) Rock is cut or planed away

(C) Rotative cutting drilling (iii) Rock is ground away by abrassive action

(D) Rotative shearing drilling (iv) Rock is broken by repetitive impaction

(a) (A) (iv), (B) (iii), (C) (ii), (D) (i)

(b) (A) (iv), (B) (i), (C) (ii), (D) (iii)

(c) (A) (iv), (B) (iii), (C) (ii), (D) (i)

(d) (A) (i), (B) (ii), (C) (iii), (D) (iv)

SECTION B 4×5=20

(Short Answer Type Questions)

Note : *Answer the following questions in* ***250*** *words.*

Unit-I

1. Give a brief note on surface prospecting methods.

Or

Give a brief note on geobotanical prospecting.

Unit-II

2. Which physical properties are involves in Geophysical prospecting method. Give a brief note on magnetic method.

Or

Discuss about Lithological criteria in ore research.

Unit-III

3. What do you understand by the term logging. Discuss any *one* logging method in brief.

Or

Give a brief note on sub-surface method of prospecting.

Unit-IV

4. Define sampling. Give a brief description on channel sampling.

Or

Define Assay, Grade and Tonnage Factor.

Unit-V

5. What do you understand by Lithological logging ?

Or

Give a brief note on Calyx drilling.

SECTION C **10×5=50**

(Long Answer Type Questions)

Note : *Answer the following questions in* ***500*** *words.*

Unit-I

1. Define the term prospecting and Exploration. Discuss on what criteria the mineral target areas located during prospecting, are accepted or rejected, prior to exploration.

Or

Give a detailed note on sub-surface prospecting methods.

Unit-II

2. Describe the geological prospecting method for Aluminium ore or Iron ore deposits.

Or

Give a detailed note on Geochemical prospecting for mineral deposits.

Unit-III

3. Define pitting and trenching methods of prospecting. Which method is preferable for (a) Narrow and linear deposits, (b) For widely exposed and thin deposits. How they are useful in mineral exploration ?

Or

Explain electrical method of geophysical prospecting in detail.

Unit-IV

4. Explain, what is sampling ? Enumerate various methods of sampling, what precaution are necessary during sampling ? Give a note on method of coning and quartering.

Or

Give a detailed note on ore reserve estimation method.

Unit-V

5. Name various types of drilling methods employed in exploration. Give a detailed note on 'Diamond drilling' method with suitable diagram.

Or

Discuss various components of drilling with neat sketches.

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