

Course Name : 03 Years Diploma in Mining Engineering

Year : First

Subject Title : Elements of Mining Geology

Subject Code : M108/M114

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
L	T	P	Full Marks.	External Exam Marks	Internal Exam Marks	External Pas Marks	Total Pass Marks	Duration of External Exams
02			100	80	20	26	40	3 Hrs
Practical		2	50	40	10	13	20	4 Hrs

NOTE:

Internal marks will be allotted on the basis of two snap tests and 2 assignment of equal marks to be conducted by the faculty teaching the subject.

DETAILED CONTENTS:

CHAPTER	CONTENTS	HOURS	MARKS
1.	GENERAL GEOLOGY 1.1 Branches 1.2 Sub branches 1.2.1 Essential 1.2.2 Allied 1.3 Scope of geology 1.4 Origin of Earth 1.5 Age of Earth 1.6 Interior of Earth 1.7 Isostacy 1.8 Plate Tectonic Theory & Continental drift	10	12

2.	<p>MINERALOGY</p> <p>2.1 Elements of crystallography</p> <p>2.2 Characteristic symmetry elements</p> <p>2.3 Elements of crystal system</p> <p>2.4 Definition of Mineral</p> <p>2.5 Classification of Minerals.</p> <p>2.6 Physical and chemical properties of Minerals.</p> <p>2.7 Physical Chemical and Optical properties of following groups of rock forming minerals- Quartz, Pyroxene, Olivine, Amphobil,</p>	10	12
3.	<p>PETROLOGY</p> <p>3.1 Rock cycle and characteristics of various Rock types</p> <p>3.2 Igneous Rocks</p> <p>3.2.1 Origin</p> <p>3.2.2 Forms and structures</p> <p>3.2.3 Classification, occurrence & uses.</p> <p>3.3 Sedimentary Rocks</p> <p>3.3.1 Origin & classification</p> <p>3.3.2 Structure</p> <p>3.3.3 Occurrence & uses</p> <p>3.4 Metamorphic Rocks</p> <p>3.4.1 Origin & Classification</p> <p>3.4.2 Structure</p> <p>3.4.3 Occurrence & Uses</p>	08	10

4.	PHYSICAL GEOLOGY 4.1 Weathering 4.1.1 definition of weathering 4.1.2 factors affecting weathering 4.1.3 types of weathering 4.1.4 Weathering & soil formation, weathering profile in various climatic region. 4.2 Land form produced by river, wind, glacier, ocean. 4.3 Earth quake 4.3.1 Definition of Earth Quake, epicenter, hypocenter. 4.3.2 Siesmic zones 4.4 Volcano 4.4.1 definition ,types & Land form	08	10
5.	STRUCTURAL GEOLOGY 5.1 Strike & Dip 5.1.1 Apparent Dip 5.1.2 True Dip 5.2 Dip-strike Problems 5.3 Folds-classification & Recognition in field 5.4 Faults- classification & Recognition in field 5.5 Unconformity- classification & Recognition in field 5.6 Joints and cleavages 5.7 Outlier and Inlier	08	12
6.	COAL GEOLOGY 6.1 Physical & chemical properties 6.2 Origin, occurrence and distribution 6.3 Ranks of coal 6.4 Banded constituents of coal. 6.5 Structural features of coal seam. 6.6 Commercial classification of coal.	08	12
7.	GEOLOG ICAL MAPS 7.1 Drawing of Geological section of maps. 7.2 Description of Geological maps. 7.3 characteristics of contour line.	08	12
	Total	60	80

LIST OF PRATICAL

1. Identification of Minerals in sets. Colour, Form, Cleavage, Fracture, Luster & Streak using Moh's scale of hardness.
2. Identification of Minerals on the basis of physical properties in hand specimens.
 - a. Quartz group
 - b. Feldspar group
 - c. Mica group
 - d. Amphibole group
 - e. Pyroxene group
 - f. Feldspathoid group
 - g. Miscellaneous silicate group
 - h. Non-silicates.
3. Identification of Igneous Rocks in Hand specimen.
4. Identification of sedimentary rocks in Hand specimen.

5. Identification of Metamorphic rocks in Hand specimen.
6. Drawing of Geological section Maps (any ten)
7. Draw profile from contour map along a given line using available software.
8. Identify the rank of given coal specimen.
9. Identify the structural band of coal specimen.
10. Measure the dip & strike of inclined plane using Brunton compass .
11. Measure the hinge & axial plane of fold in given model.

REFERENCE:

AUTHOR	TITLE	YEAR OF PUBLICATION	PLACE OF PUBLICATION & PUBLISHER
P.K. Mukherjee	A text book of Geology	1986	The world press pvt. Ltd. Calcutta.
A.K. Dutta	Physical Geology	1962	A. K. Bose Ranchi.
S.W. Chiplonkar	Structural Geology		
Pravin singh	Engineering & General Geology	2016	Katsons, Delhi

