

MN-108-MINING GEOLOGY LAB

Course Title	Mining Geology Lab	Course Code	MN- 108
Year	I	Course Group	Practical
Teaching Scheme in Periods (L:T:P)	1:0:2	Credits	2
Methodology	Lecture + Practical	Total Contact Periods:	90
CIE	60 Marks	SEE	40 Marks

PRE-REQUISITES

Basic knowledge of Mining Geology

COURSE OBJECTIVE

To equip students with hands-on experience in mineral and rock studies, enhance competency in observational and analytical techniques, and build proficiency in mapping, field methods, geophysical exploration, and quantitative evaluation essential for geological investigations.

COURSE OUTCOMES

Students who had completed the course will be able to

Course outcome		Linked Learning outcome
CO1	Identify the physical properties of Rock forming and Ore forming minerals	1&2
CO2	Identify the megascopic properties of Igneous, Sedimentary and Metamorphic rocks	3,4&5
CO3	Identify the microscopic properties of Minerals / Rocks	6&7
SCO4	Identify the mineral based industries and resources from the map and topo sheet preparation	8&9
CO5	Collect the samples in the field and solve the Dip and Strike problems	10&11
CO6	Electrical resistivity survey and Estimation of ore reserves	12,13,14&15

List of learning outcomes

S. No	Name of the Learning outcome	Periods
1	Study and identification of Rock forming Minerals -Quartz, Calcite, Gypsum, Feldspar, Asbestos, Fluorite, Apatite, corundum, Topaz, Diamond and Talc	6
2	Study and identification of Ore forming Minerals- Hematite, Bauxite Magnetite, Graphite, Chalcopyrite and Barites	6
3	Megascopic identification of Igneous Rocks-Granite, Basalt, Dolerite, Syenite, Gabbro and Rhyolite	6
4	Megascopic identification of Sedimentary rocks- Sandstone, Conglomerate, Breccia, Limestone, Dolomite and Shale	6
5	Study and megascopic identification of Metamorphic rocks- Gneiss, Schist, Slate, Marble, Quartzite and Charnokite	6
6	Microscopic identification of Minerals -Muscovite, Biotite, Tourmaline, Plagioclase Feldspar, Quartz and Kyanite	6
7	Microscopic identification of Rocks -Syenites, Granite, Sandstone, Limestone, Schist and Gneiss	6
8	Topo sheet map preparation (on trace paper)	6
9	Map pointing (Physiographic divisions of India - various industries - resources)	6
10	Geological field work to measure Dip and Strike of Rocks with the help of Compass	6
11	Identify folds like Anticline and Syncline. Identify Inlier and Outlier, Current bedding, Ripple marks and Outcrops. Collect samples of rock / mineral specimen	6
12	Deploy electrical resistivity survey for Wenner configuration across known ore body	6
13	Deploy electrical resistivity survey for Schlumberger array across known ore body	6
14	Estimate ore reserves by applying triangular method	6
15	Calculate tonnage by using square and rectangular method	6

Suggested E-Learning references

1. http://en.wikipedia.org/wiki/Mineral_exploration
2. <http://en.wikipedia.org/wiki/Geology>
3. <http://geology.about.com/>
4. <http://geology.com/>
5. www.nptel.com

CO-PO Mapping Matrix

	Basic and Discipline Specific Knowledge	Problem Analysis	Design/ Development of Solutions	Engineering Tools, Experiment and Testing	Engineering Practices for Society, Sustainability and Environment	Project management	Lifelong Learning	Linked PO
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
CO1	3	2	1	3	2	1	-	1,2,3,4,5&6
CO2	3	3	2	3	1	2	1	1,2,3,4,5,6&7
CO3	2	3	-	3	3	-	-	1,2,4&5
CO4	2	3	1	3	3	1	1	1,2,3,4,5,6&7
CO5	1	1	2	3	2	1	2	1,2,3,4,5,6&7
CO6	3	3	3	3	2	3	2	1,2,3,4,5,6&7

SCHEME OF VALUATION

MID EXAMINATION -I and II

Questions are to be chosen from the list of experiments 1 to 5 for Mid-I examination and from 6 and 7 for mid-II examination.

Sl. No	Description	Marks
1	Writing procedure	5
2	Sketch / Drawing	5
3	Experiment	5
4	Viva voce	5
Total		20

INTERNAL EVALUATION

The internal evaluation of a student in the laboratory will be carried out based on the following objectives

Sl. No	Description	Marks
1	Assignment	10
2	Seminar /Model preparation	10
Total		20

END EXAMINATION

Sl. No	Description	Marks
1	Writing procedure	10
2	Sketch / Drawing	5
3	Experiment	15
4	Viva voce	5
Total		40

EXAMINATION PATTERN

I-MID EXAMINATION

S. No	Name of the Experiment
1	Identification of any One Rock forming mineral
2	Identification of any One Ore forming mineral
3	Identification of any One Igneous rock
4	Identification of any One Sedimentary (or) One Metamorphic rocks
5	Component relevant for the given practical work
6	Viva voce

II- MID EXAMINATION

S. No	Name of the Experiment
1	Microscopic Identification of minerals
2	Microscopic Identification of rocks
3	Component relevant for the given practical work
4	Viva voce

END EXAMINATION

Questions are to be chosen from the list of experiments 1 to15 for End examination

S. No	Name of the Experiment
1	Identification of Rock forming minerals
2	Identification of Ore forming minerals
3	Identification of Igneous rocks
4	Identification of Sedimentary rocks
5	Identification of Metamorphic rocks
6	Microscopic Identification of Minerals
7	Microscopic Identification of Rocks
8	Prepare complete topo sheet
9	Map pointing
10	Solve dip/strike problems
11	Identify folds, Inlier, Outlier, Current bedding, Ripple marks and Outcrops. Collect samples of rocks / mineral specimens
12	Deploy electrical resistivity survey for Wenner configuration across known ore body
13	Deploy electrical resistivity survey for Schlumberger array across known ore body
14	Estimate ore reserves by applying triangular method
15	Calculate tonnage by using square and rectangular method
16	Component relevant for the given practical work
17	Viva voce

BOARD DIPLOMA EXAMINATION, (C-26)

MID-I Examination Model Question Paper

MN-108 Mining Geology Lab

[Time: 1 Hour]

[Total: 20 Marks]

Note: Instructions to student, answer allotted question

1. Identification of Rock/Ore forming minerals.
2. Identification of Igneous/Sedimentary/Metamorphic rocks.
3. Microscopic Identification of Minerals.

BOARD DIPLOMA EXAMINATION, (C-26)

MID -II Examination Model Question Paper

MN-108 Mining Geology Lab

[Time: 1 Hour]

[Total: 20 Marks]

Note: Instructions to student, answer allotted question

1. Microscopic Identification of Rocks
2. Identify the different various Geological Structures
3. Identify contents with help of Map pointing

BOARD DIPLOMA EXAMINATION, (C-26)

End Examination Model Question Paper

MN-108 Mining Geology Lab

[Time: 2 Hours]

[Total: 40 Marks]

Note: Instructions to student, answer allotted question

1. Identification of Rock forming minerals
2. Identification of Ore forming minerals
3. Identification of Igneous rocks
4. Identification of Sedimentary rocks.
5. Identification of Metamorphic rocks.
6. Microscopic Identification of Minerals
7. Microscopic Identification of Rocks
8. Prepare complete topo sheet tracing showing contours, drainage, settlements, transport lines within 5km × 5km grid square.
9. Identify fold type in hand specimen
10. Mark Singareni coalfield and name associated Gondwana formation
11. Bedding strike N30°W. Find strike perpendicular to dip direction
12. Deploy electrical resistivity survey for Wenner configuration across known ore body
13. Deploy electrical resistivity survey for Schlumberger array across known ore body
14. Estimate ore reserves by applying triangular method
15. Calculate tonnage by using square and rectangular method