and Rogers, JJW 1987 Precambilan Geology of India. Oxford

1968 A Manual of Geology of India and Burma Vol. IV Govt

training

studies of stratigraphical formations significant for palaeontological and Sedimintologigcal and visual environmental impact studies. The duration of field training be for three weeks.

ical mapping with emphasis or liothological, structural geomorphological features. The duration of field training for three weeks.

training is compulsory and students not taking part in the shall not be allowed to appear in the examination.

M. Sc. FINAL GEOLOGY

Paper - VII: Resource Geology

Note: The paper will contain nine questions having three quesion from each section, candidates are required to attempt five questions selecting at least one question from each section.

Section A

and its relation with mineral deposit. The development theories of ore formation, Classification for ore deposits. processes of ore formation:magmatic concentration, contact metasomatism, hydrothermal, Residual and mechanical concentration, sedimentation, metamorphism, supergene enrichment, Bacteriogenic, submarine vent exhalations, Stratabound and Stratiform ore deposits.

Fluid inclusion in ores : Principles, assumptions, limitations, and applications.

Study of Staple and unstable isotopes in relation to ore deposits.

Section B

Mode of occurrence of ore bodies - morphology and relationship with host rocks. Textures, Paragenesis and Zoning of ore and their significance. Concept of ore bearing fluid and deposition of ore. Their migration and evolution. Wall rock alteration, Structural and stratigraphic control of ore localization. Metallogenic provinces and epochs.

Metallogenesis in relation to Plate tectonics Metallic mineral deposits mode of occurrence, use and distribution in India of Copper, Lead-Zinc, Aluminium, Iron, Managese and Chromium.

Section C

Coal definition and origin of Coal, Rank grade and type of coal, International Classification Geological and geographical distribution of Coal deposits in India, Detailed geology for some important coal fields of India.

Petroleum its nature and composition. Origin and migration (primary and secondary) of Oil and gas. Characteristics of Reservoir rocks, (structural & stratigraphic) geology of oil bearing basins of India, position of oil and natural gas in India, future prospects and the ecomomic Secnario.

Atomic Fule: Mode of occurrence Distribution of atomic minerals in India. Brief outline of the following important deposits; Bushveld chromite kuruko deposit iron Porphyry copper deposit.

Practical:

Megascopic study of structures and fabrics of different minerals and their associations. Mineralogical and textural studies of common ore minerals under ore-microscope and petrological study of ether industrial and nonmetallic minerals. Diagrammatic representation of open cast and underground mining. Exercises on mine sampling and determination of tenor, cut-off grades and ore reserves

Books Recommended:

- Bateman, A.M. (1951), Economic Mineral Deposits.
- Brown, J.C. and A.K. Dey (1955) India's Mineral Wealth
- Sinha, R.K. and Geology of Ore Deposits
- Wolfe, J.A. (1984) Mineral Resources - A World Review
- Mookherjee, A., 2000 : Ore genesis - A Holostic Approach, Allied Publisher.

Paper VIII : Igneous & Metamorphic Petrology

Note : The paper will contain nine questions having three question from each section, candidates are required to attempt five questions in all selecting at least one question from each section.

Section A

Magma - Origin and emplacement; factors affecting magma generation, differentation and Assimilation. Mineralogical, chemical and tectonic classification of igneous rocks; principles of IUGS systematics.

Crystallization of silicate melt-phase rule, crystallization behavior of albite-anorthite; albite-orthoclase; Forsterite-silica; Naphelene-Kalsilite-silica, Quartz-Albite-Anorthite-Orthoclase.

Section B

Petrography, mode of occurrence, classification and petrogenesis of granites, alkaline rocks, anorthosites, pegmatites, lamprophyre, basalt, ultramafic rocks and roks suites

Metamorphism, its limits and variables Phase rule and phase diagrams: ACF, AKF and AFM; their application in understanding mineral paragenesis and parentage.

Section C

Metamorphic zones, facies and grade, fabric and mode of occurrence of metamorphic rocks, Facies of low pressure (contact metamorphism) and of medium pressure metamorphism-greenschist, amophibolite and granulite. Facies of high pressure (ecologite and blue schist facies). Origin of migmaties in light of experimental studies. Origin of charnockites. Elements of Geothermometry, P-T paths of regionally metamorphosed rocks. Metamorphism and crustal evolution.

Dy. Registrar
(Academic)
University of Rajasthan

Igneous Petrology

...cription and identification of important igneous rocks in hand ...men and thin section.

...hical presentation of geochemical data and its intrepretation.

...culation of CIPW and Niggli values. Geographic distribution ... important ingeous epoisodes of India.

...rphic Practical

...cription and identification of imoportant metamorphic rocks ...and sepcimen and thin section.

...phical presentation of geochemical data - ACF and AKF ...agram and their interpretation.

...graphic distribution of important metamorphic terrains of ...

... recommended

- ..., FJ 1980 Metamorphic Petrology. McGraw Hill, New York.
- ...ey, B.W. 1989 An Introduction to Metamorphic Petrology. Longman, York
- ...er K. and Frey, M. 1994 : Petrogenesis of Metamorphic Rocks Springer ...rlag
- ...ers, A. 1992 : Igneous and Metamorphic Petrology Prentice Hall.
- ... M.G. 1986 : Igneous and Metamorphic Petrology, CBS Publishers.
- ... M.K. 1997 Igneous Petrology, Worls Press, Lolkata
- ...ar Rao Metamorphic Petrology.
- ... R.G. Bel, J.D. and Pankhurst, R.J. 1979 : The Interpretation of Igneous ... Unwin Hyman.
- ... M. 1989 : Igneous Petrogenesis.

Paper-IX : Remote sensing and exploration geology

... : The paper will contain nine questions having three ... from each section, candidates are required to attempt five ... in all selecting at least one question from each section.

Section A

...togeology, Photogrammetry : types and geometry of Aerial ...graph, Map and Aerial Photographs; Photographic Flight ... Stereoscopy, Vertical Exaggeration; Elements of Aerial ...Interpretation; Photomosaic, application of Aerial Photographs ...logy, Geomophology, Mineral & Petroleum Exploration, Water ... Management, Urban Planning, Geo-Engineering and ...mental Studies

Section B

... Sensing - Definition, Development in Remote Sensing ... Abroad Principles or Remote Sensing, Physical basis of ...sensing Data Products, Visual Interpretation of Remote ...Data. Remote Sensing application in Mineral Exploration, ...ater exploration, Water Resource Management, soil studies, ... & land cover studies. Natural Hazard Management and ...ental Studies. Elements of Digital Interpretation, Basics of ... Information System (GIS)

Section C

Elements of ore search and ore guides, surface prospecting methods; exploratory drilling; drill hole logging, deviation of bore holes; Geochemical propecting, concept of anomaly, Geochemocal cycle, mobility and association of elements, Geochemical tracers and isotopes, Primary and Secondary dispersion patterns, Geophysical prospecting - concept and application of seismic, gravity, magnetic, electrical and radioactivity methods. Classification of reserves; calculation of resources grade and tonnage relationship.

Practical :

Familiarity with photogeology and satellite data products

Familiarity with photogeology and satellite data interpretation instruments.

Transfer of principal and conjugate points, determination of scale; interpretation of aerial photographs and satellite data for various applications such as hydrogeomorphology, geomorphology, geology, and land use & land cover, drainage and gully pattern; soil type indetification, urban planning and environmental studies.

Numerical and map interpretation of seismic, gravity, magnetic and electrical data.

Book recommended

- Miller V.C. 1961 Photogeology McGraw hills.
- Sabbins F.F. 1985 Remote Sensing - Principles and Applicatuons Freeman
- Drury S.A. 1987 Image Interpretation in Geology Allen and Unwin
- Drury S.A. 1987 Image and Application of Photogeology Wiley Eastern, New Delhi.
- Wolf P.R. 1974 Elements of Photogrammetry McGraw Hill
- Sharma PV 1986 Geophysical Methods in Geology Elsevier
- Dobrin M.B. 1976 Introduction to Geophysical Prospection, McGraw Hill
- Arogyaswami RNP 1980 Courses in Minning Geology, Oxford, New Delhi

Paper-X : Element of Engineering Geology, Mining Geology and ore Dressing

Note : The paper will contain nine questions having three question from each section, candidates are required to attempt five question in all selecting at least one question from each section.

Section A

Application of geology in planning, designing and construction of civil engineering projects. Engineering properties of rocks specific gravity, porosity, absorption, compressive and shear strength

Rocks as construction material previous and imprevious soils, aggregates

Dams classification, terminology, types of spillways, Forces acting on dams, Geological investagations for dam site selection, geological mapping, trial pits, drilling, geophysical methods, their interpretation. Dam failure, leakage, sliding and settlement Foundation treatment, grouting. Tunnels : classification and nomenclature, geological exploration for tunnel alignment, tunnel supports and lining

...water in tunnels, in hilly terrains. Landslides Types, process ... landsides, landslide prevention and remedial measures.

Section B

...lements of alluvial mining.

...tlines of open cast mining, Benching method, stripping, ratio, ...den removal, advantages and disadvantages. Under ground ... methods; Mine development, mine terminology, stopping ... Underground drilling machines, Explosives : their types and ... Blasting techniques, blast hole patterns, blast hole ...ation.

Methods of sampling, drill hole samples, chip and channel ... Preparing samples for analysis.

Section C

...ncept of ore dressing, its technical necessity. Physical ... used in ore dressing.

...ntages of ore dressing. Comminution practice : Jaw, gyratory ... crushers, their principle and uses; types of griding mills ...s of sulfide beneficiation, concept of forth floetation.

Classification : sink - float techniques, gravity separation ... Process of coal washing. Heavy media separation, ...ostatic & Magnetic Separation.

Practical :

Survey by Plane Table and Prismatic Compass and Theodolite. ...ing and countouring by Dumpy Level and profile drawing by ...evel

Books Recommended :

- ...aswamy, R.N.P. 1996 Courses in Mining Gology. Oxford IBH. Clark, ... 1957 Mining Geology. John Wiley.
- ...ne, D.H. and Judd, W.R., 1998 Principles of Engineering Geology. CBS ...blishers.
- ...na, P.V. 1997 Environmental and Engineering geophysics. Cambridge ... Press.
- ...ie K.V.G.K. 1980 Experiments in Engineering Geology
- ...S.K. 1986 Ore Processing Oxford and IBH Publishing

Field Training :

Field studies of outcrops of Igneous and Matamorphic rocks and ...conomic mineral deposits. The duration of field training should ... for three weeks.

Field training of mining methods with emphasis on geological ...tures of mineralization and mining. The duration of the ...ing should be for two weeks.

...ld studies/training is compulsory and students not taking part ...e training shall not be allowed to appear in the examinat...