Syllabus and Course Scheme

Academic year 2020-21

Bachelor of Science- Geology

Exam.- 2021

UNIVERSITY OF KOTA

MBS Marg, Swami Vivekanand Nagar,
Kota - 324 005, Rajasthan, India

Website: uok.ac.in

University of Kota, Kota

B.Sc.- Pt-III (Geology)

The examination shall consist of three theory papers and one practical.

		Hrs/Week	Exam/Hrs.	Marks
A. Theory Papers				
Paper I :	Mineral Resource	2	3	50
Paper II :	Geoexploration and Principles of Mining	2	3	50
Paper III :	Geology of Rajasthan and Groundwater Geology	2	3	50
B. Practical		4	4	75
Total Marks				**225**

Time: 3 hrs **MM 50**

Note: Each paper will be divided into THREE parts.

Part- I Ten questions (short types answer) two from each Unit will be asked. Each question will be of one mark and the candidates are required to attempt **ALL** question.

Total-10 marks.

Part –II Five Questions (answer not exceeding 250 word) one from each Unit with internal choice will be asked and the candidates are required to attempt **ALL** questions. Each question will be of 05 marks.

Total 25 marks.

Part –III For questions may be in part covering all five Units (answer not exceeding 500 words) will be asked. The candidates are required to attempt any **TWO** question. Each question will be of $7^{1/2}$ marks.

Total 15 marks.

Paper- I MINERAL RESOURCES

Time: 3hrs. **MM 50**

UNIT -I

Magma and its relation with mineral deposits. Elementray ideas of Magmatic concentration and hydrothermal process.

UNIT –II

Elementary ideas of processes of ore formation by Sedimentary, Volcanogenic, Evaporation, Oxidation and Supergene Enrichment, Metamorphism, Mechanical and Residual Concentration.

UNIT -III

Brief idea of contact matosomatism and skarn formation. Coal, Petroleum and Radioactive Mineral Deposits of India.

UNIT -IV

Brief Knowledge of mode of occurrence, distribution, use and origin of important metallic mineral deposits: Lead-Zinc, Copper and Iron in India.

UNIT -V

Brief knowledge of mode of occurrence, distribution, uses and origin of important non-metallic mineral deposit of India-Rock Phosphate, Gypsum, Talc, Asbestos, Barytes, Fluorite, Calcite, Garnet, Kyanite and Sillimanite and Clay deposits of Rajasthan.

Paper-II GEOEXPLORATION AND PRINCIPLES OF MINING

Time: 3hrs. **MM 50**

UNIT -I

Prospecting and Exploration. Geological techniques and procedures of prospecting and exploration planning and operation of exploration.

UNIT -II

Geological aspect of drilling : methods, selection of sites, angle and direction of bore holes. Core-logging.

UNIT -III

Methods of sampling and calculation of average grades. Classification of ore reserves, calculation of cut-off grade, Grade and tonnage. Principles of geochemical and geophysical prospecting.

UNIT -IV

Mineral Economics and its concept, tenor, grade and specification for important minerals used in industries. Methods of ore reserve estimation. Principles and methods of ore dressing.

UNIT- V

Elements of mining methods: Introduction to opencast and underground mining methods.

PAPER- III: GEOLOGY OF RAJASTHAN AND GROUNDWATER GEOLOGY

Time: 3 hrs. **MM 50**

UNIT-I

Geomorphologic division of Rajasthan and their characteristic. Geological Time Scale and its equivalents in Rajasthan. Banded Gneissic Complex, Aravalli and Delhi Supergroups : their distribution, classification, lithology, igneous intrusive and economic importance.

UNIT-II

Younger Precambrian formations of Rajasthan-Sirohi Group, Sindhrath Group and Malani Igneous Suite, Vindhyan and Marwar Supergroups of Rajasthan : their distribution, classification, lithology, fossil content and economic importance.

UNIT-III

Palaeozoic, Mesozoic, Tertiary and Quaternary Geology of Rajasthan: their distribution, classification, lithology, fossil content and economic importance.

UNIT-IV

Source and origin of groundwater. Hydrologic cycle. Hydrological properties of rock: Types of aquifers, porosity, permeability, transmissibility, storage coefficient, specific yield and specific retention. Water table and artesian well. Occurrence of groundwater in igneous, metamorphic and sedimentary rocks.

UNIT-V

Groundwater prospecting methods and Groundwater resources of Rajasthan.

B.Sc. THIRD YEAR GEOLOGY PRACTICAL 2020-2021

Examination will be of four hours duration.

Max Marks 75

Mineral Resource: Plotting and Spotting	-	15
Geo-exploration and Principles of Mining :Surrey	-	10
Geology of Rajasthan and Groundwater Geology:		
Plotting and identification	-	15
Field work	-	15
Viva voce	-	10
Record	-	10
		75

Mineral Resources:

1. Identification and description of important economic minerals and rock specimens.
2. Plotting of important economic mineral deposits in the outline map of India

Geo-exploration & Principles of mining:

1. Survey: Chain and Plane table surveying

Geology of Rajasthan & Groundwater:

1. Identification and description of important Stratigraphic rocks of Rajasthan.
2. Plotting of important Stratigraphic units in the outline map of Rajasthan.

Field work: Field work of 3-5 days for study of different mineral deposits and geological formation of Rajasthan.

BOOKS SUGGESTED B.Sc. (Part-III)- Geology

1. Krishnan, M.S. : Geology of India and Burma, CBS Publisher & Distributor, Delhi

2. Sinha Roy, S., Malhotra, G., and Mohanty, M. : Geology of Rajasthan. Geological Society of India, Publication.

3. Mukerjee, P.K. : A Text book of Geology. The world Press Pvt. Ltd, Kolkata.

4. Parbin Singh : Engineering & General Geology, S.K. Kataria & Sons, New Delhi

5. Garg, S.P. : Groundwater and Tube wells. Oxford & 1BH Pub. Co., New Delhi

6. Todd, D.K. : Groundwater Hydrology. John Wiley & Sons. Singapore

7. Arogyaswami, R.N.P. : Courses in Mining Geology. Oxford & 1BH Pub. Co. New Delhi

8. Krishna Swami, S : India's Mineral Resources. Oxford & 1BH Pub. Co. New Delhi

9. Peters W.C. : Exploration & Mining Gelology John Wiley & Sons New Yourk

10. Deb, S. : Industrial Minerals & Rocks of India, Allied Pub. New Delhi

11. Jensen M.L. and Bateman, A.M. : Economic Mineral Deposits. John Wiley & Sons

12. Roy, A.B. and Jakhar, S.R. : Geology of Rajasthan- (North West India)-Precambrian to Recent Scientific Publisher, Jodhpur