

*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](http://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
<b>A. Theory Papers</b>			
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>B. Practical</b>	4	4	75
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<b>Total Marks</b>			<b>225</b>

**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. Elementary 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 metamorphism 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
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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 Geology 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

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