

**B. Sc. FIRST YEAR GEOLOGY PRACTICAL 2020-2021****Examination will be of four hours' duration.****Maximum Marks 75**

Physical Geology	05
Paleontology	20
Crystallography-Mineralogy	20
Field Work	15
Viva Voce	05
Record	10

<b>Total</b>	<b>75</b>
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**(i) Paleontology:**

Identification and description of following fossils in hand specimens:

Foraminifera	: <i>Nummulites, Assilina, Alveolina.</i>
Echinoidea	: <i>Cidaris, Hemiaster, Micraster.</i>
Brachiopoda	: <i>Rhynchonella, Terebratula, Productus, Spirifer.</i>
Pelecypoda	: <i>Pecten, Ostrea, Trigonina, Lima, Exogyra.</i>
Gastropoda	: <i>Trochus, Murex, Voluta, Physa, Turritella, Conus.</i>
Ammonoidea	: <i>Phylloceras, Ceratites, Perisphinctes.</i>
Coleoidea	: <i>Belemnites.</i>
Nautiloidea	: <i>Nautilus, Orthoceras.</i>
Trilobita	: <i>Calymene, Phacops, Agnostus, Trinucleus, Paradoxides.</i>
Graptoloidea	: <i>Monograptus, Diplograptus.</i>
Plant fossils	: <i>Glossopteris, Gangmopteris, Vertibraria, Ptilophyllum.</i>

**(ii) Crystallography and Mineralogy:**

Description and identification of the following minerals in hand specimen : Quartz, feldspar, muscovite, biotite, chlorite, hornblende, augite, olivine, garnet, kyanite, staurolite, sillimanite, tremolite, asbestos, serpentine, calcite, dolomite, magnetite, hematite, epidote, tourmaline, beryl, nepheline, talc, gypsum, apatite, fluorite, topaz and corundum.

Drawing, description and identification of crystal models.

**(iii) Identification of following minerals under microscope: Quartz, Plagioclase feldspar, Microcline Feldspar, Muscovite, Biotite, Garnet, Hornblende, Calcite, Olivine, Hypersthene.****(iv) Physical Geology:**

Preparation of charts and diagrams illustrating important processes of erosion and weathering.

**(v) Field Work:**

Three days Geological field excursion and a report thereon.

**Students not taking part in the field work will not be awarded marks for the field work.**

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Dr. Harish Kapasya

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Mr. Subhash Janagal

## **B. Sc. First Year Science 2020-2021**

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### **Books suggested, besides the Internet: B. Sc. Part I**

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- Datta A. K.:** Introduction to Physical Geology, Kalyani Publishers, New Delhi.
- Ford, W. E.:** Dana's Textbook of Mineralogy, John Wiley & Sons, New York.
- Hamblin W. K.:** Earth's Dynamic Systems, Macmillan Publishing Company, New York.
- Homes A.:** Principles of Physical Geology, Thomas Nelson & Sons, London.
- Mahapatra G. B.:** A Textbook of Geology, CBS Publishers & Distributors, Delhi.
- Mukerjee P. K.:** A Textbook of Geology, The World Press Pvt. Ltd., Calcutta.
- Parbin Singh:** Engineering & General Geology, S. K. Kataria & Sons, New Delhi.
- Read H. H.:** Rutley's Elements of Mineralogy (revised by C.D. Gribble), CBS Publishers & Distributors, Delhi.
- Sharma, N. L.:** Determinative Tables, ISM, Dhanbad.
- Shrock R. R. & Twenhofel W. H.:** Principles of Invertebrate Palaeontology, CBS Publishers & Distributors, Delhi.
- Tarbuck E. J. & Lutgens F. K.:** The Earth - An Introduction to Physical Geology, Merrill Publishing Company, London.
- Woods, Henry:** Paleontology Invertebrates, CBS Publishers & Distributors, Delhi.

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Maximum Marks 75

### Petrology

- |                                     |    |
|-------------------------------------|----|
| 1. Study of rocks in hand specimens | 08 |
| 2. Microscopic study of rocks       | 07 |

### Structural Geology

- |   |    |
|---|----|
| 3. Interpretation and drawing of section of simple geological map | 10 |
| 4. Problem of true and apparent dips                              | 05 |

### Stratigraphy

- |   |    |
|---|----|
| 5. Stratigraphic rocks.                                     | 10 |
| 6. Sketch map of Indian formations and palaeographic period | 05 |
| 7. Field report   | 15 |
| 8. Viva-Voce  | 05 |
| 9. Record   | 10 |

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**Total** **75**

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### STRUCTURAL GEOLOGY:

1. Study of topographic maps. Interpretation of topography from contour maps.
2. Orientation of planes and lines; dip, strike, pitch and plunge. Use of clinometer compass.
3. Study and interpretation of outcrop patterns. True and apparent thickness of beds, study of simple geological maps and drawing of sections.
4. Basic principles of stereographic and orthographic projections.

### PETROLOGY:

(1) Identification of igneous, metamorphic and sedimentary rocks in hand specimens as per list given below:

#### **Igneous Rocks:** -

Granite, granodiorite, syenite, diorite, anorthosite, norite, gabbro, pyroxenite, peridotite, nepheline syenite, pegmatite, dolerite, basalt and rhyolite.

#### **Metamorphic Rocks:** -

Quartzite, marble, granite gneiss, mica schist, phyllite, slate, amphibolite, charnockite, mylonite and migmatitic gneiss.

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### **Sedimentary Rocks: -**

Sandstone, limestone, shale, conglomerate, arkose, grit, greywacke, and breccia.

(2) Petrographic study of the following rocks under microscope: granite, syenite, diorite, gabbro, dolerite, rhyolite, basalt, mica schist, granite gneiss, amphibolite, marble, sandstone and limestone.

### **STRATIGRAPHY:**

Identification and description of important stratigraphic rocks of India and their assignment to respective stratigraphic position. Plotting of following stratigraphic units and their equivalents in the outline map of India. Delhi-Aravalli fold belts, Main Vindhyan Basin, Gondwana Supergroup, Deccan Traps and Siwalik Group. Preparation of palaeogeographic maps of Permocarboniferous and Cretaceous periods.

### **FIELD WORK:**

Field work for 3 day for training in geological mapping of rock units and measurement of Structural features.

**Students not taking part in the field work will not be awarded marks for the field work.**

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**B. Sc. Second Year Science 2020-2021**  
**BOOKS SUGGESTED**

**Books suggested, besides the Internet: B. Sc. Part II**

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**Billings M. P.:** Structural Geology, Prentice Hall of India Pvt. Ltd., New Delhi.

**Bolton T.:** Geological Maps their solution and interpretation, Cambridge University Press

**Haung G. N.:** Petrology

**Kirshnan M. S.:** Geology of India and Burma, CBS Publishers & Distributors, Delhi.

**Lemon R. R.:** Principles of Stratigraphy, Merill Publishing Company, London

**Mukerjee P. K.:** A Textbook of Geology, The world Press Pvt. Ltd., Calcutta.

**Naqvi S.M. & Rogers J. J.W.:** Precambrian Geology of India. Oxford University Press.

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

**Pettijohn F. J.:** Sedimentary Rocks, CBS Publishers & Distributors, Delhi.

**Ravindra Kumar:** Fundamentals of Historical Geology and Stratigraphy of India, Wiley  
Eastern Ltd., New Delhi.

**Sinha Roy, S., Malhotra, G., & Mohanty, M.,** 1998: Geology of Rajasthan, Geological Society  
of India, Bangalore, pp278.

**Tyrrell G. W.:** The principles of Petrology, B. I. Publications Pvt. Ltd., Delhi.

**Weller J. M.:** Stratigraphic Principles and Practice, Universal Book Stall, Delhi.

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## B. Sc. THIRD YEAR GEOLOGY PRACTICALS 2020-2021

Examination will be of four hours duration.

Maximum Marks 75

1. Mineral Resources: Plotting and spotting	15
2. Geoexploration and Principles of Mining: Survey	10
3. Geology of Rajasthan And Groundwater Geology: Plotting and identification	15
4. Field Work	15
5. Viva-Voce	10
6. Record	10
<b>Total</b>	<b>75</b>

### MINERAL RESOURCES:

1. Identification and description of important economic mineral and rocks in hand specimen.
2. Plotting of important economic mineral deposits in the outline map of India.

### GEOEXPLORATION AND PRINCIPLES OF MINING:

1. Survey: Chain and Plain Table surveying.

### GEOLOGY OF RAJASTHAN AND GROUND WATER:

1. Identification and description of important stratigraphic rocks of Rajasthan and their assignment to respective stratigraphic position.
2. Plotting of important stratigraphic units in the outline map of Rajasthan.

### FIELD WORK:

Field work for 5-day for studying different mineral deposits and stratigraphic units in Rajasthan.

**Fieldwork is compulsory. Students not taking part in the fieldwork will not be allowed to appear in the Final Examination.**

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## **B. Sc. Third Year Science 2020-2021**

### **Books Suggested, besides the Internet: B. Sc. Part-III**

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**Arogyaswamy R.N.P.:** Courses in Mining Geology, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.

**Chouhan T. S.:** Encyclopedia of Rajasthan Vol. I, Vigyan Prakashan, Jodhpur.

**Deb, S.,** 1980: Industrial Minerals and Rocks of India. Allied Publ. New Delhi. pp603.

**Garg S. P.:** Groundwater and Tube Wells, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.

**Jensen M. L. & Bateman A. M.:** Economic Mineral Deposits, John Wiley & Sons, Singapore

**Kirshnan M. S.:** Geology of India and Burma, CBS Publishers & Distributors, Delhi.

**Krishnaswamy S.:** India's Mineral Resources, Oxford & IBH Publishing Co. Pvt. Ltd.,  
(Revised by R. K. Sinha) New Delhi.1988, 613 p.

**Naqvi S. M. and Rogers J. J. W.:** Precambrian Geology of India. Oxford University Press.

**Pandey S. N.:** Principles and Applications of Photogeology, Wiley Eastern Ltd., New Delhi.

**Peters W. C.:** Exploration and Mining Geology, John Wiley & sons, New York.

**Rao T. C. & Gokhle K. V.:** Ore Deposits of India: Their Distribution and Processing.

**Ravindra Kumar:** Fundamentals of Historical Geology and Stratigraphy of India, Wiley  
Eastern Ltd., New Delhi.

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

**Venkatramaiah C.:** Textbook of Surveying, Universities Press (India) Ltd., 3-5-820,  
Hyderguda, Hyderabad-500029.

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