M. G. S. UNIVERISTY, BIKANER

SYLLABUS

SCHEME OF EXAMINATION AND

COURSES OF STUDY

FACULTY OF SCIENCE

B.SC. PART I EXAMINATION 2023

Maharaja Ganga Singh University
Bikaner

Botany
B.Sc. Part I
SCHEME OF EXAMINATION

There shall be three (03) Sections in the Question Paper.
Section A shall consist of ten questions (02 questions from each Unit), of 1 mark each, all compulsory to be answered in around 50 words.
Section B shall consist of seven questions (at least 01 question from each Unit) of 03 marks each, to be answered in around 200 words. Five questions must be answered out of given seven.
Section C shall consist of five questions (01 question from each Unit) of 05 marks each, to be answered in around 500 words. Any three questions must be answered out of given five.

The number of paper and the maximum marks for each paper together with the minimum marks required for a pass are shown against each subject separately. It will be necessary for a candidate to pass in the theory part as Classification of successful candidates shall be as follows :

First Division 60%, Second Division 48% of the aggregate marks.
All the rest shall be declared to have passed the examination, if they obtain the minimum pass marks in each subject viz. 36% no division shall be awarded at the part I and Part IIExamination.
Students have to pass individually in each paper including internal assessment.

DISTRIBUTION OF MARKS

Paper I 2 hrs 40 Marks (Minimum Passing Marks 14)
Paper II 2 hrs 40 Marks (Minimum Passing Marks 14)
Practicals 4 hrs 40 Marks (Minimum Passing Marks 14)
Internal Assessment 30 Marks (Minimum Passing Marks 12)
Total Maximum Marks 150

BOTANY

B.Sc. Part – I (2023-24)

Semester-I

PAPER I –PHYCOLOGY AND MYCOLOGY

Unit-I

General characters, thallus organization, pigments and reserve food material of Algae. Reproduction and different types of life cycle in Algae. Classification with special reference to Firtsch. General account of Cynobacteria, Cell structure and reproduction in *Oscillatoria* and *Nostoc.*

Unit-II

General characters of Chlorophyta and Xanthophyta. Morphology and reproduction in-
Chlorophyta – *Chlamydomonas, Hydrodictyon, Volvox, Oedogonium*

Charophyta- *Chara*
Xanthophyta –*Vaucheria*

Unit- III

General characters of Phaeophyta and Rhodophyta. Morphology and reproduction **Phaeophyta** - *Ectocarpus*
Rhodophyta - *Polysiphonia*
Economic importance of Algae.

Unit-IV

Characteristics and broad classification of Fungi (Alexopoulus and Mims, 1979) .Structure and life history of *Albugo, Aspergillus, Mucor, Penicillium* and *Morchella.*

Unit-V

Structure and life history of *Puccinia, Ustilago, Agaricus,* and *Alternaria.* General Economic importance of Fungi.

PAPER– II LICHENS, MICROBIOLOGY AND PLANT PATHOLOGY

Unit- I

Lichens - General characters, habitat, structure, reproduction (with special reference to *Parmelia* and *Usnea*) and economic importance of Lichensespecially as indicators of environment.

Unit- II

Brief history of Microbiology : Major contributions of Leuwenhoek, Pasteur, Koch, Metchinkoff, Paul Ehrlich, Edward Jenner, Flemming and Waksman.

Unit- III

Characteristics, structure, nutrition and reproduction of Bacteria. Gram staining, economic importance of Bacteria. Characteristics, structure and economic importance of Mycoplasma.

Unit- IV

Viruses: nature, structure, multiplication and transmission of plant Viruses. Generalaccount of Viroids, AIDS and Prions.

Unit- V

Principles of Plant Pathology: Symptoms and control measures of following plant diseases: Green Ear Disease of Bajra. Loose and Covered Smut of Wheat/ Barley, Black Rust of Wheat, Citrus Canker, Little Leaf of Brinjal, Yellow VeinMosaic of Bhindi and mycosis disease caused by Mucor.

PRACTICALS

Microscopic preparations and study of the following algal material:

Nostoc, Oscillatoria, Hydrodyctyon, Volvox, Oedogonium, Vaucheria. Chara, Ectocurpus and *Polysiphonia*.

Microscopic preparation and study of:

Albugo, Aspergillus, Mucor, Morchella, Penicillium, Ustilago, Puccinia, Agaricus and *Alternaria.*

Study of Lichen Section / specimen.

Staining of different types of Bacteria. Study of some locally available plant diseases caused by Viruses.

Mycoplasma, Bacteria and Fungi in field/laboratory. Yellow Vein Mosaic of Bhindi. Little Leaf of Brinjal, Citrus Canker, Green Ear Disease of Bajra, Rust and Smut of Wheat and White Rust of Crucifer. Mycosis disease caused by Mucor.

Marking Scheme-

There shall be a practical examination of Four hours duration and the distribution of marks shall be as follows –

		Regular & NC students	ExStudents
1	Identification and slide preparation of Algae	5	6
2	Identification and slide preparation of Fungi	5	6
3	Bacterial staining	5	6
4	Plant pathology exercise / Lichens	5	6
5	Spots – Five (a) Algae (b) Fungi (c) Lichens (d) Plant pathology Fungi (e) Plant pathology Bacteria/ Virus/ Mycoplasma	(2*5=10)	(2*5=10)
6	*Viva-Voce*	5	6
7	Practical record	5	-
8	**Total**	40	40

Semester-II

PAPER –I : BRYOPHYTES AND PTERIDOPHYTES

Unit-I

General characters and classification of Bryophytes.
Evolutionary trends in thallus and sporogonium in Bryophytes.
Morphology and life history of *Riccia* and *Marchantia.*

Unit-II

Morphology, life history of *Anthoceros* and *Sphagnum*.
Economic importance ofBryophytes.

Unit-III

Characteristics and broad classification of Pteridophyta. Stelar system in Pteridophytes..

Unit-IV

Occurrence, structure and life history of *Psilotum, Lycopodium* and *Equisetum.*

Unit-V

Occurrence, structure and life history of *Selaginella, Dryptoteris* and *Marsilea.*
Homospory, heterospory and origin of seed habit.

PAPER –II: GYMNOSPERMS & PALAEOBOTANY

Unit-I

General characters, economic importance and broad classification ofGymnosperms.

Unit -II

Occurrence, Morphology, anatomy and life history of *Cycas*.

Unit-III

Occurrence, Morphology, anatomy and life history of *Pinus*

Unit-IV

Occurrence, Morphology, anatomy and life history of *Ephedra*.

Unit-V

Geological Time Scale. Types of fossils, process of fossilisation. Applied aspects of Palaeobotany. Structure of *Rhynia* and *Williamsonia*.

PRACTICALS

Study of External morphology and microscopic preparations of the following Bryophytes : *Riccia, Marchantia, Anthoceros* and *Sphagnum*.

Microscopic examination of fossil slides, specimen/photographs - *Rhynia* and *Williamsonia.*

Microscopic, temporary, double stained preparations and study ofstem/rhizome, anatomy of following Pteriodophytes - *Psilotum, Lycopodium, Selaginella*. *Equisetum* and *Marsilea.*

Study of temporary, single stained microscopic preparations of the Followings:

Cone of *Lycopodium, Selaginella* and *Equisetum*. Sporophyll of *Dryopteris.* Sporocarp of *Marsilea.*

Microscopic temporary double stained preparations of T.S. stem of *Pinus* and *Ephedra*, T.S.Leaflet and Rachis of *Cycas* and needle of *Pinus,* T.S. of normal and coralloid root of *Cycas.* Study of male cone and megasporophyll of *Cycas*. Microscopic preparation of male cone of *Pinus*and male & female cones of *Ephedra,* Study of female cone of *Pinus.*

Marking Scheme-

There shall be a practical examination of Four hours duration and the distribution of marks shall be as follows –

		Regular & NC students	ExStudents
1	A double stained section of Bryophyte	5	6
2	A double stained section of Pteridophyte (Vegetative)	5	6
3	A double stained section of Gymnosperm (Vegetative)	5	6
4	A double stained section of Pteridophyte/Gymnosperm (Reproductive)	5	6
5	Spots – Five (a) Bryophyte (b) Pteridophyte (c) Gymnosperm (d) Pteridophyte/Gymnosperm (Reproductive) (e) Fossils	(2*5=10)	(2*5=10)
6	*Viva-Voce*	5	6
7	Practical record	5	-
8	**Total**	40	40

Reference Books-

1. A Text Book of Botany: Vol. I & II – Saxena and Sarabhai, Ratan PrakashanMandir, Agra.
2. 2. A Text Book of Botany – Singh, Pandey and Jain, Rastogi Publication, Merut.
3. Algae, Lichens and Bryophyta – Gena, Verma and Chaudhary, Alka Publication,Ajmer.
4. Fungi, Microbiology and Plant Pathology – Gena, Verma and Chaudhary, AlkaPublication, Ajmer.
5. Pteridophyta, Gymnosperms and Palaeobotany – Tyagi and Saxena, R.B.D., Jaipur.
6. Pteridophyta, Gymnosperms and Palaeobotany – Gena, Verma and Chaudhary,Alka Publication, Ajmer.
7. Practical Botany – Bendre and Kumar, Rastogi Publication, Meerut.