

Choice Based Credit System

(w.e.f. 2019)

BACHELOR OF SCIENCE (B.Sc.) BIOTECHNOLOGY

SEMESTER WISE PRACTICAL QUESTION BANK CUM MODEL PAPER

B.Sc. BIOTECHNOLOGY, TELANGANA UNIVERSITY, (CBCS).

B.Sc. Biotechnology I year- Semester -I

PAPER -I

CELL BIOLOGY & GENETICS

PRACTICAL MODEL QUESTION BANK/PAPER

MAX MARKS: 50

TIME: 03 HRS

I. MAJOR Experiment Questions (any one) (20 M)

1. Monohybrid and dihybrid ratio in *Drosophila*/maize (major)
2. Preparation of different stages of Mitosis and Meiosis (major)
3. Pedigree charts of some common characters like blood group & color blindness (major)

II. Minor Experiment Questions (any one) (10 M)

1. Types of chromosomes (minor)
2. Ames test for mutagenic agents (minor)
3. Preparation of Nuclear, Mitochondrial & Cytoplasmic fractions (minor)

III. Spotters (4x2 1/2=10 M) (any four)

1. Nucleus structure & functions;
2. Eukaryotic&Prokaryotic Ribosomal components;
3. Nucleosomes;
4. CyclinDependant Kinases;
5. Synaptonemal Complex;
6. Chemical components of biological membranes;
7. Dihybrid test cross;
8. Cytological proof of Crossing over;
9. Genic balance theory;
10. Haemophilia;
11. Tumor suppressor genes;
12. Lethal genes.

IV. Viva Voce & Record (10 M)

B.Sc. Biotechnology I year- Semester -II

PAPER -II

BASICS OF NUCLEIC ACIDS - BIostatISTICS- COMPUTERS

PRACTICAL MODEL QUESTION BANK/PAPER

MAX MARKS: 50

TIME: 03 HRS

I. MAJOR Experiment Questions (any one) (20 M)

1. Estimation of DNA by diphenylamine method (major)
2. Estimation of RNA by orcinol method (major)
3. Problems on Binomial and Poisson distributions (major)
4. Micro soft Power Point presentation. (major)

II. Minor Experiment Questions (any one) (10 M)

1. Finding statistical significance of a given data using 't' test (minor)
2. Graphical representation of data (Histograms, frequency polygon, Pie diagram) (minor)
3. Acquaintance with the Biological databases through Internet(minor)

III. Spotters (4x2 1/2=10 M) (any four)

1. Hershey-Chase experiments ;
2. Fidelity of replication ;
3. Meselson&Stalh experiments;
4. Telomerase;
5. Thymidine dimers;
6. SOS repair;
7. t-test;
8. Chi-square test;
9. Short cut keys;
10. MS DOS commands;
11. Protein databases.

IV. Viva Voce & Record (10 M)

B.Sc. Biotechnology II year- Semester -III

PAPER -III

BIOLOGICAL CHEMISTRY

PRACTICAL MODEL QUESTION BANK/PAPER

MAX MARKS: 50

TIME: 03 HRS

I. MAJOR Experiment Questions (any one) (20 M)

1. Qualitative tests of Sugars, amino acids and lipids (major)
2. Estimation of proteins by Biurate method (major)
3. Estimation of total sugars by Anthron method (major)
4. Reducing sugars DNS method (major)
5. Separation of amino acids by paper chromatography, TLC (major)

II. Minor Experiment Questions (any one) (10 M)

1. Preparation of normal, molar and molal solutions (minor)
2. Preparation of buffers (acids, basic and neutral) (minor)
3. Separation of protein by SDS – PAGE.(minor)

III. Spotters (4x2 1/2=10 M) (any four)

1. Osazone;
2. Cellulose;
3. globular protein;
4. Lock and Key model of enzymes;
5. Competitive inhibition;
6. Xerophthalmia;
7. RUBISCO;
8. Albinism;
9. ATP synthase;
10. Cytochrome;
11. Albinism;
12. Gout.

IV. Viva Voce & Record (10 M)

B.Sc. Biotechnology II year- Semester -IV

PAPER -IV

MICROBIOLOGY & BIOPHYSICAL TECHNIQUES

PRACTICAL MODEL QUESTION BANK/PAPER

MAX MARKS: 50

TIME: 03 HRS

I. MAJOR Experiment Questions (any one) (20 M)

1. Separation of amino acids by paper chromatography (major)
2. Technique of Micrometry (Stage and ocular) (major)
3. Staining and identification of bacteria – *E.coli*, *Pseudomonas*, *Bacillus* and *Staphylococcus*. (major)

II. Minor Experiment Questions (any one) (10 M)

1. Electrophoretic separation of proteins (SDS-PAGE) (minor)
2. Preparation of routine microbiological media (minor)
3. Isolation of common non-pathogenic bacteria (minor)

III. Spotters (4x2 1/2=10 M) (any four)

1. HIV;
2. Autoclave;
3. Laminar Air Flow;
4. Pencillium;
5. Tyndalization;
6. Bacterial growth curve;
7. Inoculation loop;
8. Cyanobacteria;
9. Hot air oven;
10. Agarose gel electrophoresis;
11. Serial dilution technique;
12. Numerical aperture.

IV. Viva Voce & Record (10 M)

B.Sc. Biotechnology III year- Semester -V

PAPER -V

MOLECULAR BIOLOGY - CORE

PRACTICAL MODEL QUESTION BANK/PAPER

MAX MARKS: 25

TIME: 1hr 30 min

I. MAJOR Experiment Questions (any one) (10 M)

1. Isolation of DNA from plant/animal/bacterial cells (major)
2. Bacterial transformation and selection of transformants under pressure (antibiotic). (major)

II. Minor Experiment Questions (any one) (05 M)

1. Analysis of DNA by agarose gel electrophoresis (minor)
2. Restriction digestion of DNA (minor)
3. Preparation of competent cells of Bacteria (minor)

III. Spotters (2x2 1/2=05 M) (any two)

1. Eukaryotic promoter;
2. Spliceosome;
3. Transcriptional bubble;
4. 7 MG 5' – cap;
5. Post -translational events;
6. Polycistronic m-RNA;
7. Attenuator;
8. Inhibitors of translation;
9. Charging of t-RNA.

IV. Viva Voce & Record (05 M)

B.Sc. Biotechnology III year- Semester -V

PAPER -VI

ELECTIVE – A

PLANT BIOTECHNOLOGY

PRACTICAL MODEL QUESTION BANK/PAPER

MAX MARKS: 25

TIME: 1 hr 30 min

I. MAJOR Experiment Questions (any one) (10 M)

1. Preparation of medium for tissue culture. (MS or B5) (major)
2. Protoplast isolation and culture. (major)
3. Synthetic seed production. (major)

II. Minor Experiment Questions (any one) (05 M)

1. Sterilization methods of explants (seed leaf, inter node & root), medium (minor)
2. Establishment of callus cultures –from carrot. (minor)
3. Cell suspension cultures.(minor)

III. Spotters (2x2 1/2=05 M) (any two)

1. Callus;
2. Somatic embryos;
3. Protoplast;
4. Cybrid;
5. Rhizogenesis;
6. Suspension culture;
7. Agar – agar;
8. Green house;
9. Synthetic seeds

IV. Viva Voce & Record (05 M)

B.Sc. Biotechnology III year- Semester -V

PAPER -VI

ELECTIVE – B

ANIMAL BIOTECHNOLOGY

PRACTICAL MODEL QUESTION BANK/PAPER

MAX MARKS: 25

TIME: 1 hr 30 min

I. MAJOR Experiment Questions (any one) (10 M)

1. Preparation of media(major)
2. Preparation of somatic metaphase chromosomes(major)
3. Karyotyping- banding procedures for comparing the chromosomal complement(major)

II. Minor Experiment Questions (any one) (05 M)

1. Isolation of cells from Chicken Liver(minor)
2. Isolation of cells from Chick Embryo(minor)
3. Screening of chromosomal abnormalities(minor)

III. Spotters (2x2 1/2=05 M) (any two)

1. Cell lines;
2. Root-Knot Nematode;
3. Super ovulation;
4. Microinjection;
5. Transgenic sheep;
6. Transgenic mosquito;
7. Molecular farming;
8. Somatic cell fusion ;
9. Cryopreservation;
10. Artificial insemination.

IV. Viva Voce & Record (05 M)

B.Sc. Biotechnology III year- Semester -VI

PAPER -VII-CORE

GENETIC ENGINEERING AND IMMUNOLOGY

PRACTICAL MODEL QUESTION BANK/PAPER

MAX MARKS: 25

TIME: 1 hr 30 min

I. MAJOR Experiment Questions (any one) (10 M)

- 1.ELISA Test (major)
- 2.Micro agglutination using micro titer plates (eg. ABO and Rh Blood grouping) (major)
- 3.Viability tests of cells/bacteria (Evans blue test or Trypan blue test) (major)
- 4.Production and applications of transgenic mice(major)

II. Minor Experiment Questions (any one) (05 M)

- 1.Immuno-diffusion test(minor)
- 2.Coomb's test (minor)
- 3.Demonstration of PCR(minor)

III. Spotters (2x2 1/2=05 M) (any two)

1. pBR 322
2. pUC
3. Probe
4. cDNA
5. Haptens
6. Macrophage
7. Taq DNA Polymerase
8. VNTR
9. Rheumatoid arthritis
10. primer design

IV. Viva Voce & Record (05 M)

B.Sc. Biotechnology III year- Semester -VI

PAPER -VII-APPLIED (ELECTIVE A)

INDUSTRIAL BIOTECHNOLOGY, IPR & BIOSAFETY

PRACTICAL MODEL QUESTION BANK/PAPER

MAX MARKS: 25

TIME: 1 hr 30 min

I. MAJOR Experiment Questions (any one) (10 M)

1. Production of wine using common yeast (major)
2. Production of alcohol by fermentation and estimation of alcohol by colorimetry(major)
3. Production of Citric acid(major)

II. Minor Experiment Questions (any one) (05 M)

1. Growth curves of bacteria, Measurement of growth in liquid cultures (minor)
2. Screening of amylase producing microorganisms(minor)
3. Production of hydrogen or biogas using cow/cattle dung(minor)
4. Production of Penicillin/Ampicillin(minor)

III. Spotters (2x2 1/2=05 M) (any two)

- a) Fermenter
- b) Antiviral proteins
- c) Batch culture
- d) Fed batch culture
- e) Replica plating
- f) Beverage – Beer
- g) HAT medium
- h) Proteases
- i) Biosafety policies

IV. Viva Voce & Record (05 M)

B.Sc. Biotechnology III year- Semester –VI

PAPER –VII-APPLIED (ELECTIVE B)

ENVIRONMENTAL BIOTECHNOLOGY, BIOREMEDIATION & RESTORSTION BIOLOGY

PRACTICAL MODEL QUESTION BANK/PAPER

MAX MARKS: 25

TIME: 1hr 30 min

I. MAJOR Experiment Questions (any one) (10 M)

- 1.Estimation of BOD in water samples(major)
- 2.Estimation of COD in water samples(major)
- 3.Isolation of microorganisms from soil/industrial effluents(major)

II. Minor Experiment Questions (any one) (05 M)

1. Estimation of Total dissolved solid in water samples(minor)
2. Organic wastes for Compost production & vermiculture(minor)

III. Spotters (2x2 1/2=05 M) (any two)

- 1.Aerosols
- 2.Bio magnification
- 3.Tidal energy
- 4.Habitat destruction
- 4.Biodegradable plastic – Poly hydroxybutyrate
- 5.Elnino affect
- 6.Coral reefs
- 7.Xenobiotic compounds
- 8.Global warming
- 9.Acid rains

IV. Viva Voce & Record (05 M)