

B.Sc. (BT) (Sem.-5)
HUMAN BEHAVIOUR & PSYCHOLOGY

Subject Code : BSBT-137-18
 M.Code : 78348

Date of Examination : 07-06-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION--A

1) Write briefly :

- Define cognitive psychology.
- Why study of psychology is important?
- Define perception.
- What is memory?
- Write the nature of intelligence.
- Individual differences.
- Personality tests
- Functions of memory
- Introvert personality
- What is the use of personality tests?

SECTION-B

- Discuss the various theories of learning.
- Discuss the nature & scope of psychology.
- Explain the various models of intelligence.
- What are the various issues involved in the assessment of intelligence?
- What are the environmental & genetic bases for understanding individual differences?

SECTION-C

- Discuss the features and attributes of perception.
- Explain the environmental bases of individual differences.
- Discuss the various sub fields of psychology. What are the applications of psychology to the study of human-behavior?



NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to U.M.C. against the Student

Reply-2023

**B.Sc. (BT) (Sem-5)
BIOTECHNOLOGY IN FORENSIC SCIENCES**

Subject Code : BSBT142-18

M. Code : 78353

Date of Examination : 05-06-2023

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
- SECTION-B contains FIVE questions carrying 2½ marks each and students have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- Define chronic injury.
- What does forensic handwriting analyst do?
- What are class 4 weapons?
- What do you mean by ballistics?
- Why are fingerprints important in forensic science?
- What is DNA profiling?
- Define cyber security.
- Define electronic discovery.
- What is forensic anthropology?
- What is the role of modus operandi in crime records?

SECTION-B

- How are forensic evidences preserved?
- What is the role of DNA fingerprinting in forensic investigation?
- Describe forensic toxicology.
- What is meant by seizure of digital evidence?
- Which tests are used to identify the type of explosives?

SECTION-C

- Write a note on tools and techniques in forensic science.
- Discuss the organization and necessary elements of a forensic science laboratory.
- Describe the role of computers in forensic science.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.



2023

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Sc. (BT) (Sem.-5)
HUMAN BEHAVIOUR & PSYCHOLOGY**

Subject Code : BSBT-137-18

M.Code : 78348

Date of Examination : 14-12-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What is the importance of studying psychology in present times?
- b) Stereotyping
- c) Halo effect
- d) Individual differences
- e) Personality tests
- f) Functions of memory
- g) Introvert personality
- h) Positive motivation
- i) Self-actualisation
- j) Elements of creativity.



(5?) 365

1 | M-78348

SECTION-B

2. Discuss the various theories of learning.
3. Discuss the nature & scope of psychology.
4. Explain the various models of intelligence.
5. What are the various issues involved in the assessment of intelligence?
6. What are the environmental & genetic bases for understanding individual differences?

SECTION-C

7. Discuss the various subfields of psychology. What are the applications of psychology to the study of human-behaviour?
8. What are the determinants of personality? Discuss.
9. How can conflict be handled constructively? Discuss the various conflict-handling strategies.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

2 | M-78348

(52)-365

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc. (BT) (Sem.-5)
ANIMAL BIOTECHNOLOGY
Subject Code : BSBT-139-18
M.Code : 78350
Date of Examination : 16-12-2022

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying TWO & HALF ($2\frac{1}{2}$) marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) Pluripotent
- b) Morula
- c) Reverse transcription
- d) Theileriosis
- e) Coccidiosis
- f) Clone
- g) Stem cell
- h) Transgenesis
- i) Retrovirus
- j) Vector.

SECTION-B

2. Write a short note on transgenic cow.
3. What do you understand by artificial insemination? Explain.
4. Explain molecular engineering with suitable example.
5. What are applications of stem cell technology?
6. Describe embryonic stem cell mediated gene transfer.

SECTION-C

7. Explain the process of microinjection in detail.
8. Give an account of embryo transfer techniques.
9. How animal diseases can be cured by using biotechnology?



NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Disc-2022

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (BT) (Sem.-5)
BIOTECHNOLOGY IN FORENSIC SCIENCES

Subject Code : BSBT-142-18

M.Code : 78353

Date of Examination : 19-12-2022

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying $2\frac{1}{2}$ marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) Forensics
- b) Legal
- c) Crime
- d) Weapons
- e) Chemistry
- f) Fingerprints
- g) Ridge characteristics
- h) Principle of comparison
- i) Death
- j) Class Characteristic

SECTION-B

2. Discuss Hierarchy of Forensic Science laboratory.
3. Role and limitations of MOB.
4. Discuss briefly the relevance of types of injuries in medico-legal cases.
5. Explain briefly why finger prints as evidence are important.
6. Write note on cyber security.

SECTION-C

7. Explain in detail sociological causes of crime.
8. Discuss various systems of firearm classification.
9. Discuss in detail the DNA fingerprinting technique.



Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

**B.Sc (Bio Technology) (Sem.-5)
FERMENTATION TECHNOLOGY**

Subject Code : BSBT140-18

M.Code : 78351

Date of Examination : 21-12-22

Time : 3 Hrs.

Max. Marks : 40

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying TWO AND A HALF marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :
 - a) How can we overproduce any microbial metabolite?
 - b) What is cell immobilization? Give its significance.
 - c) What is the effect of pH on enzyme kinetics?
 - d) What is the difference between Simple and Complex reactions?
 - e) What is Flocculation?
 - f) What is a Fermenter?
 - g) Which plant is commonly used for biodiesel production and why?
 - h) Mention an enzyme used in organic molecule synthesis.
 - i) Outline the products formed after steroid fermentation.
 - j) What is ultracentrifugation?

1 | M-78351

(52)-1084

SECTION-B

2. What is the difference between primary and secondary metabolites? Cite a few examples of each.
3. What are the different methods for enzyme immobilization?
4. What is Michaelis Menten's equation?
5. What are biofilms? How they are better than conventional fuel?
6. Briefly discuss
 - a) Microbial flavors
 - b) Microbial insecticides

SECTION-C

7. What is the difference between upstream and downstream processes in the fermentation industry? Write the different techniques used for the purification of proteins.
8. Explain the metabolic engineering of any one antibiotic.
9. What is Biogas? How it is produced from agricultural waste?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

2 | M-78351



(52)-1084

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(BT) (2014 to 2017) (Sem.-5)

INTELLECTUAL PROPERTY RIGHTS AND BIOSAFETY

Subject Code : BSBT-309

M.Code : 47060

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Q1. Answer briefly :

- a. How many patent offices exist in India and where is the head office of Patent of India located?
- b. Based on the report of Justice N. Rajagopalan Ayyanger and the Joint Committee of Parliament of India, a land mark Act came into existence. Name the act and the year and when did it come into force.
- c. What is "patent of addition" and "patent of division"?
- d. Define Good safety Practices.
- e. State the role of WTO.
- f. What is trademark?
- g. Define patent litigation.
- h. What is provisional filing of patent?
- i. What is WIPO and its main role?
- j. What is right of patentee?



DEC 2019

(S2) 1357

SECTION-B

- Q2. Explain in a flow chart the procedure for filing and obtaining patents in India.
- Q3. What are Copyright authorities and what are its benefits?
- Q4. Three issues in the Indian context were prominent following the TRIPS Agreement in 1995. What were these three issues and what were their impact on the pharmaceutical industries?
- Q5. Discuss the various biosafety levels.
- Q6. What are the main features of Plant Breeder's Right?

SECTION-C

- Q7. Discuss the history of patent development in India starting from its inception.
- Q8. How are deposits made and maintained? Explain the main features of Budapest treaty.
- Q9. Discuss the main features of Cartagena protocol and its advantages.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(BT) (2014 to 2017) (Sem.-5)

ANIMAL CELL CULTURE AND BIOTECHNOLOGY

Subject Code : BSBT-301

M.Code : 47056

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Q1. Define briefly :

- a) Monolayer culture
- b) Histotypic culture
- c) Hybrid Antibodies
- d) Cell Cultures
- e) Cell line
- f) Biolistic gun method
- g) Recombinant proteins
- h) Generation number
- i) Transfection
- j) In vitro fertilization

SECTION-B

- Q2. Differentiate between Suspension and Monolayer cultures.
- Q3. Write a note on immobilized cultures.
- Q4. Discuss steps in initiation of primary culture.
- Q5. Write a note on Embryo transfer.
- Q6. Discuss about natural and artificial media used for cell culture.

SECTION-C

- Q7. Elaborate on production of monoclonal antibodies.
- Q8. What are transgenic animals? Discuss various methods of transfection.
- Q9. Write about bioethical considerations and guidelines for cell culture research.



Dec-2019

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

(S2)-1000

Roll No. _____

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2014 to 2017) (Sem.-5)

FOOD BIOTECHNOLOGY

Subject Code : BSBT-303

M.Code : 47057

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt **ANY FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt **ANY TWO** questions.

SECTION-A

1. Write briefly :

- a) Ripening
- b) Beer
- c) Coloring agents
- d) *Agaricus bisporus*
- e) Golden Rice
- f) Value added products
- g) Lipases
- h) Pickling
- i) SCP
- j) Food Additives



09C-2019

SECTION-B

2. What is the composition of food which make it good substrate for microbes?
3. What is the role of amylases in industries?
4. What are class I and class II preservatives?
5. What are advantages of mushroom production?
6. How safety and nutritional evaluation is done?

SECTION-C

7. Define solid substrate fermentation. How cheese is produced commercially? Give its types as well.
8. Describe the role of glucose oxidase catalase and proteases in food industries.
9. Explain the production of fruit juices and microbiology of pickling.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2014 to 2017) (Sem.-5)
ENVIRONMENTAL BIOTECHNOLOGY
Subject Code : BSBT-305
M.Code : 47058

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Define the following :
 - a) Phytoremediation
 - b) Sludge
 - c) Co-metabolism
 - d) Xenobiotic compounds
 - e) Biomagnification
 - f) Biological Oxygen demand
 - g) Digesters
 - h) Tricking filters
 - i) Sanitary Landfill.
 - j) Vermicomposting



DSC-2019

SECTION-B

2. Write a note on sources of solid waste.
3. Discuss parameters of water Quality assessment.
4. Write about advantages and limitations of microbial remediation.
5. Why and how are Xenobiotics hazardous?
6. Write a note on measurement of pollution levels.

SECTION-C

7. Elaborate on microbial processes involved in Hydrocarbon degradation.
8. Write in detail about advantages limitations and scope of phytoremediation.
9. Discuss different methods of anaerobic wastewater treatment.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2013 to 2017) (Sem.-5)
ENVIRONMENTAL BIOTECHNOLOGY

Subject Code : BSBT-305

M.Code : 47058

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Define :

- a) Bioaccumulation
- b) Bioremediation
- c) Pollutant
- d) Sewage
- e) TDS in water quality.
- f) Aerobic Treatment
- g) MPN
- h) Digesters
- i) Oxidation Ponds
- j) Mycoremediation



May - 2019

(-2) 1307

SECTION-B

2. Write about Sources of liquid Waste.
3. List methods to measure level of Pollution.
4. Write a note on Biofilters.
5. Discuss hazards from Xenobiotic compounds.
6. What is Co-metabolism and Gratuitous Metabolism?

SECTION-C

7. Elaborate on the technique of Phytoremediation, its advantages and Limitations.
8. Discuss on Microbial mechanisms of Xenobiotic Degradation.
9. Discuss Anaerobic Wastewater treatment strategies.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

**B.Sc.(BT) (2013 to 2017) (Sem.-5)
AGRICULTURAL BIOTECHNOLOGY.**

Subject Code : BSBT-307
M.Code : 47059

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.

SECTION-A

I. Answer briefly :

- What is a strong promoter?
- What is BT toxin?
- Give an example of reporter gene.
- What are degradative plasmids? Give its significance.
- What are *tra* genes?
- How transgenic are better than breeding programs for crop improvement?
- Which genes are responsible for tumour formation in plants infected by *Agrobacterium tumefaciens*?
- What are shuttle vector? Name any one used in development of transgenics.
- Give the advantage of using biofertilizers.
- Give the name of any two GMO crop.

May - 2019



SECTION-B

- Describe bioremediation and its significance.
- What are the applications of biochips?
- What is gene silencing?
- What are biopesticides? How are they better from the conventional chemical pesticides?
- Name any transgenic plant with resistance against herbicides. Give the underlying mechanism of crop resistance.

SECTION-C

- What is biosensor? Give detail account of its application in identifying environmental pollutants.
- Explain different physical method for transformation in plant cells.
- Describe the role of *nif* genes in nitrogen fixation of plants. How have these genes exploited for increasing the crop productivity?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student

Roll No. _____

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(BT) (2013 to 2017) (Sem.-5)

FOOD BIOTECHNOLOGY

Subject Code : BSBT-303

M. Code : 47057

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt **ANY FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt **ANY TWO** questions.

SECTION-A

Q1. Write briefly :

- a) What is invert sugar?
- b) Define must
- c) Which algae are used as SCP?
- d) Name the substrates used for mushroom cultivation.
- e) What for proteases are used in food industries?
- f) How microbes improve the food quality by fermentation?
- g) Name any two flavoring agents.
- h) How pickling increases the shelf life of the product?
- i) What for Hop plant is used in beer production?
- j) What are Amylases?



May - 2019

(12) 977

2 | M-47057

SECTION-B

2. What are advantages and disadvantages of solid substrate fermentation?
3. What is the role of lipases in food industries?
4. Why coloring agents are important? Name any two coloring agents from biological sources.
5. What are harmful mushrooms? Give examples of harmful mushrooms.
6. What are the methods of biomass recovery?

SECTION-C

7. Describe the applications of enzymes in food and brewing industries.
8. What types of cheese are produced commercially? How their ripening is carried out?
9. Discuss the production process of fungal SCP.

NOTE : Displeasure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

523-877

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(BT) (2013 to 2017) (Sem.-5)
AGRICULTURAL BIOTECHNOLOGY
Subject Code : BSBT-307
M.Code : 47059

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.

SECTION-A

1. Answer briefly :

- What is a strong promoter?
- What is BT toxin?
- Give an example of reporter gene.
- What are degradative plasmids? Give its significance.
- What are *tra* genes?
- How transgenic are better than breeding programs for crop improvement?
- Which genes are responsible for tumour formation in plants infected by *Agrobacterium tumefaciens*?
- What are shuttle vector? Name any one used in development of transgenics.
- Give the advantage of using biofertilizers.
- Give the name of any two GMO crop.

SECTION-B

- Describe bioremediation and its significance.
- What are the applications of biochips?
- What is gene silencing?
- What are biopesticides? How are they better from the conventional chemical pesticides?
- Name any transgenic plant with resistance against herbicides. Give the underlying mechanism of crop resistance.

SECTION-C

- What is biosensor? Give detail account of its application in identifying environmental pollutants.
- Explain different physical method for transformation in plant cells.
- Describe the role of *nif* genes in nitrogen fixation of plants. How have these genes exploited for increasing the crop productivity?



May - 2019

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2013 to 2017) (Sem.-5)
ENVIRONMENTAL BIOTECHNOLOGY
Subject Code : BSBT-305
M.Code : 47058

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Define :

- a) Bioaccumulation
- b) Bioremediation
- c) Pollutant
- d) Sewage
- e) TDS in water quality.
- f) Aerobic Treatment
- g) MPN
- h) Digesters
- i) Oxidation Ponds
- j) Mycoremediation



May-2019

SECTION-B

2. Write about Sources of liquid Waste.
3. List methods to measure level of Pollution.
4. Write a note on Biofilters.
5. Discuss hazards from Xenobiotic compounds.
6. What is Co-metabolism and Gratuitous Metabolism?

SECTION-C

7. Elaborate on the technique of Phytoremediation, its advantages and Limitations.
8. Discuss on Microbial mechanisms of Xenobiotic Degradation.
9. Discuss Anaerobic Wastewater treatment strategies.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(BT) (2013 to 2017) (Sem.-5)
FOOD BIOTECHNOLOGY
Subject Code : BSBT-303
Paper ID : [F0223]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.

SECTION-A

Q1. Write briefly :

- a) Alpha amylases
- b) Hop plant
- c) Sauerkraut
- d) Sodium benzoate
- e) Ropiness
- f) Starch as food adulterant
- g) Composting
- h) Swiss cheese
- i) Saccharification
- j) Coagulum formation

SECTION-B

- Q2. Which substrates are used for mushroom production?
- Q3. How solid substrate fermentation is better than submerged fermentation?
- Q4. What is the role of enzymes in production of fruit juices?
- Q5. Write about the microbiology of pickling.
- Q6. What is safety evaluation and its significance?

SECTION-C

- Q7. a) Explain the role of biotechnology in improvement of food resources.
b) Explain the bread making process commercially.
- Q8. a) What are value added products? Explain any one with suitable example.
b) Discuss the coloring and flavoring agents commonly used in foods of biological origin.
- Q9. Write notes on the following :
 - a) Production of SCP
 - b) Production of wine



Roll No. _____

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2013 to 2017) (Sem.-5)
AGRICULTURAL BIOTECHNOLOGY

Subject Code : BSBT-307

Paper ID : [F0225]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

- 1 SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2 SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
- 3 SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.

SECTION-A

Q1. Answer briefly :

- a. Define Bioremediation.
- b. Define reporter genes
- c. What is transient expression?
- d. What is the source of 35s promoter?
- e. What are degradative plasmids?
- f. What is T-DNA and where is it found?
- g. What are *nif* genes?
- h. What is "Round up Maize"?
- i. What is abiotic stress?
- j. What are biotips?

SECTION-B

- Q2. Discuss in brief the various kinds of bioherbicides.
- Q3. What are the steps required for developing transgenic plants?
- Q4. Why is *Agrobacterium* known as the natural plant engineer? Discuss.
- Q5. What modifications can be made to increase nitrogen fixing capabilities in plants?
- Q6. What are biosensors and give their types?

SECTION-C

- Q7. What is gene silencing and give the measures to overcome gene silencing?
- Q8. Discuss in detail the various kinds of Biofertilizers which could be used by farmers
- Q9. Discuss in detail mechanism of Nitrogen fixation by both nitrogenase and hydrogenase systems.



Roll No.

--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(BT) (2013 to 2017) (Sem.-5)
ANIMAL CELL CULTURE AND BIOTECHNOLOGY

Subject Code : BSBT-301

Paper ID : [F0222]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Q.1 Define :

- i) Monolayer culture
- ii) Organ culture
- iii) Super-ovulation
- iv) *In vitro* Fertilization
- v) Secondary culture
- vi) Role of CO₂ Incubator
- vii) Plating efficiency
- viii) Split ratio
- ix) Hybridoma
- x) Contact Inhibition

SECTION-B

- Q.2 Differentiate between Primary and Secondary culture
- Q.3 Write a note on Hybrid antibodies
- Q.4 List Advantages and Limitations of Sub culturing.
- Q.5 Write a note on Scale up of Cell culture
- Q.6 Discuss Recombinant protein production from cell culture

SECTION-C

- Q.7 Write about the technique and applications of *In vitro* fertilization and Embryo transfer technology
- Q.8 Discuss Hybridoma technology for monoclonal antibody production.
- Q.9 Elaborate on bioethical considerations and guidelines for cell culture research



Roll No.

--	--	--	--	--	--	--	--	--	--

Total No. of Questions : 09

Total No. of Pages : 02

B.Sc.(BT) (2013 to 2017) (Sem.-5)

INTELLECTUAL PROPERTY RIGHTS AND BIOSAFETY

Subject Code : BSBT-309

Paper ID : [F0226]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

Q1. Answer briefly :

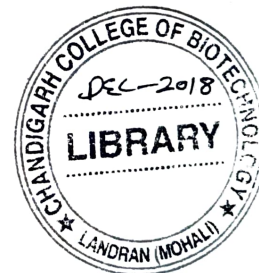
- i. When & why was the Rajagoplacharya Ayyangar committee set up?
- ii. What is the term of biotechnology patent and term of trademark?
- iii. Under which treaty international patent is filed?
- iv. Define patent litigation.
- v. What are "Black Box" patent applications?
- vi. How many Biosafety levels are present and what is their basis?
- vii. What is the importance of Copyrights?
- viii. Art work, music, symphonies, dramas, falls under which IPR? Which year act was enforced in India?
- ix. What is compulsory licensing?
- x. What is AIA in Cartagena protocol?

SECTION-B

- Q2. What are patentable and non-patentable inventions under the Indian patent law?
- Q3. What is the importance of patents and patenting in biotechnology in the Indian context?
- Q4. Explain with an example in biotechnology what is infringement of patent?
- Q5. Discuss the process of international patent application and procedure
- Q6. How is risk assessed and regulated?

SECTION-C

- Q7. Mention briefly in chronological order the evolution of Indian patent system. Which forms of Biotechnological inventions are patentable?
- Q8. What is Substantive aspect of patent litigation and the procedural aspects of patent litigation?
- Q9. Discuss the main features of TRIPS agreement and how did India comply with the agreement when it became the member of TRIPs?



B.Sc. (BT) (Sem. - 5)
FOOD BIOTECHNOLOGY
M Code: 47057
Subject Code: BSBT-303
Paper ID: [F0223]

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION A

1. Write briefly
 - a) How can biotechnology help in improving the food resources?
 - b) What are the advantages of fermented foods? Give examples of different types of fermented foods?
 - c) Define Koji.
 - d) What is invert sugar? What are its uses?
 - e) Which enzymes are used in brewing industry and why?
 - f) Yogurt as a fermented food.
 - g) Maceration in wine production.
 - h) Why is RNA reduction done for SCP intended for human use?
 - i) What are the different types of cheese?
 - j) What is leavening of bread. What are leavened and unleavened breads?

SECTION B

2. Discuss the production of mushrooms.
3. What are the different type of coloring and flavouring agents in food industry?
4. What are the steps involved in the production of beer?
5. Write a short note on Golden rice.
6. Explain solid state fermentation, its method, advantages and disadvantages.

SECTION C

7. What are the different enzymes used in the food processing industries? Explain their role in industry.
8. Give a detailed account of sauerkraut production.
9. What is SCP? Discuss the substrates, microorganisms for SCP and the production process.

