

Seat Number

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BC 401

**Microbial Biotechnology
(Old)**

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All question are compulsory.
5. Draw neat and labeled diagrams (s) wherever necessary.
6. Figures to the right indicate full marks.

1. Define the following. 16
- | | |
|-------------------|------------------------|
| a) Sterilization | b) Crystallization |
| c) Lyophilization | d) Extraction |
| e) Inducer | f) Del factor |
| g) Antifoam | h) Synchronous culture |

2. Answer the following. 16
- a) Describe criteria for choice of organism of industrial process
 - b) Describe methods of screening.

OR

Describe ethanol fermentation & its recovery in detail.

3. Describe any two. 16
- a) Criteria for selection of recovery method.
 - b) Methods of selection of auxotrophic mutants & analogue resistant organisms.
 - c) What is Sterilization? Describe batch and continuous Sterilization.

4. Explain any two.

16

- a) Criteria for inoculum? Describe inoculum preparation for yeast.
- b) Describe methods of cell disruption.
- c) Take comparative account of different methods of culture preservation.

5. Write short notes any four.

16

- a) Plackett Burmen design.
- b) Applications of industrially important erythropoietin & rifamycin.
- c) Uses of lipases, amylases and pectinases.
- d) Uses of nisin and lovostatin.
- e) Product of SSF.

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BC -301
Molecular Biology

P. Pages : 1

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory.
5. All questions carry equal marks.
6. Draw well labelled diagrams wherever necessary.

1. Explain the following **any eight**. 16

i) Base excision repair.	ii) recA protein.
iii) Melting temperature of DNA.	iv) Exons.
v) Linking number.	vi) Topoisomerase.
vii) Nucleotides.	viii) Cycloheximide.
ix) Superhelicity.	

2. What is an "operon" ? Explain lactose operon. 16

OR

Describe the structure of DNA.

3. Explain transcription. Add a note on processing of mRNA. 16

OR

Describe the synthesis of protein by using the information on messenger RNA.

4. Describe the regulation in lambda phage. 16

OR

Explain the nucleosomal organization of eukaryotic DNA.

5. Write short notes on the following **any four**. 16

a) Tryptophan operon.	b) SOS repair mechanism.
c) Properties of DNA polymerases.	
d) Chaperon proteins.	e) Nucleotide excision repair.

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BC 201

Human Physiology and Biochemistry of Specialized Tissues

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory and carry equal marks.
5. Figures to right indicate full marks.
6. Draw neat labelled diagram wherever necessary.

1. Briefly answer the following. 16
 - a) Impulse transmission.
 - b) Neuro muscular junction.
 - c) Acid base buffers.
 - d) cAMP.
 - e) Haemoglobin as allosteric protein.
 - f) Troponin.
 - g) Rhodopsin.
 - h) Haemophilia.

2. Answer the following.
 - a) Describe gaseous exchange during respiration. 8
 - b) Comment on visual cycle. 8

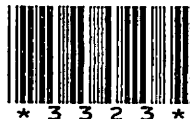
OR

Describe structure and physiological role of actin and myosin.

3. Solve any two. 16
- a) Clinical abnormalities associated with acid-base imbalance.
 - b) Mechanism of formation of thrombin.
 - c) Mechanism of action of protein hormone on target cell.
4. Explain any two. 16
- a) Conditions that cause excessive bleeding in humans.
 - b) Regulation of Respiration.
 - c) Regulation and control of acid base balance.
5. Write short notes on any four. 16
- a) Na/K pump.
 - b) Acetyl choline receptor channel.
 - c) Types of transport.
 - d) Homeostasis.
 - e) Molecular mechanism of steroid hormone.

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BC 402

Genetic Engineering & rDNA Technology (Old)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory.
5. Draw neat and labelled diagrams wherever necessary.

1. Explain any eight. 16

i) Transfection	vi) Competent cell
ii) c DNA	vii) DNA Insert
iii) Promoter	viii) Hybridization
iv) Transgene	ix) Crown gall
v) Staggered ends	x) Recombinant vector.

2. Describe any two. 16
 - i) Restriction enzymes.
 - ii) Plasmids.
 - iii) Electroporation for gene transfer.

3. Explain any two. 16
 - i) c DNA library.
 - ii) Restriction mapping.

iii) Basis of tumour formation.

4. Explain any two.

16

i) RFLP

ii) Maxam and Gilbert method of DNA sequencing.

iii) DNA chip technology.

5. Write short notes. any five.

16

i) Steps involved in cloning.

ii) Site Directed mutagenesis.

iii) Reporter genes.

iv) Structure of T - DNA.

v) Applications of genetic engineering in agriculture.

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BC 102

Bioenergetics and Metabolism

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All question are compulsory.
5. Draw well labelled diagrams whenever necessary.

1. Explain the following : **any eight** **16**
 - i) Albinism.
 - ii) Hydrogen bonds.
 - iii) Free energy change.
 - iv) Structural homopolysaccharides.
 - v) Glycerophospholipids.
 - vi) Substrate level phosphorylation.
 - vii) Deoxyribonucleotides.
 - viii) Mapple syrup urine disease.
 - ix) Reducing Sugars.

2. Describe the oxidation of a polyunsaturated fatty acid. **16**

OR

 - a) Describe the fatty acid synthase complex.
 - b) Explain the regulation of fatty acid biosynthesis.

3. Describe any two of the following. 16
- a) Pyruvate dehydrogenase complex.
 - b) Pentose phosphate pathway.
 - c) Formation of Pyruvate from glucose.
4. Attempt any two of the following : 16
- a) Explain the biosynthesis of chorismate.
 - b) Explain urea cycle and its regulation.
 - c) Describe ribonucleotide reductase.
5. Write short notes on the following : any four 16
- i) Circulating lipids.
 - ii) Properties of nucleic acids.
 - iii) Glucuronic acid cycle.
 - iv) Gluconeogenesis.
 - v) Regulation of TCA cycle.

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BC - 202

Analytical Biochemistry

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory.
5. All questions carry equal marks.
6. Draw neat diagrams wherever necessary.

1. Explain any eight of the following. 16

- i) Buffers.
- ii) Fluorescence.
- iii) Beer and Lambert's law.
- iv) Monochromatic light.
- v) Radioactive isotope.
- vi) pH
- vii) pKa
- viii) Spectroscopy.
- ix) Microscopy.

2. Explain the concept of pH. 16

OR

Explain the principle and give applications of SEM.

3. Explain the principle, instrumentation and applications of atomic absorption spectroscopy. 16

OR

- a) What is chromatography ? Write principle and give applications of paper chromatography. 10
- b) Describe liquid scintillation technique. 8
4. Attempt any two of the following. 16
- a) Give principle and give applications of pulse field gel electrophoresis.
- b) Write principle and give applications of phase contrast microscopy.
- c) Explain the principle of dialysis. Give its applications.
5. Write short notes on any four of the following. 16
- i) Bonding of atoms in water molecules.
- ii) Principle of NMR spectroscopy.
- iii) Application of PAGE.
- iv) Autoradiography.
- v) Principle of HPLC.

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BC 403

Biochemistry of Natural Products (Old)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory.
5. All questions carry equal marks.
6. Draw well labelled diagrams wherever necessary.

1. Explain the following terms **any eight**. 16
- a) Secondary metabolites
 - b) Steroid
 - c) IPR
 - d) Copyright
 - e) Isoprenoid
 - f) Alkaloids
 - g) Carotenoids
 - h) Pectin
 - i) Rotenone's
2. Explain the classification, biosynthesis and medicinal importance of terpenoids. 16

OR

Describe general properties and medicinal importance of Saponins.

3. Explain the following **any two**. 16
- i) Tannins
 - ii) Plant breeder and farmer's rights
 - iii) Pyrethroids.
4. Describe the following **any two**. 16
- a) Shickmic acid pathway
 - b) Terpenes
 - c) Plant pigments
5. Write short notes on the following **any four**. 16
- i) Methods employed for isolation of secondary metabolites from plant.
 - ii) Plant variety protection and UPOV.
 - iii) Role of secondary metabolites in plant defense.
 - v) Lignins.

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BC 103

Microbial Physiology

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory.
5. Draw neat and labeled diagrams wherever necessary.
6. Figures to the right indicate full marks.

1. Briefly answer following.

16

- a) What is water activity?
- b) Why Nosocomial infection are dangerous?
- c) How will you stain mycobacterium.
- d) Which are different types of extremophiles?
- e) What is Gram staining?
- f) What are osmoprotectant.
- g) What are STD?
- h) What is mycosis?

2. Answer following.

16

- a) What is culture media? Describe different type of culture medium and their use.
- b) What are anaerobes? Describe toxic forms of oxygen.

OR

What arthropod transmitted diseases and explain epidemiology of malaria. 16

3. Solve any two. 16

- a) Explain how S/v ratio affect on growth of organism.
- b) What is growth? Describe factors affecting on growth of microorganisms.
- c) What is difference between flagella and fimbriae? Describe types of flagella and structure of Gram negative bacterial flagella.

4. Describe any two. 16

- a) Viral diseases and antiviral compounds.
- b) Chemostat and Turbidostat and its experimental uses.
- c) Synthesis antimicrobial drug.

5. Write short notes any four. 16

- a) Bacterial endospore.
- b) β -lactam antibiotics.
- c) AIDS.
- d) Types of culture medium.
- e) Bergey's manual.

Seat Number

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BC 303

Environmental Toxicology

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory.
5. Draw neat and labeled diagrams wherever necessary.
6. Figure to the right indicates full marks.

1. Briefly answer the following.

16

- a) What is toxicity? Define toxin?
- b) What is Synergism? Give example?
- c) What are mycotoxins? Enlist names types?
- d) What is action of Acetyl choline esterase?
- e) What are the exposure routes of toxins?
- f) What is storage depot of toxin? Give examples.
- g) What is carcinogen? Enlist types?
- h) What is means hydrolytic rections.

2. What are the heavy metals? Discuss the toxicity of mercury, its metabolism and remedy to its poisoning.

16

- a) Describe different factors affecting toxicity.
- b) What is botanical toxin? Explain the mode of action of Ricin toxin.

3. Describe any two. 16
- a) Modern methods of solid waste management.
 - b) Explain different metabolism steps in phase II reaction.
 - c) Dose response relationship.
4. Explain any two. 16
- a) Types and mode of action of Mycotoxins.
 - b) Synergism, additivity and antagonism with examples.
 - c) Scope & importance of toxicology.
5. Write short notes. 16
- a) Neurotoxicity.
 - b) Solvent toxicity.
 - c) Snake venom.
 - d) AMES test.

Seat Number

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BC 404

Applied Biochemistry & Animal Tissue Culture

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory & carry equal marks.
5. Draw neat & well labelled diagram wherever necessary.
6. Figures to right indicates full marks.

1. Explain briefly any eight.

16

- i) Oxalate toxins.
- ii) SGOT.
- iii) Define :
 - a) Splitting
 - b) Drug
- iv) Continuous cell lines.
- v) Pharmacology.
- vi) Distinguish between adherent & suspension cells.
- vii) MSUD.
- viii) Growth curves.
- ix) What is anesthesia? enlist different types of it.

2. Describe any four of the following.

16

- a) The role of CO₂ incubator in ATC lab.

- b) Concept of nanobiotechnology.
- c) Cell proliferation & differentiation.
- d) Give the advantages of tissue culture.
- e) Theory of macromolecules perturbation.

3. Write short notes on any four.

16

- a) Enlist the choice of culture vessel in ATC.
- b) Hybridoma technology.
- c) Tranquilizers.
- d) Metabolic functions of media components.
- e) Hepatic toxins.

4. Explain any two of the following.

16

- a) Biochemical basis of & production of monoclonal antibodies.
- b) Explain the method for development of hybridoma culture.
- c) Give the method of preparation of primary cell culture for cervical & cerebellar neuronal cells.

5. Describe any two of the following.

16

- a) Physiochemical properties of media.
- b) Different types of contaminants in cell culture and how they are identified?
- c) Metabolism of drug & factors affecting drug metabolism.
