Msc - BioTech

Seat Number

नंदा - 002

April 2015

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BT 401

Pharmaceutical Biotechnology and Bioinformatics

(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. Draw the neat labelled diagrams wherever necessary.
5. All question are compulsory.
6. All question carry equal marks.

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

i) Pharmacogenetic.

ii) Pharmacokinetics.

iii) Gene chips.

iv) Clean rooms.

v) Microbial contaminants.

vi) Vaccines.

vii) Antisense therapy.

viii) Growth hormones.

ix) FASTA.

x) Drug designing.

2. Explain the following **any two.** **16**

a) Pharmaceuticals & Microbial and plant origin.

b) Use of recombinant interferons in Cancer Therapy.

c) Gene therapy in inherited single gene disorders

3. Explain the following **any two**. 16

a) Role & impact of genomics in drug discovery.

b) Method of simulated docking.

c) Gene Bank & DDBJ.

4. Attempt **any two** of the following. 16

a) Theory of scoring matrices and their are in sequence comparison.

b) Protein structure prediction using bioinformatics approach.

c) Antigen and antisense therapy.

5. Write notes on **any four**. 16

a) Structural genomics.

b) Randomised control studies.

c) Detection of endotoxin.

d) Validation studies.

e) Statistical analysis of BLAST results.

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Seat Number

* 3 3 0 0 *

BT-201
Molecular Biology

P. Pages : 2

Time : Three Hours **Max. Marks : 80**

Instructions to Candidates :

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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. Attempt **any eight** of following. **16**

i) ORF
ii) Replication fork
iii) Point mutation
iv) Pyrosequencing
v) Initiation factor
vi) RNAi
vii) Rec A
viii) Replio somes
ix) Kornberg polymerase

2. Explain the causes of mutations. **16**

OR

Describe the Direct DNA repair system.

3. Explain the following **any two.** **16**

a) Enzymes in Replication.

b) Control of transcription.

c) Splicing mechanism.

4. Attempt **any two.** **16**

a) Post translational modification of protein.

b) Structure of Ribosome.

c) Regulation of gene expression in Bacteriophage.

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

a) DNA polymerase.

b) Fidelity of replication.

c) Positive regulation.

d) RNA Enzyme.

e) ara operon.

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Seat Number

3301

BT-402
Bioinformatics
(New)

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. All question carry equal marks.

1. Attempt **any eight.** **16**

i) Genes

ii) Regulatory regions

iii) pH gradient

iv) Protein chips

v) MMDB

vi) EMBL

vii) PAM

viii) CN3D

ix) Data mining.

2. Explain the following : **any two** **16**

a) Protein expression analysis.

b) Comparative genomics.

c) Electro Blot.

3. Attempt **any two.** **16**

a) Structure databases

b) PAM - Matrix

c) Phylogeny tree analysis

4. Explain the following : 16

a) Multiple sequence alignment

b) Modeller

OR

a) Visualization softwares.

b) Secondary structure prediction.

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

a) Chimera b) Similarity Search

c) Pubmed d) digital Imaging

e) Oligonucleotide finger printing.

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Seat Number

* 3 3 0 2 *

BT - 402
Food 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 questions are compulsory.
5. Figures to right indicates full marks.

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

i) Corn sweeteners.

ii) Cellulose.

iii) Bakers yeast.

iv) β-Carotene.

v) ELISA.

vi) Patent.

vii) Fermentation biotechnology.

viii) SCP.

ix) Strain improvement.

x) Beverages industry.

2. Answer the following **any two.** **16**

i) Explain metabolic engineering of bakers yeast.

ii) Why glucan sucrose is importance in synthesis of oligosaccharide.

iii) Surface plasma resonance.

3. a) How cold enzymes play important role in food preparation. 8

OR

Application and production of bacterial cellulose.

b) Genetic engineering of Baker's yeast. 8

OR

What are the approaches of probiotics in fermented food.

4. a) Attempt **any two** of the following. 10

i) How solid state fermentation is important for fermented food products.

ii) International aspects of quality and safely assessment of food.

iii) Explain application and uses of Dunaliella as food ingredient production.

b) Enzyme technology in dairy products. 6

OR

How you will improve quality of food by using Biotechnology.

5. Write short note on **any four.** 16

i) Microbial biotechnology of fermented food.

ii) Biotransformation with example.

iii) Prebiotics.

iv) Food born pathogens.

v) Mycotoxin.

vi) Corn Sweeteners.

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Seat Number

3303

BT-102
Biomolecules and Molecular Enzymology

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 Diagram(s) wherever necessary.

1. Answer the following **Any Four.** **8**

1) Anomer.

2) Saponification number.

3) Antimetabolites.

4) Isoenzymes.

5) Writing number.

6) Feed-back inhibition.

2. Explain **any four.** **8**

1) Mutarotation.

2) Physiologically important glycosides.

3) Cyclic fatty acids.

4) Xerophthalmia.

5) Competitive inhibition.

6) Matrix.

3. Attempt **any two.** 16

1) Classification of vitamins.

2) Protein stabilizing bonds.

3) β-oxidation of fatly acid.

4. Attempt **any two.** 16

1) Glycolysis.

2) Protein classification.

3) Structure and functions of coenzyme A.

4. a) Briefly answer Oxidative phosphorylation. 10

OR

Mechanism of enzyme action.

b) Describe secondary structure of protein. 6

OR

Significances of Vmax and km.

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

1) C value paradox.

2) Unisubstrate enzyme kinetics.

3) Enzyme inhibition.

4) Homopolysaccharides.

5) Hemoglobin.

6) Industrial applications of Immobilized enzymes.

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Seat Number

* 3 3 0 4 *

BT-302
Plant Technology

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 carry equal marks.
5. Draw neat and labelled diagrams whenever necessary.

1. Explain **any eight.** **16**

i) Cybrid

ii) Cytoplasmic male sterility

iii) Gametoclonal variation

iv) parthenogenetic embryo

v) Feeder layer

vi) Molecular marker

vii) Taxol

viii) Chloroplast engineering

ix) Viability of plant cells

x) STS.

2. Describe **any two.** **16**

a) Plant tissue culture media.

b) Production of virus free plants.

c) Haploid identification.

3. Explain **any two.** **16**

a) Protoplast culture technology.

b) Promoters used in plant vectors.

c) Secondary metabolites of commercial importances.

4. Explain **any two.** 16

a) Mitochondrial genome.

b) Selection of fused protoplast.

c) Herbicide resistances transgenic plants.

5. Write short notes **any four.** 16

a) Binary vectors.

b) RAPD.

c) Sub protoplast isolation.

d) Gynogenesis.

e) Clonal propagation.

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Seat Number

3305

BT-202

Bioinstrumentation and Biostatistics

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 and labelled diagram wherever necessary.

1. Define **any eight.** **16**

i) Coefficient of variation ii) Fluorescence

iii) Relative centrifugal force iv) Range

v) Population vi) Sample

vii) Radioactivity viii) Resolving power

ix) Sedimentation coefficient x) Frequency.

2. a) Calculate mean, median mode of given data. **12**

Value	6	8	10	12	14	16	18	20	22	24
Frequency	20	30	40	40	55	60	55	20	15	25

OR

Calculate standard deviation and coefficient of variation of given data.

Grain yields	15–17	18–20	21–23	24–26	27–29	30–32	33–35	36–38	39–41	42–44
No. of Plants	2	2	4	5	7	9	6	4	3	2

b) Explain in brief ion exchange chromatography. 4

OR

Describe in brief measures of dispersion.

3. Attempt **any two** of the following. **16**

i) Describe principle working and applications of SEM.

ii) Explain principle and applications of cytophotometry and flow cytometry.

iii) Explain autoradiography and its applications.

4. Describe **any two.** **16**

i) Write types, principle and applications of density gradient centrifugation.

ii) Measurement of radioactivity by ionization chamber and proportional counter.

iii) Affinity chromatography.

5. Write short note on **any four.** **16**

i) Standard deviation.

ii) Chi square test.

iii) ANOVA.

iv) Types of centrifuge.

v) Fluorescence microscope.

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Seat Number

* 3 3 0 6 *

BT-403
Industrial and Business Biotechnology (New)

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. Draw neat and labelled diagram wherever necessary.

1. Define / Explain **any eight.** **16**

a) Hydrolytic reactions.
b) Glucose isomerase
c) Dextrans
d) Biosafety
e) ISO 9000
f) Polyketide antibiotics
g) Cobalamin
h) β– lactam antibiotics.
i) Management concept.

2. Write short notes on **any four.** **16**

a) Time event - time study.
b) Microorganisms for citric acid production.
c) Principles of Management.
d) Regulation of biosynthesis of streptomycin
e) PHB.

3. Describe methods of fermentative production & Recovery of following **any two.** 16

a) Tetracycline

b) Erythromycin

c) Lactic acid.

4. Write in detail **any two.** 16

a) Write production and applications of Glucose isomerase.

b) Transformation of prostaglandins.

c) Discuss Biopol - a biodegradable plastic.

5. a) Explain in brief microbial production of cellulases. 8

OR

Write in detail Microorganism involved, production and Recovery of Penicillin - G.

b) What are polysaccharides? Write in detail production and Recovery of Dextrans. 8

OR

Write in detail different methods for industrial amino acid production.

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Seat Number

* 3 3 0 7 *

BT-403
Industrial 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. Draw a neat labelled diagram wherever necessary.
5. All questions are compulsory and carry equal marks.

1. Attempt **any eight** of the following. **16**

a) Xanthan

b) Erythromycin

c) Riboflavin

d) Gluconic acid

e) Polyhydroxybutyrate (PHB)

f) Penicillin.

g) L - lysine

h) Lactic acid

i) Dextran

j) Cephalosporin

2. Attempt **any two** of the following. **16**

a) Describe production, recovery and application of citric acid.

b) Comment on production and application of vitamin - B12.

c) Describe importance of microbial polysaccharides.

3. Attempt **any two** of the following. **16**

a) Write a chemistry, applications and production of xanthan.

b) Explain biosynthesis and commercial production of Riboflavin.

c) Write microorganisms used production & recovery of tetracycline production.

4. Attempt **any two** of the following. **16**

a) Write a note on lactic acid production.

b) Describe chemistry and properties of polyhydroxy butyrate.

c) Write an account on production, chemistry and recovery of penicillin.

5. Attempt **any four** of the following. **16**

a) Alginate

b) t-tryptophan

c) Production of alcohol by fermentation.

d) Recovery and applications of dextran.

e) Erythromycin.

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Seat Number

* 3 3 0 8 *

BT-103
Immunology

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. Draw a well labelled diagram.
5. All questions are compulsory.
6. All question carry equal marks.

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

i) Hematopoiesis
ii) IgD
iii) Allergy
iv) Immunization
v) Attenuated vaccine
vi) TNF
vii) C_9
viii) Memory cells
ix) CD_8
x) Crystal lattice

2. Attempt **any two** of following. **16**

a) Complex mediated hypersensitivity.

b) Structures & functions of cytokines.

c) Organ specific autoimmunity.

3. Attempt **any two** of following. **16**

a) Activation of β - cells.

b) Adaptive Immunity.

c) Variants of Immunoglobulins.

4. Explain the following. 16

a) Whole organism vaccines.

b) Agglutination.

OR

a) Explain the principle of Immunoelectrophoresis.

b) Mast cell degranulation.

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

a) Spleen
b) BCR - CD_{19}
c) Selection
d) HIV genome
e) ELISA

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Seat Number

* 3 3 1 0 *

BT-203
Bioprocess Engineering and Technology

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 and labelled diagram wherever necessary.

1. Answer briefly **any eight.** **16**

a) Describe feedback inhibition.

b) Write note on strain improvement for secondary metabolite.

c) Define Z value.

d) Define Reynold number.

e) Write short note on agitator.

f) Briefly explain process of filtration.

g) Draw a neat labelled sketch of bioreactor.

h) Write a note on crystallization.

i) Explain in short factors affecting sterilization.

j) Define Bioreactor.

2. a) What is bioreactor? Explain any one bioreactor in detail **12**

OR

Explain the continuous sterilization and scale up of the batch sterilization.

b) Write a note on foam separator. 4

OR

Inoculum development.

3. Explain **any two** of the following. **16**

a) Explain strain improvement of industrially important microorganisms.

b) Describe measurement and control of Bio-process.

c) Explain aeration & agitation system for bio-reactor.

4. Explain **any two** of the following. **16**

a) Explain in detail centrifugation technique.

b) Write note on preservation of industrial strain.

c) Write a note on removal of microbial call and solid matter in down stream processing.

5. Explain **any four** of the following. **16**

a) Exhaust gas.

b) Gas liquid mass transfer.

c) Liquid- liquid extraction.

d) Mutagenesis.

e) Secondary metabolites.

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Seat Number

3311

BT - 404
Business 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.
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4. Draw neat and labelled diagrams wherever necessary.
5. All questions are compulsory.
6. All questions carry equal marks.

1. Briefly answer the following **any eight.** **16**

a) What are public limited companies ?

b) Define the 'Bottom-up' approach in nano fabrication.

c) Mention the need of registering geographical indications.

d) List the important properties of nanotubes.

e) What is product planning ?

f) Give the examples of franchising.

g) What is 'PLC' ?

h) List any four agencies supporting entrepreneurship in India.

i) Give any four examples of bioweapon.

j) Define the term, nanolithography.

2. Answer the following : **16**

a) Which are the ways to make the organization more effective ?

b) What are the principles of sales management.

OR

What is 'entrepreneurship' and 'self employment' ? Discuss its need in Indian context.

3. Write short notes on **any four.** **16**

a) SWOT analysis.

b) Market research.

c) Nanotubes and Buckyballs

d) Nanotechnology for drug delivery (method)

e) Sui Generis system.

f) patents.

4. Attempt **any two** of following. **16**

a) Illustrate the working principle and applications of atomic force microscopy.

b) What are good manufacturing practices ?

c) Elaborate the applications of nanotechnology in drug delivery.

5. Describe **any two** of following. **16**

a) ISO 9000 quality system standards.

b) Guidelines for DNA research activity.

c) Ethical implications of biotechnological products.

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