F–1978

Sub. Code
7MBC1C2

M.Sc. DEGREE EXAMINATION, APRIL 2019.

First Semester

Biochemistry

ANALYTICAL BIOCHEMISTRY

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What is tissue slice technique?

2.   Define relative centrifugal force.

3.   Mention the various locating agents used in TLC.

4.   Enlist the role of B-mercaptoethanol in protein separation.

5.   What is stoke's shift?

6.   Differentiate phosphorescence and fluorescence.

7.   Define Becquerrel.

8.   What is tissue solubilizer?

9.   Expand TOFMS.

10.   What is solid phase synthesis?

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Give an account on cryopreservation methods.

Or

(b) Write short notes on differential centrifugation and its application.

12. (a) Explain the principle of isoelectric focusing and add a note on its uses.

Or

(b) Outline the steps involved in southern blotting technique.

13. (a) Enumerate the biological applications of photoacoustic spectroscopy.

Or

(b) Present the essential components of a spectrophotometer.

14. (a) Comment on Radio immuno assay.

Or

(b) Point out the applications of commonly used isotopes in biochemical studies.

15. (a) Explain the methods employed in protein crystallization.

Or

(b) Highlight on atmospheric pressure ionization.

2

F–1978

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss the methods of determine the molecular weight in an ultracentrifuge.

17. Describe the principle, operation and applications of gas liquid chromatography.

18. Elaborate the principle, technique and applications of Nuclear Magnetic Resonance (NMR).

19. Write an essay on auto radiography and its applications.

20. Elucidate the methods involved to determine the sequence of a DNA.

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3

F–1979

M.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Biochemistry

Elective : FOOD TECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. Mention the microbes responsible for sliminess of food.

2. Write the nutritive value of wheat.

3. List any four methods of food preservation.

4. What is meant by intermediate moisture products?

5. Mention the factors that influence the rate of spoilage of fish.

6. Define souring.

7. What are the signs and symptoms of shigellosis?

8. Define aflatoxins.

9. What is meant by sauerkraut?

10. Name any two leavening agents.

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss in brief about the factors affecting the microbial growth in food.

Or

(b) How will you enumerate the microorganisms in food?

12. (a) Explain the control of microorganisms by UV and ionizing radiations.

Or

(b) Write short notes on canning and packing of foods.

13. (a) Discuss in brief about the microbial spoilage of fish.

Or

(b) Describe the spoilage of vegetable and vegetable products.

14. (a) Explain any two food borne viral diseases.

Or

(b) Highlight the signs, symptoms and control measures of Salmonellosis.

15. (a) Write short notes on fermented vegetables.

Or

(b) Explain the process of bread making.

2   **F–1979**

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the types and sources of microorganisms associated with food.

17. Discuss in detail about the control of micro–organisms by low temperature and drying.

18. Describe the microbial spoilage of cereals and pulses.

19. Give a detailed account on staphylococcal food intoxication.

20. Outline the production process of wine.

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F–1979

F–1980

Sub. Code
7MBC2C1

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Biochemistry

CELL BIOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What is glycoconjugate?

2.   What is passive transport?

3.   What is photorespiration?

4.   Write any two functions of endoplasmic reticulum.

5.   What is oxidative reaction?

6.   What is polytene chromosome?

7.   Define mitosis.

8.   What are cell cycle checkpoints?

9.   Define necrosis.

10. What is JAK-STAT kinase?

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Compare and contrast between prokaryotes and eukaryotes.

Or

(b) Write a note on gap junctions.

12. (a) Draw the structure of mitochondria and write its functions.

Or

(b) Draw and label the structure of golgi complex.

13. (a) Write an account on polytene chromosomes.

Or

(b) Write a note chromosome banding.

14. (a) What is cell fusion? Write down the applications?

Or

(b) Comment on the structural organization of proteosome.

15. (a) Comment on MAP-kinase pathway.

Or

(b) What are tumor cells? Explain the onset of cancer.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an account on the structure and organization of membranes.

2   **F–1980**

17. Explain about the organelles involved in the protein transport.

18. What are specialized chromosomes? Explain with examples.

19. Write a note on the nuclear cytoplasm interactions.

20. Give a brief account on apoptosis and necrosis.

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F–1980

F–1981	Sub. Code
	7MBC2C2

M.Sc. DEGREE EXAMINATION, APRIL 2019.

Second Semester

Biochemistry

MICROBIOLOGY AND IMMUNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. What is mesosome? Mention its functions.

2. Distinguish between synchronous and continuous growth culture.

3. What is Coerocytic mycelium?

4. List the functions of nucleocapsid.

5. Define Lapten.

6. What is allotype?

7. What is immunosuppression? Name any two immunosuppressive agents.

8. Define opsonisation.

9. What is tumour antigen?

10. What is Di – George syndrome?

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Enumerate the salient characters of archaebacteria.

Or

(b) Explain the phases of a bacterial growth curve.

12. (a) With a neat labelled sketch explain the structure of Paramecium.

Or

(b) Comment on Human Immuno Virus.

13. (a) Present the cells of lymphoreticular system.

Or

(b) Give an account on complement activation.

14. (a) Differentiate primary and secondary immune responses.

Or

(b) Write short notes on cytokines.

15. (a) What is graft Vs. host rejection? Explain its mechanism and clinical symptoms.

Or

(b) Illustrate the structure and functions of MHC.

2   **F–1981**

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an essay on the types of culture media.

17. Illustrate the classification of algae with suitable examples.

18. Describe the structure and functions of peripheral lymphoid organs.

19. Highlight the defence mechanisms of innuate immunity against infections.

20. What is anaphylaxis? Explain its causes, symptoms, mechanism and prevention.

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3

F–1982

Sub. Code
7MBC2C3

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Biochemistry

BIOTECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. Define expression vector.

2. What is cos site?

3. What is inverse PCR?

4. Define electophoretic mobility.

5. What is magnetofection?

6. Differentiate somatic and germ cell gene therapy.

7. Mention the therapeutic applications of interferons.

8. Define abzyme.

9. Name any two yeast and bacteria used in alcohol fermentation.

10. What is fluidized bed bioreactor?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Give an account on plasmids.

Or

(b) Explain the blunt and cohesive end ligation.

12. (a) Enumerate the applications of PCR in biological sciences.

Or

(b) Comment on autoradiography.

13. (a) How will you diagnose AIDS?

Or

(b) What is SCID? Explain the gene therapy for adenosine deaminase deficiency.

14. (a) Outline the steps involved in the production of RNA vaccines.

Or

(b) Enlist the advantages and disadvantages of monoclonal antibodies.

15. (a) Present the production of citric acid by submerged processes.

Or

(b) Explain the production of glycerol by alga.

2 **F–1982**

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Elaborate on the process of transformation and screening of recombinant vectors.

17. Discuss the principles, methodology and applications of agarose gel electrophoresis.

18. Describe the methods accomplished in viral gene therapy.

19. Elucidate the applications of monoclonal antibodies in biological sector.

20. Illustrate the design and operation of a bioreactor.

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F–1982

F–1984

M.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Biochemistry

MEDICAL BIOCHEMISTRY

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** the questions.

1. In SI unit, how is the amount of substance and temperature expressed?

2. Define a standard solution.

3. What are seromycoproteins?

4. What is γ – globu1inemia?

5. Give the range of normal and diabetic blood glucose.

6. What is fructosuria?

7. What is porphyria?

8. What is Diabetes insipidus?

9. What is C-reactive protein?

10. How does ESR measurement help for diagnosis of RA?

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Differentiate between functional and non-functional plasma enzymes.

Or

(b) What are isozymes? Explain its significance in clinical diagnosis.

12. (a) Write a short note on the disorders of tyrosine metabolism.

Or

(b) Discuss on Fanconi syndrome.

13. (a) Write in detail on lactose intolerance.

Or

(b) Give a note on hyper cholesterolemia and its experimental production in animals.

14. (a) Write about the renal function in acute and chronic glomerularnephritis.

Or

(b) Write a note on laboratory tests for peritoneal and haemodialysis.

15. (a) What is jaundice? Explain its types.

Or

(b) How do the body fluids help for disease diagnosis?

2 **F–1984**

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Elaborate on the applications of any Four serum enzymes in disease diagnosis.

17. Elaborate on the clinical significance of plasma proteins.

18. Give a detailed note on glycogen storage diseases.

19. What are the major constituents of urine? How do these of diseases?

20. Write a detailed note on amniotic fluid analysis.

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F–1984

F–1985

M.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Biochemistry

MOLECULAR BIOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1.   Define protein family

2.   What is satellite DNA?

3.   What is the function of RNA polymerase?

4.   What are Okazaki fragments?

5.   What is genetic analysis of mutants?

6.   Define deletion mapping

7.   How are reporter genes helpful in screening transformed cells?

8.   What is hfr conjugation?

9.   What is genetic drift?

10. What is the function of pair-rule genes?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a detailed note on chromatin condensation.

Or

(b) What is mitochondrial DNA? Give a note on how it is inherited.

12. (a) Write a detailed note on the structure and types of RNA.

Or

(b) Explain the steps involved in RNA processing.

13. (a) Write a short note on the types of mutants.

Or

(b) Write a short note on site specific recombination.

14. (a) How is genetic material introduced into bacterial cells?

Or

(b) Write a detailed note on triparental mating.

15. (a) Explain the applications of Hardy Weinberg's law.

Or

(b) Write a short note on egg polarity, segmentation and homeotic genes.

2 **F–1985**

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Give a detailed note on the genome organisation of prokaryotes.

17. Elaborate on the eukaryotic translation machinery.

18. Explain complementation and intragenic complementation.

19. Write in detail on transduction.

20. Explain the development and genetic control in *C.elegans*.

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F–1985

F–2134	Sub. Code
	7MBC2E4

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Biochemistry

Elective — MOLECULAR GENETICS

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define nucleases.

2. What is RNA turn over?

3. What is operon?

4. Define transposons.

5. Define crossing over.

6. Define mutation.

7. What are p elements?

8. What is gene maping?

9. What is pedigree analysis?

10. Define polyploidy.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a note on the genetic significance of nucleic acids.

Or

(b) Write down the differences between prokaryotes and eukaryotes.

12. (a) Explain gene expression regulation in prokaryotes.

Or

(b) Discuss the control of transcription by translation.

13. (a) Comment of linkage.

Or

(b) Write a note on the spontaneous chemical changes that occur during mutations.

14. (a) Write a note on the mechanism of conjugation.

Or

(b) Comment on the role of transposons in hybrid dysgenesis.

15. (a) Write a note on polyploidy.

Or

(b) What is karyotyping? Explain.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Give a brief account on DNA replication.

17. Write a brief note on operons with two examples.

2 **F–2134**

18. Write a brief note on DNA repair and its types.

19. Give a brief note on transposons and explain the mechanism of replicative and nonreplicative mechanisms.

20. Discuss in brief about the chromosomal rearrangements.

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F–2134

F–2136	Sub. Code
	7MBC3E3

M.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Biochemistry

Elective – HORMONES AND CELL SIGNALING

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What is signal transduction?

2.   Define autocoids.

3.   What is the role of G-proteins?

4.   How does genetic errors in G protein coupled receptors affect their functions?

5.   What is MAPK? Write it's function.

6.   Mention the functions of a chemokine.

7.   Is thyroid hormone a steroid? Justify.

8.   What is T_3 response element?

9.   Write the relationship between type II diabetes and thyroid disease.

10. What is receptor gene mutation?

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Classify hormones that bind to intracellular receptors.

Or

(b) Write notes on the types of receptors.

12. (a) Explain the structure of G protein coupled receptor.

Or

(b) Give an account on G protein coupled receptor families.

13. (a) Cite with suitable example the activation mechanism for tyrosine kinase receptor.

Or

(b) Classify the cytokine receptors.

14. (a) Give an account on the structure and functions of cytosolic receptors.

Or

(b) Present the steroid and thyroid receptor super family.

15. (a) Enumerate on the disorders related with generalised resistance to Ca^{2+}.

Or

(b) Comment on the activating mutations of the parathyroid receptor.

2   **F–2136**

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Describe the classification of hormones based on its structure.

17. Write on essay on the signal transduction pathways for G protein coupled receptor.

18. "Calcium as second messenger" – Substantiate.

19. Discuss on the mechanism of action of steroid hormone receptor in a target cell.

20. Write an essay on the role of G protein hormone receptors in cancer.

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F–2136

F–2144	Sub. Code
	7MBC2E3

M.Sc. DEGREE EXAMINATION, APRIL 2019.

Second Semester

Biochemistry

Elective — BIOSTATISTICS AND BIOINFORMATICS

(CBCS – 2017 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What is histogram?

2.   What is coefficient of variation?

3.   Define permutation.

4.   If the mean of a poisson distribution is 4, then find the standard deviation and skewness.

5.   What is factorial design?

6.   Define ANOVA.

7.   What is homology modelling?

8.   Define gap penalty.

9.   What is multiple sequence alignment? Mention its uses.

10. What is KEGG?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Find the mean, median and modal ages of married women at first child birth.

Age at the birth of first child : 13 14 15 16 17 18 19

No. of married women : 37 162 343 390 256 433 161

Age at the birth of first child : 20 21 22 23 24 25

No. of married women : 355 65 85 49 46 40

Or

(b) Give an account on regression equation and lines.

12. (a) State the salient features of a normal curve.

Or

(b) A ball is drawn at random from a box containing 6 red balls, 4 white balls and 5 blue balls. Determine the probability that it is

(i) Red

(ii) White

(iii) Blue

(iv) Not Red and

(v) Red or White.

13. (a) Present in brief the components of a thesis.

Or

(b) Outline the steps involved in students 't' test.

F–2144

14. (a) Give an account on PAM matrices.

Or

(b) Enumerate the criteria and need for sequence alignment.

15. (a) Explain the steps involved in molecular docking.

Or

(b) Write notes on Needleman – Wunsch algorithm.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Calculate the Karl Pearson's correlation co-efficient between marks in Genetics and Cell Biology.

Genetics : 10 25 13 25 22 11 12 25 21 20

Cell biology : 12 22 16 15 18 18 17 23 24 17

17. What is binomial distribution? Point out its properties, constant and importance.

18. Discuss the concepts of sampling distribution and standard error. Add a note on the role of standard error in large sample theory.

19. Elaborate on FASTA and its application in bioinformatics.

20. Illustrate the steps involved in drug designing process.

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F–2144