(6 pages) **Reg. No. :** .....

Code No. : 6158 **Sub. Code : PBCM 41**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Fourth Semester

Biochemistry – Core

MOLECULAR ENDOCRINOLOGY

(For those who joined in July 2017 – 2020)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following is growth hormone inhibiting hormone?

   (a) FSH

   (b) TRH

   (c) GHRH

   (d) Somatostation

2. Which of this statement is incorrect regarding the function of hormones?

   (a) Reproduction and Sexual differentiation

   (b) Maintenance of internal environment

   (c) Maintain body temperature

   (d) Development and growth

3. Which of the following hormone is produced by pituitary gland in both males and females but functional only in female?

   (a) Relaxin (b) Prolactin

   (c) Vasopressin (d) Growth hormone

4. MSH is produced by ————————.

   (a) anterior lobe of pituitary

   (b) posterior pituitary gland

   (c) parathyroid

   (d) pars intermedia of pituitary

5. Grave's disease is due to ————————.

   (a) hyperactivity of thyroid gland

   (b) hyperactivity of adrenal medulla

   (c) hyperactivity of adrenal cortex

   (d) hyperactivity of pituitary

6. Which type of epithelium is present in thyroid follicles?

(a) squamous (b) cuboidal

(c) columnar (d) transitional

7. Alpha cells are found in ———————— of the islet while beta cells are usually found in the ———————— of the islet.

(a) periphery, center

(b) center, periphery

(c) equally in both regions, periphery

(d) periphery, equally in both regions

8. Select the false statement

(a) pancreas has both endocrine and exocrine functions

(b) acute pancreatitis may be reversible if inflammation is removed

(c) clinical manifestations of acute pancreatitis include jaundice and vague indigestion

(d) chronic pancreatitis results in loss of both exocrine and endocrine function

9. Which of the following is NOT a clinical feature of Cushing's syndrome.

(i) Moon faces and Buffalo lumps

(ii) Masculinization in females and precocious puberty in males

(iii) Easy bruising and strine

(iv) Can mimic DM

(a) Both (i) and (ii)

(b) Both (iii) and (iv)

(c) (iv) only

(d) (iii) only

10. Adrenaline increases ————————.

(a) Blood pressure (b) Blood glucose level

(c) Arteriosclerosis (d) Oxygen uptake

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Describe the feedback mechanism of hormone action.

Or

(b) Illustrate the role of calcium in signal transduction.

12. (a) Write a brief note on MSH.

Or

(b) Comment on hyperpituitarism.

13. (a) Enumerate antithyroid agents explain.

Or

(b) List the biological actions of thyroid hormones.

14. (a) State the biosynthesis of insulin.

Or

(b) Write the biological effects of insulin.

15. (a) Explain adrenal androgens in brief.

Or

(b) Describe the biosynthesis of catecholamines.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Outline the classification of hormones with examples.

Or

(b) Explain the role of CGMP in signal transduction.

17. (a) Describe the secretion, structure, target site, biological actions, mode of action and regulation of ADH.

Or

(b) Write an essay on GH.

18. (a) Give an account on hyper and hypo secretion of thyroid gland.

Or

(b) Discuss the role of hormones in calcium regulation.

19. (a) Summarize the structure, synthesis, action, functions and regulation of glucagon.

Or

(b) Outline the secretion, functions and mechanism of action of GI tract hormones.

20. (a) Explain the biosynthesis, mechanism of action and biological effects of glucocorticoids.

Or

(b) Give a detailed account on estrogens.

———————

(6 pages)

Reg. No. : .....

Code No. : 6159 **Sub. Code : PBCM 42**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Fourth Semester

Biochemistry — Core

CLINICAL BIOCHEMISTRY

(For those who joined in July 2017-2020 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. A person with phenylketonuria cannot convert

   (a) Phenylalanine to tyrosine

   (b) Phenylalanine to isoleucine

   (c) Phenylalanine to ketone

   (d) Phenylalanine to lysine

2. Which of the following is the most toxic compound.

(a) tyrosine

(b) phenylpyruvate

(c) lysine

(d) phenylalanine

3. Which of the following enzymes leads to Tarui's disease?

(a) Glucokinase

(b) Pyruvate kinase

(c) Phosphofructokinase

(d) Phosphoglucomutase

4. Which of the following hormones is responsible for increasing gluconeogenesis in liver during prolonged starvation?

(a) TSH (b) Insulin

(c) Tyroxine (d) Glucagon

5. In Gilbert's syndrome which of the following form of bilirubin is elevated?

(a) Direct bilirubin and total bilirubin

(b) Indirect and total bilirubin

(c) Both direct and indirect bilirubin

(d) None

6. Wrobitinogen is oxidised to form a coloured product, which gives a characteristic colour of urine and feces. In which type of jaundice the stool colour is clay colored because of lack of urobilin?

(a) Hemolytic jaundice

(b) Viral hepatitis

(c) Obstructive jaundice

(d) Alcoholic airrhosis

7. Which of the following marker is used for the differential diagnosis of obstructive jaundice?

(a) Lactate Dehydrogenase

(b) Creatine kinase

(c) Carbonic anhydrase

(d) 5' Nucleotidase

8. An increased plasma transferrin level is often seen in patients suffering from ————————

(a) Anemia

(b) Iron overload

(c) Protein malnutrition

(d) Steatorrhoea

9. A patient with no elevated enzyme and no disease status is termed ————————

(a) False negative (b) False positive

(c) True negative (d) True positive

10. The most ideal markers for myocardial infarction are ————————

(a) CK

(b) LDH

(c) CK – MB

(d) Troponins

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write an essay on galactosemia.

Or

(b) Describe Hartnup disease.

12. (a) Explain the acute complications of diabetes mellitus.

Or

(b) Briefly explain the metabolic abnormalities of type I Diabetes mellitus.

13. (a) Explain the major causes and biochemistry of Steatorrhoea.

Or

(b) Give a short note on Crigglers and Najjar syndrome.

14. (a) Write a note on acute phase proteins.

Or

(b) Describe Nephrotic syndrome.

15. (a) Write the enzymes involved in the clinical diagnosis of thyroid dysfunction.

Or

(b) Comment on the enzyme tests in myocardial infarction.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Explain phenylketonuria. Add a note on its diagnosis.

Or

(b) Describe Gout.

17. (a) Write the role of hormones in the regulation of blood sugar.

Or

(b) Write an essay on glucosuria.

18. (a) Explain types of jaundice and its diagnosis.

Or

(b) Give an account on Liver function tests.

19. (a) Explain proteinuia in detail .

Or

(b) Coment on Porphyria and its types.

20. (a) Write the clinical significance of LOH AST and ALT.

Or

(b) Discuss the methods of detection of inborn errors in foetus.

———————

(6 pages)

Reg. No. : .....

Code No. : 6160 **Sub. Code : PBCM 43**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Fourth Semester

Biochemistry - Core

MOLECULAR BIOLOGY

(For those who joined in July 2017-2020 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. RNA Synthesis is catalyzed by the enzyme called - _____.

   (a) RNA polymerase

   (b) RNA synthase

   (c) RNA transcriphase

   (d) RNA replicase

2. The length of the transcription bubble varies from _____bp.

(a) 12-20 (b) 15-25

(c) 20-30 (d) 25-35

3. The holoenzyme in E-coli has a molecular weight of _____ K.D.

(a) 365 (b) 465

(c) 265 (d) 565

4. _____ describes a structural gene that codes for a protein involved in regulating the expression of other genes.

(a) Target gene

(b) Regulator gene

(c) Repressor gene

(d) Template gene

5. Which of the following catlyzes ADP – ribosylation of a diphthamide residue?

(a) Chloramphenicol

(b) Cycloheximide

(c) Diphthria toxin

(d) Ricin

6. Bacteria have _____ ribosomes.

(a) 70 S (b) 60 S

(c) 50 S (d) 80 S

7. Methylation of cytosine increases the transition mutation of cytosine to _____.

(a) Guanine (b) Adenine

(c) Thymine (d) Cytosine

8. Where does a repressor bind an operon?

(a) Operator

(b) Promoter

(c) Inducer

(d) Catabolite activator site

9. _____ describes the failure to observe the normal constraints of growth.

(a) Immortalization

(b) Transformation

(c) Transduction

(d) Metastasis

10. _____ cells are the immediate descendants of cells taken directly from the organism.

(a) Permissive

(b) Non-permissive

(c) Primary

(d) Secondary

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write a note on the promoter sequence in E coli.

Or

(b) Narrate the events that regulate Lac operon.

12. (a) Enumerate the functions of eukaryotic RNA polymerases.

Or

(b) Elucidate the post transcriptional modifications of mRNA in enkaryotes.

13. (a) Describe the various components of protein synthesis.

Or

(b) Explain the ubiquitine pathway.

14. (a) Comment on cytosine methylation in eukaryotes.

Or

(b) Elaborate the principles of gene regulation.

15. (a) Discuss the morphological and ultra structural alterations in tumour cells.

Or

(b) Briefly explain the mechanism of chemical carcinogenesis.

PART C — ($8 \times 5 = 40$ marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Define transcription. Elaborate the various steps in prokaryotic transcription.

Or

(b) Discuss the role of various inhibitors in transcription.

17. (a) What is mutation? Explain its various types.

Or

(b) Elucidate the transcriptional regulation in eukaryotes.

18. (a) Explain the mechanism of protein syntheses in eukaryotes.

Or

(b) Describe the constitutive and narrow domain regulation of protein synthesis.

19. (a) Write a detailed note on DNA methylation in prokaryotes.

Or

(b) Comment on epigenetic gene regulation.

20. (a) Define malignant tumors. Explain the growth characteristics of malignant tumors.

Or

(b) Give an extended report on tumour suppressor genes.

———————

(6 pages)

Reg. No. : .....

Code No. : 6174 **Sub. Code : PBTM 42**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Fourth Semester

Biochemistry — Core

PROTEOMICS AND GENOMICS

(For those who joined in July 2017-2020 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The effect of proteins on an entire organism is described in

   (a) Phenotypic function (b) Cellular function

   (c) Molecular function (d) Structural genomics

2. Genes of different species but posessess a clear sequence and functional relationship to each other

   (a) Ortholog (b) Synteny

   (c) Paralog (d) Microarray

3. Which of the following condition is of reverse phase chromatography?

(a) The mobile phase is non polar and stationary phase is polar

(b) The mobile phase is polar and stationary phase is nonpolar

(c) Both the mobile phase and stationary phase is organic

(d) Both the mobile phase and stationary phase is inorganic

4. The identification of drugs through the genomic study is called

(a) Genomics (b) Pharmacogenomics

(c) Pharmacogenetics (d) Cheminformatics

5. The process of finding the relative location of genes on a chromosome called

(a) Gene tracking

(b) Genome walking

(c) Genome mapping

(d) Chromosome walking

6. The term genome was coined by

(a) Thomas cech (b) T.H. Morgan

(c) Thomas roder (d) Craig venter

7. DNA sequencing followed by genome annotation are steps of

(a) Comparative genomics

(b) Structural genomics

(c) Functional genomics

(d) Transcriptomics

8. Variation between individuals due to single base changes is called as

(a) ESTs (b) Contigs

(c) SNPs (d) Transversion

9. International Human Genome Project was initiated by

(a) National Institute of Health

(b) Celera genomics

(c) US Department of Energy

(d) NOH and US DoE

10. Which of the following is not a gene expression database?

(a) Gen Bank (b) Flyview

(c) Seedgenes (d) BodyMap

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Explain the principle and application of ion exchange chromatography.

Or

(b) Write about the principle and applications of isoelectric focusing.

12. (a) Explain the working principle and applications of microcapillary LC.

Or

(b) Explain the invivo proteome analysis.

13. (a) Explain the ubiquitination mechanism on proteomic post translation modification.

Or

(b) Write the transcriptional regulators on protein-protein interaction.

14. (a) Explain the preparation of genomic DNA by Sanger and Dideoxy method.

Or

(b) Explain about the expressed sequenced tags (ESTs).

15. (a) List out the application of PCR.

Or

(b) Briefly explain the Random Amplified Polymorphic DNA (RAPD).

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Discuss the principle and instrumentation of mass analyzer.

Or

(b) Comment on the ionization techniques in mass spectrometry.

17. (a) Sketch out the protein and peptide separation techniques.

Or

(b) State the expression of proteome analysis.

18. (a) Specify the transcription regulators in protein— protein interactions.

Or

(b) Mention the challenges in anticancer therapy approaches.

19. (a) State the DNA sequence analysis methods by fluorescence in detail.

Or

(b) Comment on the gene disease association.

20. (a) Describe about the Fluorescence in Situ Hybridization (FISH).

Or

(b) Enlist the characteristic features and applications of metagenomics.

———————

(6 pages)

Reg. No. : .....

Code No. : 6491 **Sub. Code : ZBCM 11**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

First Semester

Biochemistry – Core

CHEMISTRY OF BIOMOLECULES

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Alpha 1-4 glycosidic linkage is found in

   (a) Sucrose (b) Maltose

   (c) Cellulose (d) Cellubiose

2. The heteropolysaccharide which does not contain uronic acid is

   (a) Chondroitin sulphate (b) Dermatan sulphate

   (c) Heparan sulphate (d) Keratan sulphate

3. The primary structure of proteins contains

(a) Covalent bond (b) Coordinate bond

(c) H– bond (d) Vaanderwaals force

4. Bonding which stabilizes the alpha and beta helix requires

(a) Hydrogen bond (b) Peptide bond

(c) Disulphide bond (d) Salt linkage

5. Beta turns are classified into

(a) 5 types (b) 6 types

(c) 7 types (d) 8 types

6. Gene expression can be identified using

(a) Western blotting

(b) Southern blotting

(c) Northern blotting

(d) Fingerprinting

7. High lipid content is a characteristic feature of

(a) Cytoplasm

(b) Plasma membrane

(c) Inner mitochondria

(d) Myelin sheath

8. Phosphatidyl ethanolamine is called as

(a) lecithin

(b) cephalin

(c) cardiolipin

(d) sphingomyelin

9. When DNA sample is heated above its melting temperature the Following occurs

(a) change in absorbance at 260 mm

(b) a change in viscosity

(c) a change in phosphodiester linkage

(d) a change in absorbance and viscosity

10. According to Chargaff's rule the two stands of DNA has

(a) Same molecular weight

(b) Different molecular weight

(c) Same amount of A and G

(d) Different amount of A and G

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Give a brief note on the structure and biological importance of starch.

Or

(b) Write a brief note on the structure and biological importance of glycogen.

12. (a) Write short notes on the biologically important peptides.

Or

(b) Describe Xray diffraction analysis of proteins

13. (a) Summarize the nature of $\beta - \alpha - \beta$ motif.

Or

(b) Enumerate the forces that stabilizing tertiary structure.

14. (a) Discuss the chemistry of Cholesterol.

Or

(b) Discuss the structure of bile salts and bile acids.

15. (a) Compare the composition and structure of Nucleotides and Nucleosides

Or

(b) Discuss the Hyperchromic shift in DNA.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Classify heteropolysaccharides of physiological importance.

Or

(b) Elate the structural features and importance of lectins.

17. (a) Explain the structural classification of aminoacids.

Or

(b) Give a detailed account on the general properties and functions of proteins.

18. (a) Demonstrate the super secondary structure of protein.

Or

(b) Discuss the structure of collagen.

19. (a) Explain the types and biological role of Essential Fatty acids.

Or

(b) Evaluate the types structure of Phospholipids.

20. (a) Differentiate the helical structure of A, B and Z forms of DNA.

Or

(b) Summarise the structure and function of tRNA.

———————

(6 pages) **Reg. No. :** .....

Code No. : 6492 **Sub. Code : ZBCM 12**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

First Semester

Biochemistry – Core

BIOPHYSICAL AND ANALYTICAL TECHNIQUES

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Prisms and gratings are used in
   (a) Colorimeter
   (b) Spectrophotometer
   (c) Colorimeter
   (d) All of the above

2. Bioluminescence is exhibited by

   (a) egg protein yolk

   (b) algal pigment phycobilin

   (c) blood hemoglobin

   (d) firefly luciferin

3. Liquid Scintillation Counting is a suitable method for the measurement of

   (a) alpha particles

   (b) beta particles

   (c) gamma particles

   (d) none of the above

4. The radioisotope used to analyse DNA fragments

   (a) S^{32}

   (b) S^{35}

   (c) P^{32}

   (d) P^{35}

5. TEMED is

   (a) Tetra methylene diamine

   (b) Tetra ethylene diamine

   (c) Tetra methyl ethylene diamine

   (d) Tetra methyl ethyl diamine

6. Ethidium bromide is

(a) used for visualizing DNA

(b) carcinogenic

(c) used for fluorescent tag

(d) all of the above

7. The Rf value of any solute is always

(a) above 1 (b) below 1

(c) 1 (d) between 1 and 10

8. In affinity chromatography, the matrix used must posses

(a) suitable groups

(b) good flow properties

(c) stability

(d) all of the above

9. The speed of rotation of Ultracentrifugation is

(a) 30,000 rpm (b) 40,000 rpm

(c) 50,000 rpm (d) 60,000 rpm

10. Ultracentrifuges are used for

(a) separation of macromolecules

(b) purification of macromolecules

(c) studying the properties of macromolecules

(d) all of the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) State and explain Beer – Lambert's law.

Or

(b) Differentiate spectrophotometer and colorimeter.

12. (a) Discuss the principle of GM counter.

Or

(b) Describe the units of radioactivity.

13. (a) Explain the effect of electric field strength and the nature of sample on the mobility of proteins during electrophoresis.

Or

(b) Enumerate the different kinds of support material used in electrophoresis.

14. (a) Tabulate principle and applications of Affinity chromatography.

Or

(b) Compare and contrast ascending and descending paper chromatography.

15. (a) Differentiate preparative and analytical centrifuge.

Or

(b) Discuss the types of density gradient centrifuge.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the principles and applications of flame photometry.

Or

(b) Explain the principle and working of atomic absorption spectrophotometry.

17. (a) Describe the principle and working of Liquid Scintillation Counter.

Or

(b) Explain the biological applications of radioactive isotopes.

18. (a) Give a detailed account on the types of electrophoretic techniques.

Or

(b) Explain in detail about agarose gel electrophoresis.

19. (a) Exemplify High performance liquid chromatography.

Or

(b) Explain the principle and operation of GLC.

20. (a) Describe the basic principles and applications of preparative centrifuges.

Or

(b) Discuss the types and applications of Ultracentrifuges.

———————

(6 pages)

Reg. No. : .....

Code No. : 6493 **Sub. Code : ZBCM 13**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

First Semester

Biochemistry – Core

MOLECULAR CELL BIOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. In which part of the plant , does photosynthesis takes place?
   (a) Peroximes (b) Glyoxysomes
   (c) Quantosomes (d) Lysosomes
2. Which cell organelles are involved in apotosis?
   (a) Golgi apparatus
   (b) Endoplasmic Reticulum
   (c) Mitochondria
   (d) Lysosomes

3. Integral proteins are also known as

(a) Intrinsic protein

(b) Glycosylated protein

(c) Transmembre protein

(d) Bilayer protein

4. The ratio of Na^+ and K^+ transported by Na^+ / K^+ ATP are pump is _____

(a) 1:1 (b) 2:1

(c) 2:3 (d) 3:2

5. Name the regulatory component of the cell cycle?

(a) Cyclin (b) CDK

(c) DNA (d) APC

6. Which of these events is not a part of Karyokinesis?

(a) Metaphase (b) Prophase

(c) Interphase (d) Anaphase

7. Name the largest family of cell surface Receptor.

(a) GPCR (G-Protein coupled Receptor)

(b) Ion-channel receptor

(c) Enzyme linked Receptor

(d) Nuclear receptor

8. Name the family of monomeric G-protein which regulators the growth of the cell.

(a) Ras (b) Raf

(c) Rho (d) Map

9. The maximum possible numerical aperture of 1.5 is for a _____ lens.

(a) Oil immersion (b) Air interface

(c) Water interface (d) Binocular

10. Negative staining is used for examining _____

(a) Virus particle

(b) Protein molecules

(c) Bacterial Flagella

(d) Virus particles protein molecules and bacterial flagella

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) What is the importance of cristae in the mitochondria? Draw the structure of mitochondria.

Or

(b) Differentiate between Rough endoplasmic reticulum and smooth endoplasmic reticulum.

12. (a) Write the differences between facilitated transport and active transport.

Or

(b) Write short notes on membrane Lipids and Membrane protein.

13. (a) Briefly outline structure and functions of gap junctions.

Or

(b) Explain the different phases of cell cycle.

14. (a) Discuss the types cell signalling.

Or

(b) Explain the importance of Ion channel.

15. (a) Elaborate the use of microtone in cytology.

Or

(b) Explain the principle, and application of scanning Electron microscope.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Analyse the structure of nucleosomes and chromosomes.

Or

(b) Explain the structure , functions of Golgi apparatus.

17. (a) Illustrate the structure and functions of Ion selective channel.

Or

(b) Distinguish the functions of $Na^+ K^+$ ATPase and calcium ATPase.

18. (a) Briefly outline the different phases of mitosis and its significane.

Or

(b) Give a brief account on apotosis.

19. (a) Explain the structure and mechanism of G-protein coupled Receptors.

Or

(b) Differentiate ongogens and oncogogenesis.

20. (a) Describe the principle, procedure and applications of Light microscope.

Or

(b) Explain the different staining technique and its applications.

———————

(6 pages) **Reg. No. :** .....

Code No. : 6494 **Sub. Code : ZBCM 14**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

First Semester

Biochemistry – Core

GENETICS

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The alternate form of a gene is
   (a) Alternate type
   (b) Recessive character
   (c) Dominant character
   (d) Allele

2. The longitudinal subunits of a chromosome is known as ————————.

(a) Centromere (b) Chromatid

(c) Telomere (d) Chromosome

3. The crossing of F1 to either of the parents is known as

(a) Test cross (b) Back cross

(c) F1 cross (d) F2 cross

4. Mendel's findings were rediscovered by

(a) Correns (b) De Vries

(c) Tschermark (d) Morgon

5. In males, the gene for colour blindness is located in ————————.

(a) X-chromosome

(b) Y-chromosome

(c) Both X and Y chromosome

(d) Either X-chromosome or Y-chromosome

6. Sex-linked genetically inherited traits

(a) Can appear in both males and females

(b) Are only found in males

(c) Are only found in females

(d) Result from premarital sexual intercourse

7. The phenomenon in which genes are present on the same chromosomes is

(a) Cross over (b) Segregation

(c) Linkage (d) Assortment

8. A Drosophila has four pairs of chromosomes. It contains the following connection groups

(a) one more than the pair of chromosomes

(b) one less than the pair of chromosomes

(c) four

(d) eight

9. This is an example of industrial melanism is

(a) Mutation

(b) Neo Darwinism

(c) Neo Lamarckism

(d) Natural selection

10. Acquired characteristics of Lamarck are not inherited and have an evolutionary value. Who gave this statement?

(a) Weismann (b) Hugo de Vries

(c) TH Morgan (d) Charles Darwin.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Explain various stages of cell cycle with diagram.

Or

(b) Briefly explain any two DNA repair mechanism.

12. (a) Explain the polyhybrid cross with suitable example.

Or

(b) Outline the principle of independent assortment.

13. (a) Outline the Y linked inheritance in man.

Or

(b) Discuss Klinefelter's syndrome.

14. (a) Briefly assess the Partial chaisma type theory.

Or

(b) Discuss factors affecting crossing over and their significance.

15. (a) Simplify the role of mutation in evolution and speciation.

Or

(b) Briefly explain Ame's test.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Elaborate the Gene mutation.

Or

(b) Explain the molecular and evolutionary genetics.

17. (a) Illustrate Mendel contribution in inheritance.

Or

(b) Distinguish monohybrid cross and dihybrid cross with example.

18. (a) Describe the sex linked in Drosphophila.

Or

(b) Give detailed an account on color blindness.

19. (a) Explain important theories on the mechanism of crossing over.

Or

(b) Explain chromosome theory of linkage.

20. (a) Illustrate the Natural selection in mutation.

Or

(b) Explain the Kin selection and Industrial Melanism.

———————

(6 pages) **Reg. No. :** .....

Code No. : 6495 **Sub. Code : ZBCM 21**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Second Semester

Biochemistry – Main

ENZYMES AND ENZYME TECHNOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Enzyme catalysing rearrangement of atomic grouping without altering molecular weight or number of atom is ————————.

   (a) Ligase

   (b) Isomerase

   (c) Oxidoreductase

   (d) Hydrolase

2. This enzyme was first isolated and purified in the form of crystals

(a) Urease (b) Pepsin

(c) Amylase (d) Ribonuclease

3. In competitive inhibition a factor is obtained from the measurement of

(a) Vmax

(b) Km

(c) Y intercept in line weaver-burk plot

(d) none of these

4. Given an enzyme with a Km = 10 mm and Vmax = 100 mmol/min. If [S] = 100 mm. Which of the following will be true?

(a) A 10 fold increase in Vmax would increase velocity 10 fold

(b) A 10 fold decrease in Km would increase velocity

(c) Both (a) and (b)

(d) A 10 fold increase in Vmax would decrease velocity 20 fold

5. Which of the following statements are true regarding enzyme inhibition?

(a) It may be reversible or irreversible

(b) Reversible can be competitive or non-competitive

(c) both (a) and (b)

(d) it is always reversible

6. Inhibition of invertase by sucrose falls into which category of inhibition?

(a) Substrate inhibition

(b) Non-competitive inhibition

(c) Product inhibition

(d) Competitive inhibition

7. The allosteric inhibitor of an enzyme ————.

(a) causes the enzyme to work faster

(b) binds to the active site

(c) participates in feedback regulation

(d) denatures the enzyme

8. Which of the following is false?

(a) Allosteric modulators may be inhibitory or stimulatory

(b) Homotropic allosteric enzymes have the substrate and modulator same

(c) Based on the nature of modulator, allosteric enzymes are of 2 types

(d) Heterotropic allosteric enzymes have the substrate and modulator same

9. Which of the following is not a characteristic of the immobilized enzymes?

(a) They cannot be re-used

(b) It produces reproducible results

(c) Stability exists

(d) Same catalytic activity is present for number of analysis

10. In Glycose electrode, glucose oxidase has been coupled to an electrode by which of the following materials?

(a) Ferrocene derivatives

(b) Urease

(c) Polyacylamide

(d) Biochips

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write down the classification of enzymes.

Or

(b) Briefly explain about ribozymes.

12. (a) Describe Edie-Hofstee plot.

Or

(b) Explain King-Altman procedure.

13. (a) Comment on covalent catalysis.

Or

(b) Write notes on DNA polymerases.

14. (a) Give a brief account on feed back inhibition.

Or

(b) Write an essay on zymogens.

15. (a) List out the applications of enzyme biosensors.

Or

(b) Give an account on anti-inflammatory agents.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Write the methods of investigating active site structure.

Or

(b) Describe various methods of enzyme purification.

17. (a) Derive Michaelis-Menten plot for unisubstrate enzyme action.

Or

(b) Discuss the factors affecting enzyme activity.

18. (a) Explain the mechanism of action of lysozyme.

Or

(b) Explain the mechanism of action of chymotrypsin.

19. (a) Describe fattyacid synthase complex.

Or

(b) Write an account on Isoenzymes.

20. (a) Explain some industrially important enzymes and their clinical significance.

Or

(b) Give a detailed study on enzyme immobilization and their applications.

———————

(6 pages) **Reg. No. :** .....

Code No. : 6496 **Sub. Code : ZBCM 22**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Second Semester

Biochemistry — Core

METABOLISM AND REGULATION

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following equation gives the relationship between ΔG° and *Keq*?

   (a) $\Delta G^{\circ} = -RT \ln Keq$

   (b) $\Delta G^{\circ} = \ln Keq$

   (c) $\Delta G^{\circ} = \Delta G^{\circ} - RT\ Keq$

   (d) $\Delta G = -RT \ln Keq$

2. Reactions that lose heat are termed as _____

(a) Endothermic (b) Exothermic

(c) Chemical (d) Physical

3. An essential for the conversion of glucose to glycogen in liver is _____

(a) UTP

(b) GTP

(c) Pyruvate Kinase

(d) Guanosine

4. Which of the following metabolites negatively regulates pyruvate kinase?

(a) Fructose 1,6 bisphosphate

(b) Citrate

(c) Acetyl COA

(d) Alanine

5. Which of the following enzyme is not used in the synthesis of triacylglycerol?

(a) Glycerol 3-phosphate acyl transferase

(b) Acylglycerophosphate acyl transferase

(c) Phosphatidic and phosphohydeolase

(d) Glycogen phosphorylase

6. What is the outcome of the accumulation of acetyl COA in the mitochondria of the livers?

(a) It is used as an energy source

(b) It has broken down into free fatty acid

(c) It gets converted to oxaloacetate

(d) It form Ketone bodies

7. Oxidative deamination is the conversion of an amino _____

(a) Group from an aminoacid to a Ketoacid

(b) Acid to a carboxylic acid plus ammonia.

(c) Acid to a Ketoacid plus ammonia.

(d) Group from an aminoacid to a carboxylic acid.

8. In the normal breakdown of Phenylalanine, it is initially degraded to _____

(a) Fumerate

(b) Tyrosine

(c) Lysine

(d) Phenyl pyruvate

9. Glucagon is stimulated by

(a) Insulin (b) Thyroxine

(c) Metabolism (d) Glucose

10. Which of the following type of metabolites is used for generating glucose under severe starvation conditions?

(a) Aminoacids (b) Fats

(c) Glycogen (d) Starch

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Describe chemiosmotic theory.

Or

(b) Summarize the uncouplers of oxidative phosphorylation and ETC.

12. (a) Comment on glygogenesis.

Or

(b) Explain pypuvate Dehydrogenase complex.

13. (a) Write the role of carnitine in β-oxidation.

Or

(b) Describe the synthesis of phospholipids.

14. (a) Write short note on purine degradation.

Or

(b) Explain the biosynthesis of pyrimidines.

15. (a) Describe the role of adipose tissue in metabolism.

Or

(b) Write the role of cortisol in metabolism.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write a detailed account on mitochondual transport systems.

Or

(b) Explain ETC in detail.

17. (a) Give an account on HMP shunt.

Or

(b) Write an essay on glucuronic acid pathway.

18. (a) Give a detailed study on lipoprotein metabolism.

Or

(b) Describe the biosynthesis of prostaglandins.

19. (a) Explain urea cycle and its regulation.

Or

(b) Write an essay on catabolism of carbon skeleton of aminoacids.

20. (a) Explain the role of insulin and epinephrine in the regulation of metabolism.

Or

(b) Discuss the metabolic profile of liver and brain.

———————

(6 pages) **Reg. No. :** .....

Code No. : 6497 **Sub. Code : ZBCM 23**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Second Semester

Biochemistry – Main

PHYSIOLOGY AND NUTRITION

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The normal diastolic blood pressure in a normal healthy adult human is

   (a) 80 mm Hg

   (b) 60 mm Hg

   (c) 90 mm Hg

   (d) 110 mm Hg

2. ———————— is a blood disorder where the haemoglobin is defective

(a) Heterochromics

(b) Alopecia

(c) Haemolysis

(d) Sickle cell anaemia

3. Nyctalopia can occur due to the deficiency of

(a) Vitamin A (b) Vitamin C

(c) Vitamin K (d) Vitamin B12

4. Pancreatic juice is stimulated by the release of

(a) Secretin (b) Cholecystokinin

(c) Enterokinase (d) Both (a) and (b)

5. What is the enzyme that breaks down lactose?

(a) Lipase enzyme (b) Pepsin

(c) Amylase (d) Lactase

6. In humans. Lacteals are found in

(a) Ileum (b) Oesophagus

(c) Ear (d) None of the above

7. Nervous system consists of

(a) Brain

(b) Spinal card

(c) Nerves

(d) All the above

8. Which nerves are attached to the brain and emerge from the skull?

(a) Cranial nerves

(b) Spinal nerves

(c) Thoracic nerves

(d) Sacral nerves

9. The bread, cereals, rice and pasta group is a good source of

(a) Carbohydrate (b) Vitamin C

(c) Calcium (d) Vitamin D

10. The milk, cheese and yogurt group are important for ————————.

(a) Strong bones

(b) Teeth

(c) Muscles

(d) All of the above

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Illustrate the functions of blood.

Or

(b) Write down the factors regulating blood pH.

12. (a) List out the functions of saliva.

Or

(b) Write the composition of pancreatic juice.

13. (a) Give a note on neurotransmitters.

Or

(b) Explain the conduction of nerve impulse.

14. (a) Write notes on food groups

Or

(b) Explain nitrogen balance.

15. (a) Describe the factors affecting BMR.

Or

(b) Summarize the special aspects of nutrition during lactation.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

Each answer should not exceed 600 words.

16. (a) Describe the mechanism of blood clotting.

Or

(b) Explain the transport of O2 and CO2 in blood.

17. (a) Give a detailed study on urine formation.

Or

(b) Write an essay on renal regulation of acid-base balance.

18. (a) Explain the divisions of nervous system in detail

Or

(b) Briefly explain cardiac cycle.

19. (a) Write an essay on food adulteration.

Or

(b) Explain how to improve protein quality of food by supplementation and fortification?

20. (a) Explain measurement of food stuffs by Bomb calorimeter.

Or

(b) Illustrate the requirements of carbohydrates an lipids.

———————

(6 pages) **Reg. No. :** .....

Code No. : 6498 **Sub. Code : ZBCM 24**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Second Semester

Biochemistry

PLANT BIOCHEMISTRY

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The first step in photosynthesis is
   (a) joining of 3 carbon atoms to form glucose
   (b) formation of ATP
   (c) ionization of water
   (d) excitement of an electron of chlorophyll a by a photon of light

2. Dark reaction in photosynthesis is called so because

(a) it can occur in dark

(b) it does not require light energy

(c) neither of these

(d) both of these

3. C_3 and C_4 plants differ with respect to

(a) number of ATP molecules consumed

(b) first product

(c) the substrate which accept CO_2

(d) all the these

4. The first product of C_4 pathway is ————

(a) PGA

(b) DHAP

(c) Oxaloacetate

(d) Phosphoenol pyruvate

5. Formation of organic nitrogen compounds like amino acids from inorganic nitrogen compounds is called as ————.

(a) Nitrogen fixation

(b) Nitrification

(c) Denitrification

(d) Nitrogen assimilation

6. Nitrate reduction can be carried out by

(a) only microorganism

(b) plant microorganism

(c) only plants

(d) none of these

7. Metabolic intermediates found in living system which are essential for growth and life is called _____

(a) Saponins

(b) Tannins

(c) Secondary metabolites

(d) Primary metabolites

8. Which of the following is not the class of secondary metabolite?

(a) Aminoacids (b) Terpenes

(c) Phenolics (d) Alkaloids

9. Name the term which defines the ability of plants to measure the length of photoperiods?

(a) Phototropin

(b) Photoperiodism

(c) Cryptochrome

(d) Gravitropism

10. Which of the following is not the long day plant?

(a) Spring barley (b) Wheat

(c) Spinach (d) Soybean

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write the organization of thylakoid.

Or

(b) Give a brief account on photosynthetic pigments.

12. (a) Write down the synthesis of starch.

Or

(b) Explain Hatch-slack pathway.

13. (a) Give a brief account on nitrogen assimilation.

Or

(b) Describe the biochemistry of nodule formation.

14. (a) Explain the biosynthesis of flavonoids.

Or

(b) Describe the functions of terpenoids.

15. (a) Write about seed dormancy.

Or

(b) Give an account on photoperiodism.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain the photosystems.

Or

(b) Write an account on cyclic and non-cyclic photophosphorylation.

17. (a) Describe calvin cycle.

Or

(b) Give a detailed study on metabolic transport between organelles.

18. (a) Explain Nitrogen cycle.

Or

(b) Explain symbiotic nitrogen fixation.

19. (a) Describe the synthesis, transport mechanism of action and physiological role of Gibberellin.

Or

(b) Write an essay on auxin.

20. (a) Give an account on macronutrients.

Or

(b) Summarize the factors affecting seed germination.

———————

(6 pages)

Reg. No. : .....

Code No. : 6499 **Sub. Code : ZBCM 31**

M.Sc.(CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Biochemistry - Core

IMMUNOLOGY AND IMMUNOTECHNIQUES

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Lysozyme

   (a) is a cytoplasmic organelle

   (b) activates complement

   (c) splits peptidoglycan

   (d) is released by mast cells

2. Interferons

(a) found only in mammalian species

(b) only affect infected cells

(c) are specific for individual viruses

(d) induce enzyme synthesis in the target cell.

3. The first immunoglobulin heavy chain class to be expressed on the surface of a newly produced B-cell is ————————

(a) IgA (b) IgO

(c) IgM (d) IgE

4. Using only random VDJ recombination, from 40V, 30D and 6J gene segments, the number of possible variable regions of an antigen receptor molecule would be

(a) 40 (b) 76

(c) 7200 (d) 1.4×106

5. Dr George syndrome results from a defect in

(a) WASP (b) Thymic development

(c) DNA repair (d) CD3

6. The approximate percentage of cases of severe combined immunodeficiency due to defects in the Armetis gene is ———————

(a) 5% (b) 15%

(c) 10% (d) 40%

7. Which one of the following diseases has been completely eradicated world-wide?

(a) Measles (b) Small pox

(c) Tuberculosis (d) Cow pox

8. BCG is used to protect against

(a) Tuberculosis (b) Pertussis

(c) Hepatitis B (d) Rabies

9. Which of the following is not used as a direct conjugate to the antibody for visualizing tissue antigens.

(a) Fluorescein

(b) Anti-immunoglobulin

(c) Peroxidase

(d) Gold particles

10. In ELISA you might use an antigen or antibody labelled with:

(a) Horse radish peroxidase

(b) FITC

(c) Europium 3^+

(d) Colloidal gold

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Differentiate Innate and aquired immunity.

Or

(b) List the factors influencing antigenicity.

12. (a) Explain clonal selection theory.

Or

(b) Establish the structure of T-cell receiptor.

13. (a) Indicate the types of cancer.

Or

(b) Record the immune response to virus.

14. (a) Explain leukocyte migration inhibition technique.

Or

(b) Demonstrate delayed type hypersensitivity technique.

15. (a) Illustrate ELISPOT.

Or

(b) Comment on Abzymes.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Write an account on primary lymphoid organs.

Or

(b) Explain the structure and functions of IgM.

17. (a) Describe organization and expression of Ig genes.

Or

(b) Illustrate the interaction of T and B cells.

18. (a) Explain elaborately about transplantation.

Or

(b) classify and explain immunodeficiency disorders.

19. (a) Comment on active immunization.

Or

(b) Write the principle procedure and applications of monoclonal antibodies.

20. (a) Explain the invitro production of cytokines.

Or

(b) Describe immuno ferritin and Fluorescent immunoassay.

———————

(7 pages)

Reg. No. : .....

Code No. : 6500 **Sub. Code : ZBCM 32**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Biochemistry – Core

CLINICAL BIOCHEMISTRY

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 1 = 10$ marks)

Answer ALL questions, choose the correct answer.

1. Gout is associated with which of the following

   (a) Hyper uricemia

   (b) Hypo uricemia

   (c) Hyperthyroidism

   (d) Hypothyroidism

2. Which of the following statement is NOT true?

   (a) Defective PRPP synthetase causes hyperuricemia

   (b) Secondary gout is associated with decreased elemination of uric acid in urine

   (c) Deficiency of UMP causes megaloblastic anaemia

   (d) Orotic acidcuia is of two types

3. Ketosis is mainly found in which disease

   (a) Rheumatic fever

   (b) Diabetes mellitus

   (c) Hypertension

   (d) Lung disease

4. Atherosclenesis is hardening of ————————.

   (a) Arterial wall

   (b) Muscle cell wall

   (c) Nerve cell wall

   (d) Brain cell wall

5. Bilirubin is bound to which plasma protein for its transport to peripheral tissues?

   (a) Globulin

   (b) Albumin

   (c) Filminogen

   (d) All of the above

6. What is the colour of ucotrilinogen?

   (a) Orange

   (b) Red

   (c) Brown

   (d) Colourless

7. What happens during nephritic syndrome?

   (a) Stones in kidney

   (b) Reduction in glomerulus filtration rate

   (c) Inflammation of glomerulus

   (d) Plasma proteins pass through glomerulus

8. Which of the following statement is not true?

(a) Renal calculi is destruction of kidney function

(b) Glomeruli means tiny blood vessels of kidney

(c) Malignant tumors occur in kidney

(d) Hematuria is an effect of glomerulus nephritis

9. Which of the following is not a clinical condition associated with amylase?

(a) Acute renal failure

(b) Acute pancreatitis

(c) Myocardial infarction

(d) Duodenal ulcer

10. Which of the following enzymes is not used in the diagnosis of myocardial infarction?

(a) Aldolase

(b) Aspartate transaminase

(c) Creatine Kinase

(d) Lactate Dehydrogenase

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Describe Alkaptonusia.

Or

(b) Explain briefly about galactosemia.

12. (a) Identify the acute complications of diabetes mellitus.

Or

(b) Discuss the factors influencing hypoglycemia.

13. (a) List the functions of liver.

Or

(b) Identify the causes and symptoms of Dubin Johnson syndrome.

14. (a) Discuss blood urea in relation to uremia.

Or

(b) Explain glomerulonephritis

15. (a) Memorize the clinical importance of H-glutamyl transpeptidase.

Or

(b) Record the clinical significance of LDH.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Give an account on glycogen storage diseases.

Or

(b) Comment on Gout.

17. (a) Explain Atherosclerosis in detail.

Or

(b) Illustrate Lipid storage diseases.

18. (a) Describe steatorrhea.

Or

(b) Explain Bilirubin metabolism.

19. (a) Evaluate the qualitative analysis of urine.

Or

(b) Write an essay on Urinary calculi.

20. (a) Explain the enzyme patterns in the diagnosis of muscle dystropy and bone disorders.

Or

(b) Enumerate the clinical significance of Lipase and cholinesterase.

———————

(6 pages) **Reg. No. :** .....

Code No. : 6501 **Sub. Code : ZBCM 33**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Bio Chemistry - Core

BIO TECHNOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. cDNA libraries are produced from ————————

(a) m-RNA

(b) t-RNA

(c) r-RNA

(d) None of these

2. Specific bio molecules which show easily detectable differences among different strains of a species or among different species is termed as _____

(a) DNA fingerprinting

(b) molecular markers

(c) molecular scissors

(d) RFLP

3. In gene therapy, the genetic defect is corrected by delivery of _____ gene into the individual

(a) incorrect (b) mutant

(c) normal (d) jumping

4. ZIFT is an acronym for

(a) zygote infra fallopian transfer

(b) zygote inter fallopian transfer

(c) zygote intra fallopian traction

(d) zygote inter fallopian traction

5. Which of the following plant part is free from the attack of the virus?

(a) Stem (b) Root

(c) Meristem (d) Leaves

6. Direct DNA uptake by protoplasts can be stimulated by

   (a) polyethylene glycol (PEG)

   (b) decanal

   (c) luciferin

   (d) all the above

7. Which of the following statements is not true for biosensors?

   (a) Biosensors convert to biological signal into an electrical signal

   (b) Biosensors are used to determine the concentration of substances even where they do not utilize a biological system directly

   (c) Biosensor consists of a vessel, or series of vessels, used to perform a desired conversion by enzymic means

   (d) All the above

8. What is a cell line?

   (a) Multi layer culture

   (b) Transformed cells

   (c) Multiple growth of cells

   (d) Sub culturing of primary culture

9. The organic material of the solid waste will decompose ————

(a) By the flow of water

(b) By the soil particles

(c) By the action of microorganisms

(d) By oxidation

10. Which of the following media is used in determining the colony characteristics of the isolate?

(a) Solid media (b) Semi-solid media

(c) Liquid media (d) Complex media

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Comment on DNA ligase ad Alkaline phosphatase.

Or

(b) Describe blunt end and sticky end ligation.

12. (a) Explain the application of DNA in diagnosis of any two infectious diseases.

Or

(b) How genetic material is delivered to cells?

13. (a) Explain the structure and features of Ti plasmid with a neat diagram.

Or

(b) Discuss the mechanisms of herbicide resistance in plants.

14. (a) Write about the natural and synthetic media of animal cell culture.

Or

(b) Discuss the production of amylase by using microbes.

15. (a) Explain the applications of single cell protein.

Or

(b) Describe the downstream processing in fermentation.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) What is DNA finger printing technology? Describe the steps involved in DNA finger printing.

Or

(b) What is pUC 18? Explain its structure with a neat diagram.

17. (a) Explain the application of DNA in diagnosis of genetic diseases.

Or

(b) Discuss in detail on recombinant subunit vaccines.

18. (a) Define micro propagation. What are the stages of micro propagation?

Or

(b) Define plant tissue culture. Explain the methods of plant tissue cultures in brief.

19. (a) What are transgenic animals? Discuss the applications of transgenic animals.

Or

(b) What are the components of vaccine? How vaccine are developed?

20. (a) Describe the disposal of solid waste in detail.

Or

(b) What are xenobiotics? How they are degraded by microbes?

———————

(6 pages) **Reg. No. :** .....

Code No. : 6502 **Sub. Code : ZBCM 34**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Bio Chemistry – Core

RESEARCH METHODOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. What is the correct sequence of actions in conducting an intervention based action research in education?

   (a) Act, observe, plan and reflect

   (b) Observe, plan, act and reflect

   (c) Plan, act, observe and reflect

   (d) Observe, plan, act and reflect

2. A statement about a population developed for the purpose of testing is called

(a) Hypothesis

(b) Hypothesis testing

(c) Level of significance

(d) Test-statistic

3. Failure to acknowledge the borrowed material is called

(a) Acknowledgement (b) Foot note

(c) Index (d) Plagiarism

4. References serve the purpose of

(a) Lending authenticity to the given content

(b) Insightful decision making

(c) Giving ornamental value to the research

(d) Exhibiting the great achievement

5. ———— is a set of elements taken from a larger population according to certain rules.

(a) Sample (b) Population

(c) Statistic (d) Element

6. The square of standard deviation is the

(a) Median (b) Geometric mean

(c) Harmonic mean (d) Variance

7. In hypothesis testing, the level of significance is the probability of committing a _____ error

(a) Type II (b) Type I

(c) Type III (d) Type IV

8. When the two regression lines coincide, then r is

(a) 0 (b) -1

(c) 1 (d) 0.5

9. The process of finding the relative location of genes on a chromosome is called

(a) Gene tracking

(b) Genome walking

(c) Genome mapping

(d) Chromosome tracking

10. Which one of the following is not the application of bio informatics?

(a) Drug designing

(b) Data storage and management

(c) Understand the relationship between organisms

(d) Isolation of genomic DNA

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write a features of good research design.

Or

(b) Identify the importance of research ethics.

12. (a) Outline the steps involved in thesis writing.

Or

(b) Describe the importance of tables and figures in writing thesis.

13. (a) Explain the parts of a table with an example.

Or

(b) What is frequency distribution? Explain.

14. (a) How do you test the significance level in statistics? Explain.

Or

(b) Discuss the type of 't' tests.

15. (a) Enumerate the applications of Bio informatics.

Or

(b) Find out the role of composite protein databases in bio informatics.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) What is hypothesis? Explain its purpose and types.

Or

(b) Describe the different types of research.

17. (a) Explain the logical format of thesis writing.

Or

(b) Discuss the following a. Impact factor b. Citation index c. H-index

18. (a) Analyze the merits and demerits of mean and median.

Or

(b) Find out the sources of secondary data collection.

19. (a) How do you test the correlation and regression coefficients?

Or

(b) Expand ANOVA. Explain the steps involved in its calculation.

20. (a) What are the secondary data bases available for retrieving protein sequences? Explain any two.

Or

(b) Analyze the importance of EMB net and NCBI.

———————