

**PGIIS-012-A-22****M.Sc. III Semester (CBCS) Degree Examination****BIOCHEMISTRY****Clinical Biochemistry and Hormones****Paper : SCT-3.1****Time : 3 Hours****Maximum Marks : 80*****Instructions to Candidates:*****Answer question No. 1 and any Four of the remaining**

1. Answer any Ten of the following. (10×2=20)
- a) What is Rh factor? Give its significance.
  - b) Mention role of Ca ions in blood coagulation.
  - c) Give molecular basis of thalassemia.
  - d) Mention any two clinical significance of amylases.
  - e) Give the causes and symptoms of UTI.
  - f) Mention role of bile acids, Name any two bile acids.
  - g) What is Van Den Bergh reaction? Give its significance.
  - h) What glycated haemoglobin? Mention its significance.
  - i) Outline structure of lipoprotein. Mention any two functions of it.
  - j) What is oroticaciduria?
  - k) What is carcinogenesis? Mention agents promoting it.
  - l) Mention the names of gastro intestinal hormones.
2. a) Discuss mechanisms of blood coagulation. How is it regulated?  
b) Discuss various renal function tests used in assessing kidney function. (7+8=15)
3. a) Give an account on various blood groups and their biochemistry.  
b) Describe clinical significance of SGOT and SGPT. (8+7=15)

4. a) How is bilirubin formed? Classify and explain different types of jaundice.  
b) What is hepatitis? Elaborate on hepatitis A and B and their treatment. (7+8=15)
5. a) Give molecular mechanism of following  
i) Galactosemia  
ii) PKU  
iii) Lesch Nyhan Syndrome  
iv) Gout  
b) Discuss aetiology, classification and management of Diabetes mellitus. (8+7=15)
6. a) Describe functions and disorders of hormones of thyroid.  
b) Explain the action of insulin and glucagon. (7+8=15)
7. Write notes on any **Three** of the following. (3×5=15)  
a) Abnormal hemoglobins.  
b) Hypo and Hyperacidity.  
c) Hyperlipoproteinemia  
d) Tumour suppressor genes.
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**PGIIS-010-A-22**

**M.Sc. III Semester Degree Examination**

**BIOCHEMISTRY**

**Metabolism - II**

**Paper : HCT - 3.1**

**Time : 3 Hours**

**Maximum Marks : 80**

***Instructions to Candidates:***

**Answer question No. 1 and any four of the remaining**

**Answer any ten the following.**

**(10×2=20)**

1. a) How is linoleate synthesized in the animal cell?
- b) What is alpha-oxidation?
- c) Write the functions of bile salts.
- d) What is leghemoglobin? Write its functions.
- e) Give the reactions of oxidative deamination.
- f) How is Indole-3 acetic acid synthesized?
- g) Give the composition of glutathione and its function.
- h) What is maple syrup urine disease? How is it caused?
- i) What is orotic acid urea? Give its molecular defect.
- j) How is Coenzyme A synthesized?
- k) How is fatty acid chain elongation takes place.?
- l) What is cumulative feedback inhibition?

2.
  - a) Explain the oxidation of odd chain fatty acids in the animal cell.
  - b) Explain the role of carnitine in the mitochondria.
  - c) How is C16 fatty acid is converted into myristic acid in the cell? (3×5=15)
3.
  - a) Describe the steps involved in the biosynthesis of palmitic acid
  - b) How is cardiolipin biosynthesized in the animal cell? (8+7=15)
4.
  - a) How is Homogentisic acid synthesized in the animal cell?
  - b) Explain the role of PLP.
  - c) Describe the excretion of urea from the animal body. (3×5=15)
5.
  - a) Write the steps involved in the formation of Chorismate.
  - b) Outline the steps involved in the biosynthesis of methionine. (8+7=15)
6.
  - a) Discuss the catabolism of pyrimidine nucleotides.
  - b) Describe the synthesis and regulation of purine nucleotides. (7+8=15)
7. Write notes on any **Three** of the following. (3×5=15)
  - a) Phospholipids.
  - b) Heme synthesis
  - c) Antifolic drugs.
  - d) Biosynthesis of FAD.

**PGIIS-011-A-22****M.Sc. III Semester Degree Examination****BIOCHEMISTRY****Immunology****Paper : HCT.3.2****Time : 3 Hours****Maximum Marks : 80*****Instructions to Candidates:*****Answer question 1 and any Four of the remaining****Answer any ten the following.****(10×2=20)**

1.
  - a) Distinguish between affinity and avidity of antibody.
  - b) What are secondary lymphoid organs? Name them.
  - c) What are DAMPs and PAMPs?
  - d) What are the markers of B and T lymphocytes?
  - e) What are single chain antibodies?
  - f) How do you achieve single step purification of IgG from an antiserum?
  - g) Give the principle of immunofluorescence technique.
  - h) What is SCID?
  - i) What is passive immunity? Give an example.
  - j) Give the salient features of germ line theory.
  - k) What is antibody titer?
  - l) How are heptanes produced?
2.
  - a) Give the general structure of an antibody. Give the classification and functions of antibody isotypes.
  - b) Discuss the role of neutrophils in innate and acquired immunity. **(8+7=15)**

3. a) Describe the mechanism of killing of infected cell by a cytotoxic T cell.  
b) Explain classical pathway of complement activation. Mention the effector functions. (7+8=15)
4. a) Explain the principle of ELISA. Compare direct and sandwich ELISA.  
b) Describe the mechanism of antibody heavy chain gene re-arrangement. Add a note on the factors influencing antibody diversity. (8+7=15)
5. a) Discuss why there is rejection in allotransplantation. Explain the strategies employed to reduce the rejection of allotransplantation.  
b) Give a detailed account on the T and B cell interaction in antibody production. Explain the processing and presentation of extracellular antigens. (8+7=15)
6. a) Name the types of allergy. Describe the mechanism of type - I allergy.  
b) What are vaccines? Explain any two methods of their production.  
c) What are monoclonal antibodies? Give their uses. (7+4+4=15)
7. Write a short notes on any **Three** of the following. (3×5=15)
- a) Radioimmuno assay.  
b) Immunodeficiency disorders.  
c) Immune surveillance in cancer.  
d) IgM
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PGIIS-013-A-22

M.Sc III Semester (CBCS) Degree Examination

BIOCHEMISTRY

Applied Biochemistry

Paper : OET-3.1

Time : 3 Hours

Maximum Marks : 80

## Instructions to Candidates

Answer question No. 1 and any four of the remaining.

Answer any Ten of the following.

(10×2=20)

1.
  - a) Define 'activity' and 'specific' activity' of an enzyme.
  - b) Mention the advantages of enzymes over a chemical catalyst.
  - c) Distinguish between primary and secondary metabolites giving an example each.
  - d) Define single cell proteins. Give an example.
  - e) What are microbial polysaccharides? Give an example.
  - f) What is 'microbial mining'? Mention the advantages of the same.
  - g) Write the principle and types of paper chromatography.
  - h) Write the principle and applications of HPLC.
  - i) What are ion exchanges? Give two examples.
  - j) What is biogas? Give its composition.
  - k) What is the mode of action of penicillin?
  - l) Define biotransformation giving an example.
2.
  - a) Discuss the classification of enzymes. Give an example each.
  - b) Enumerate biotechnological applications of enzymes. (7+8=15)
3.
  - a) Briefly outline the principle and methods of enzyme immobilization.
  - b) Discuss differences, advantages and disadvantages of SmF and SSF. (7+8=15)

4. a) Describe the production of biofuels.  
b) Write the principle and applications of gel permeation chromatography.  
c) Write the principle, types and applications of TLC. (7+4+4=15)
5. a) Describe the properties of industrial micro organisms.  
b) Briefly discuss the design and operation of a fermentor. (7+8=15)
6. a) Describe the production of tetracyclines and mention its mode of action?  
b) Write a note on raw materials used for SSF. (7+8=15)
7. Write notes on any **Three** of the following. (3×5=15)
- a) SDS-PAGE
  - b) Biofertilizers.
  - c) Downstream processing.
  - d) Affinity chromatography.
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