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PGIIIS-863 A-21
M.Sc. III Semester (CBCS) 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 of the following: (10×2=20)

1. a)   What are the end products of β oxidation of saturated odd chain fatty acid?

    b)   What is metabolic water?

    c)   Define α oxidation of fatty acids and mention its biological significance.

    d)   What is carnitine? Give its structure.

    e)   What is cholelithiasis?

    f)   Explain briefly 'Franz Knoop's classic experiment'.

    g)   Give comparison of fatty acid β oxidation and fatty acid biosynthesis.

    h)   What are statins? Give example.

    i)   Differentiate between '*de Novo*' and '*salvage*' pathways of nucleotide biosynthesis.

    j)   What is oxidative deamination?

    k)   How is creatine phosphate synthesised from creatine?

    l)   How atmospheric ammonia is assimilated?

2. a)   Enumerate the '*oxidation of palmitic acid*' through beta oxidation and give it's energetic.   (8+7=15)

    b)   Discuss the disorders of beta oxidation of fatty acids.

3. a)   Discuss various steps involved in cholesterol biosynthesis.   (8+7=15)

    b)   Explain the mechanism of biosynthesis of lysine.

4. a) Explain the nitrogen cycle. Add a note on its importance in plants. (8+7=15)

   b) Give an account on the regulation of nitrogenase complex and nitrogen reductase.

5. a) Outline the reactions involved in the urea cycle and explain its regulation. (8+7=15)

   b) Discuss the biosynthesis and importance of NAD and FAD.

6. a) Explain 'de novo' synthesis of pyrimidine nucleotides and its regulation. (8+7=15)

   b) Discuss the steps involved in the degradation of pyrimidines.

7. **Write notes on any Three of the following.** (3×5=15)

   a) Ketone bodies.

   b) Perxisomal oxidation of fatty acids.

   c) Inhibitors of nucleotide syntheses.

   d) Inborn errors of aromatic amino acid metabolism.

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PGIIIS-865 A-21
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.

Answer any **Ten** of the following.   **(10×2=20)**

1. a)   How do you obtain plasma and serum from the blood?

    b)   Mention the differences between nephritis and nephrosis.

    c)   What is ketosis? Give the symptoms of ketosis.

    d)   State the differences between the hypo and hyperacidity.

    e)   "Calcium can be considered as secondary messenger" justify the comment.

    f)   List any two differences between apoptosis and necrosis

    g)   Name any two cell death markers.

    h)   Mention the differences between microcytic and macrocytic anemias.

    i)   What are zymogens? Give an example.

    j)   State the role of vitamin K in blood coagulation.

    k)   What is ESR? Mention its importance.

    l)   Mention the sites of ROS generation in a cell.

2. a)   Explain the mechanism of blood coagulation.   **(7+8=15)**

    b)   Give a detail account on importance of kidney function assessment.

3. a)   Discuss the biochemical basis for jaundice.   **(7+8=15)**

    b)   Explain the fractional gastric analysis in detail.

4. a) Write a note on etiology, classification and laboratory investigations for diabetes.

(7+8=15)

b) Describe the mechanism of action of thyroid hormones.

5. a) Describe the glycogen storage diseases. (6+5+4=15)

b) Discuss on any two disorders of amino acid metabolism.

c) Add a note on the clinical significance of diagnostic markers.

6. a) Explain the risk factors and pathogenesis of atherosclerosis in detail. (6+5+4=15)

b) Discuss the general mechanism of action of steroid hormones.

c) State the role of caspases during apoptosis.

7. Write notes on any **Three** of the following. (3×5=15)

a) Liver function tests.

b) Agents promoting carcinogenesis.

c) Pancreatic hormones.

d) Tumor suppressor genes.

PGIIIS-864 A-21
M.Sc. III Semester (CBCS) Degree Examination
BIOCHEMISTRY
Immunology
Paper : HCT- 3.2

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)   What is acquired immunity? Give examples.

      b)   Name primary and secondary lymphoid organs?

      c)   Differentiate between an antigen and an immunogen?

      d)   What is CDR? Give its importance.

      e)   Mention the difference between pricepitinin and agglutinin?

      f)   What is complement? Give its function.

      g)   Give the function of TAP protein?

      h)   What are split genes?

      i)   How does the somatic mutations affect the immunoglobulin genes?

      j)   What is the function of aminopterin?

      k)   What is the function of *i* gene product of murine MHC?

      l)   What are vaccines? Classify them.

2.   a)   Outline different types of immunity.   (5+5+5=15)

      b)   Discuss the importance of secondary lymphoid organs.

      c)   Classify antigens? Add a note on the epitope characterization.

3. a) Explain the structure, function and characteristics of an IgG. **(5+5+5=15)**

    b) Outline the process of antigen independent maturation of T cells.

    c) Discuss the pricipitin and agglutinin reactions for disease diagnosis.

4. a) Explain the mechanism of activation of classical compliment pathway. **(5+5+5=15)**

    b) Explain the mechanism and use of Type I and Type IV hypersensitive reactions.

    c) Explain the principle process and application of ELISA.

5. a) Discuss the endogenic pathway of antigen processing and presentation?**(5+5+5=15)**

    b) Explain the Burnet's clonal selection theory of antibody production .

    c) Explain the induction of immune response by Tc cells.

6. a) Explain the process of production of monoclonal antibody. **(8+7=15)**

    b) Explain the process of preparation of subunit vaccine.

7. Write notes on any **Three** of the following. **(3×5=15)**

    a) RIA.

    b) MHC antigens.

    c) Mechanism of graft rejection.

    d) Allotypic and idiotypic determinants.