B.Sc. MICROBIOLOGY
FIRST SEMESTER (REPEAT)
BIOCHEMISTRY
BMB-102
[USE OMR FOR OBJECTIVE PART]

SET A

Duration: 3 hrs.

Full Marks: 70

(**Objective**)

Time: 30 mins.

Marks: 20

Choose the correct answer from the following:

$1 \times 20 = 20$

1. Photosynthesis is a .... process.
   a. Catabolic
   b. Anabolic
   c. Exothermic
   d. Metabolic

2. What is the proper designation for the unsaturated fatty acids in this lipid?
   a. 18:2 ($\Delta^{9,12}$)
   b. 18:2 ($\Delta^{6,9}$)
   c. 17:2 ($\Delta^{9,12}$)
   d. 17:2 ($\Delta^{5,8}$)

3. In the pentose phosphate pathway, the major products are.....................
   a. Ribulose and NADPH
   b. Ribulose and NADH
   c. Ribulose and NAD$^+$
   d. Ribulose and ATP

4. Which of the following enzyme catalyses the first step of glycolysis?
   a. Hexokinase
   b. Pyruvate kinase
   c. Glukokinase
   d. Phosphofructokinase 1

5. The repeating units of proteins are:
   a. Glucose units
   b. Amino acids
   c. Fatty acids
   d. Peptides

6. Nutritional polysaccharide is:
   a. Starch and glycogen
   b. Starch and chitin
   c. Starch and cellulose
   d. Starch and glucose

7. Enzyme which helps in changing shape of a molecule?
   a. Ligases
   b. Dehydrogenases
   c. Hydrolases
   d. Isomerases

8. The backbone of DNA is:
   a. Hydrophilic
   b. Hydrophobic
   c. Neutral
   d. Both hydrophilic and hydrophobic

9. During one Kreb cycle number of carbondioxide molecules released is:
   a. 1
   b. 2
   c. 3
   d. 4

10. Ramachandran plot is used for:
    a. Predicting the structure of an enzyme
    b. Predicting the structure of a protein
    c. Predicting the secondary of proteins from primary sequence
    d. All the above

11. The released energy obtained by oxidation of glucose is stored as:
    a. A concentration gradient across a   b. ADP
       membrane
    c. ATP   d. NAD⁺

12. The optimum temperature for photosynthesis is:
    a. 25-35°C   b. 10-15°C
    c. 35-40°C   d. 20-25°C

13. How many molecules of ATPs are synthesized per NADH oxidation?
    a. 2   b. 1
    c. 3   d. 4

14. Which of the following is the smallest carbohydrate – triose?
    a. Ribose   b. Glucose
    c. Glyceraldehyde   d. Dihydroxyacetone

15. A short length of DNA molecule has 80 thiamine and 80 guanine bases. The total
    number of nucleotide in the DNA fragment is:
    a. 160   b. 40
    c. 320   d. 640

16. Sphingomyelins are found in:
    a. Muscles   b. Nephrons
    c. Brain tissues   d. Hepatocytes

17. The synthesis of glucose from fats are called:
    a. Glycolysis   b. Krebs cycle
    c. Glycogenolysis   d. Gluconeogenesis

18. In what form does the product of glycolysis enter the TCA cycle?
    a. AcetylCoA   b. Pyruvate
    c. NADH   d. Glucose

19. What is the maximum wavelength that Tryptophan and tyrosine absorb?
    a. 280nm   b. 260nm
    c. 257nm   d. 230nm

20. Arrangement of nucleotides in DNA can be seen by:
    a. Ultracentrifuge   b. X-Ray crystallography
    c. Light microscope   d. Electron microscope

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(Descriptive)

[Answer question no.1 & any four (4) from the rest]

1. Define enzymes. Describe their classification and nomenclature.   3+7=10

2. Describe in detail the structure and function of mitochondria.   10

3. a) Write short note on zwitter ions.   5+5=10
   b) Write short note on peptide bonds.

4. Write a note on: 5+5=10
   a) Fate of pyruvate under aerobic and anaerobic condition.
   b) Pentose phosphate pathway.

5. Describe in detail: 5+5=10
   a) EMP pathway
   b) TCA cycle

6. a) Describe the classification of carbohydrates.   5+5=10
   b) Write the physical properties of carbohydrates.

7. a) What are lipids, how are they classified?   5+5=10
   b) Write the reaction involved when fatty acid is reacted with alkali?

8. Write a note on: 5+5=10
   a) Light reaction of Photosynthesis.
   b) Dark reaction of Photosynthesis.

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