

Seat No \_\_\_\_\_



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[12/A-15]

**SARDAR PATEL UNIVERSITY**  
**SEMESTER-VI**  
**B.Sc. EXAMINATION MICROBIOLOGY**  
**US06CMIC03**  
**(Microbial Biochemistry)**

Date: 01 /10/2022

Time: 3.30p.m. to 5.30p.m.

Day: Saturday

Total marks: 70

N.B: Figures on the right indicate marks.

**Q.1** Select the correct answer for each question from the given options. (10)

- 1 How many ATPs are produced when FADH<sub>2</sub> transfer it's electron to respiratory chain ?  
(a) 1 (b) 1.5  
(c) 2.5 (d) 3.5
- 2 F<sub>1</sub> has \_\_\_\_\_ polypeptide chains.  
(a) 9 (b) 8  
(c) 7 (d) 6
- 3 \_\_\_\_\_ is a valuable technique used for studying intermediary metabolism.  
(a) RNA splicing (b) Hybridization  
(c) Phage typing (d) Pulse labeling
- 4 6Phosphogluconic acid is converted to Ribulose-5 Phosphate by \_\_\_\_\_.  
(a) Reductase (b) Oxidative decarboxylation  
(c) Interconversion (d) Phosphorylation
- 5 Anaplerotic reaction means \_\_\_\_\_.  
(a) Throwing up (b) Throwing down  
(c) Filling up (d) Filling down
- 6 The acceptor molecule for the acetyl group and melonyl group is \_\_\_\_\_.  
(a) DCP (b) ATP  
(c) GTP (d) ACP
- 7 Complete  $\beta$ -oxidation of one molecule of Palmitoyl CoA yields \_\_\_ ATPs.  
(a) 180 (b) 118  
(c) 108 (d) 119
- 8 \_\_\_\_\_ discovered the involvement of Melonyl COA with Acetyl COA to form fatty acid.  
(a) Fritz knoop (b) Sahil Wakil  
(c) Efrain Racker (d) John Walker
- 9 All tansaminases require \_\_\_\_\_ coenzyme derived from VitaminB<sub>6</sub>.  
(a) TPP (b) Pyridoxal phosphate  
(c) Biotin (d) Lipoic acid
- 10 Which of the following is a common intermediate for aromatic amino acids?  
(a) B- aspartyl semialdehyde (b)  $\alpha$ -amino adipic acid  
(c) Chorismate (d) Prephanate

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**Q.2 (A) State if the given statements are True or False. (08)**

- 1 One gene – one enzyme hypothesis was proposed by Jacob & Monod .
- 2 E.D. biochemical pathway generating large amount of reducing power.
- 3 The general formula of Fatty acid is  $RCH_2CH_2.COOH$ .
- 4 Citrulline amino acid is regenerated during Urea cycle.

**(B) Give the appropriate answers for the given blanks.**

- 1 Fo component of ATP synthase is inhibited by \_\_\_\_\_.
- 2 In plants, glyoxylate cycle takes place in \_\_\_\_\_.
- 3 \_\_\_\_\_ is a poly unsaturated fatty acid.
- 4 \_\_\_\_\_ is a precursor for Isoleucine.

**Q.3 Give short answers to the following questions.(Attempt Any Ten) (20)**

- 1 Define: Secondary metabolism and Auxotroph .
- 2 Draw a chemical structure of ATP.
- 3 Define: ETC and Fermentation
- 4 Explain three irreversible reactions involved in gluconeogenesis.
- 5 In non-physiological state, how TCA cycle reactions are regulated?
- 6 Explain the four different Anaplerotic reactions.
- 7 Explain reaction where role of Acetyl CoA carboxylase is involved.
- 8 Define:  $\alpha$ -Oxidation and  $\omega$ -Oxidation of fatty acid.
- 9 What are the major differences between  $\beta$ -Oxidation of fatty acid and fatty acid biosynthesis?
- 10 Define: Transamination .
- 11 What is Stickland reaction?
- 12 Explain Oxidative deamination with its reaction.

**Q.4 Answer the following long questions:- (Attempt any FOUR) (32)**

1. Draw a neat labeled diagram of ATP Synthase and discuss its chemical composition and binding change mechanism.
2. Describe the use of biochemical mutants as a method of studying intermediary metabolism.
3. Write on: HMP Shunt with its energetics.
4. Write on: Hans Krebs cycle with its energetics.
5. Describe reactions involved in  $\beta$ -oxidation of Palmitoyl COA with its energetics.
6. Describe in detail about reactions involved in biosynthesis of fatty acid.
7. Discuss Krebs-Hansleit cycle.
8. Enlist and discuss the steps involved in biogenesis of murein.

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