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**SARDAR PATEL UNIVERSITY**  
**T.Y.B.Sc. EXAMINATION - SEMESTER-VI**

**MICROBIOLOGY – US06CMIC03**

**Microbial Biochemistry**

Date: 25-6-2022

Time: 10:00 AM to 12:00 PM

Day: Saturday

Total marks: 70

N.B: Figures on the right indicate marks.

Q.1 Multiple Choice Questions. 10

- 1 ATP Synthase is also known as \_\_\_\_\_.  
(a) H<sup>+</sup>-ATPase (b) F<sub>o</sub>-ATPase  
(c) F<sub>1</sub>-ATPase (d) ADPase
- 2 \_\_\_\_\_ got Nobel Prize in 1997 for Binding Change Mechanism.  
(a) John Walker (b) Paul Boyer  
(c) Efrain Racker (d) Peter Mitchell
- 3 Genetic loss of the ability to synthesize growth factor is known as \_\_\_\_\_.  
(a) Prototroph (b) Autotroph  
(c) Heterotroph (d) Auxotrophic mutant
- 4 Anaplerotic reaction means \_\_\_\_\_.  
(a) Throwing up (b) Throwing down  
(c) Filling up (d) Filling down
- 5 E.D. pathway is operated in \_\_\_\_\_.  
(a) *Pseudo. saccharophila* (b) *E. coli*  
(c) *B. subtilis* (d) *Nitrobacter*
- 6 \_\_\_\_\_ scientist reported that fatty acids were degraded by removal of two carbon at a time.  
(a) Sahil Wakil (b) Fritz Knoop  
(c) John Walker (d) Efrain Racker
- 7 Biosynthesis of fatty acids takes place in \_\_\_\_\_.  
(a) Endoplasmic reticulum (b) Mitochondria  
(c) Cytosol (d) Liver
- 8 Which carrier lipid transfer UDP-N-acetyl glucosamine from the membrane?  
(a) Porin (b) C<sub>55</sub>-isoprenoid  
(c) Sphingolipid (d) Steroid
- 9 \_\_\_\_\_ reaction is the degradation of amino acids in pair under anaerobic condition.  
(a) Stickland reaction (b) Acetyl COA synthesis  
(c) Murein synthesis (d) Urea synthesis
- 10 \_\_\_\_\_ inhibit the anthranilate synthase enzyme.  
(a) Tryptophan (b) Lysine  
(c) Phenylalanine (d) Tyrosine

- Q.2 A**      **State whether the given statements are true or false.**      **04**
- 1      Fo component of ATP synthase is inhibited by Antimycin A. \_\_\_\_\_
  - 2      Arsenite will inhibit 1,3PGA-----→ 3PGA reaction. \_\_\_\_\_
  - 3      ω -oxidation with TCA cycle & respiratory chain provides large amount of ATP than any other energy source. \_\_\_\_\_
  - 4      Arginase enzyme convert arginine to ornithine and urea. \_\_\_\_\_

- B**      **Fill in the blanks with appropriate answer.**      **04**
- 1      In eukaryotes, the ETC carriers are located in the \_\_\_\_\_.
  - 2      The inhibition of glycolysis by oxygen is known as \_\_\_\_\_.
  - 3      The acceptor molecule for the acetyl group and melonyl group is \_\_\_\_\_.
  - 4      \_\_\_\_\_ was able to isolate NACGANACMA<sub>1</sub> from the cellwall of pentapeptide bacteria.

- Q.3**      **Give SHORT answers to the following questions. (Attempt Any ten)**      **20**

- 1      Explain: Role of ATP.
- 2      Define: Secondary metabolism and Fermentation.
- 3      Draw a chemical structure of ATP.
- 4      Explain the four different anaplerotic reactions.
- 5      Give names of microorganisms where Calvin cycle is operated.
- 6      Give names of three enzymes and five co-enzymes required by PDH complex.
- 7      What are the major differences between β-oxidation of fatty acid and fatty acid biosynthesis.
- 8      Define:- α-oxidation of fatty acid.
- 9      Which are the three protein components of the Acetyl CoA Carboxylase.
- 10      Define:-Transamination
- 11      Explain about role of bactoprenol.
- 12      How many moles of ATP and enzymes are required by Urea cycle?

- Q.4**      **Answer the following LONG Question:- (Attempt any four)**      **32**

- 1      Describe: Use of biochemical mutant for studying intermediary metabolism.
- 2      Define ETC and Discuss organization, components and role of ETC.
- 3      Write on: E.M.P. pathway with its energetics.
- 4      Write on following:-
  - (a) Gluconeogenesis.
  - (b) Glyoxylate by pass pathway.
- 5      Discuss various steps involved in β-Oxidation of Palmitoyl CoA with its energetics.
- 6      Discuss various steps involved in biosynthesis of saturated fatty acid.
- 7      Write about Kreb - Hansleit cycle.
- 8      Discuss the biochemical synthesis of aspartate family of amino acids.

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