

B.N.BANDODKAR COLLEGE OF SCIENCE, THANE
SECOND TERM EXAMINATION, MARCH 2010-2011

S.Y. B.Sc.

MARKS: 60

BIOTECHNOLOGY PAPER III

TIME: 2 hrs

- N.B.**
1. All the questions are compulsory.
 2. Illustrate your answers with suitable examples.
 3. All Questions carry equal marks.

Q. 1.A. ANSWER THE FOLLOWING (any 3) 12

1. Discuss the different complexes involved in ETC.
2. Explain Reductive TCA with chemical structures.
3. Write a short note on zone electrophoresis.
4. Short notes on high energy compounds.
5. Draw structure of Nicotinic acid and state its function.

Q.1.B. ATTEMPT THE FOLLOWING (any 3) 3

1. Two examples of Photosynthetic pigments
2. Define Entropy
3. Two examples of Inhibitors of ETC
4. Gibb's free energy change
5. Two examples of Applications of PAGE

Q2.B. ANSWER THE FOLLOWING (any 3) 12

1. Justify ATP is the energy currency of the cell.
2. Draw structure and explain function of any one water soluble vitamin.
3. Explain why standard free energy change of ATP hydrolysis is very high.
4. Explain the function of any lipid soluble vitamin.

Q2. A. ATTEMPT THE FOLLOWING (any 3) 3

1. Draw structure of ATP
2. State second law of thermodynamics.
3. Explain first law of thermodynamics.
4. Draw structure of vitamin.
5. Give two function of thiamine.

Q.3.A. ANSWER THE FOLLOWING (any 3) 12

1. Diagrammatically explain Z pathway.
2. Discuss in detail the structure of Photosynthetic apparatus.
3. Explain the structure of FoF1ATPase molecule.
4. Mitochondrial membrane plays a vital role in ETC, Justify.

Q. 3. B. GIVE ROLE OF THE FOLLOWING (any 3) 3

1. Reaction center
2. Fo stalk
3. PSII
4. Antenna chlorophyll
5. Thylakoids
6. Complex-IV

Q.4.A. ANSWER THE FOLLOWING (any 3) 12

1. Explain the rate of migration with respect to
 - i) Buffer.
 - ii) Supporting media.
2. Write a short note on Agarose gel electrophoresis.
3. Write a short note on confocal microscopy.
4. Write a short note on TEM.

Q.4.B. ANSWER THE FOLLOWING (any 3) 3

1. State ohms law.
2. Explain focal point.
3. Explain working distance in microscope.
4. Flurochrome.
5. Electrophoretic mobility.

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Q. 1.A. ANSWER THE FOLLOWING (any 3) 12

1. Explain the flow of electrons in ETC through different complexes.
2. Non-cyclic photophosphorylation in chloroplast.
3. Write a short note on TEM.
4. Explain why standard free energy change of ATP hydrolysis is very high.
5. Draw structure and explain function of any one water soluble vitamin.

Q.1.B. ATTEMPT THE FOLLOWING 3

1. Two examples of carriers of ETC.
2. Two applications of agarose electrophoresis.
3. Draw structure of ATP

Q2. A. Answer the following (any 3) 12

1. Give the function of riboflavin
2. Explain functions of any one lipid soluble vitamin.
3. Justify ATP is the energy currency of the cell.
4. Explain the conditions required for a reaction to be spontaneous.

Q 2. B. EXPLAIN THE FOLLOWING TERMS (any 3) 3

1. Gibb's free energy
2. Give two functions of Vitamin C
3. Give example of high energy compound.
4. Draw structure of Vitamin B6 (Pyridoxin).
5. Explain exothermic process.

Q.3.A. ANSWER THE FOLLOWING (any 3) 12

1. Diagrammatically explain Z pathway.
2. Discuss in detail the structure of chloroplast.
3. Explain ATP formation in mitochondria by FoF1ATPase.
4. Explain Reductive TCA with chemical structures.

Q. 3. B. GIVE ROLE OF THE FOLLOWING (any 3) 3

- | | | |
|------------------------|----------------|--------------|
| 1. Ubiquinone | 2. F1 sphere | 3. PSI |
| 4. Antenna chlorophyll | 5. Carotenoids | 6. Complex-I |

Q. 4.A. ANSWER THE FOLLOWING (any 3) 12

1. Justify: various factors influence rate of migration during electrophoresis
2. Write a short note on PAGE
3. Explain in brief the procedure behind paper chromatography.
4. Give a short note on fluorescent microscopy.

Q. 4.B. ANSWER THE FOLLOWING (any 3) 3

1. State ohms law.
2. Explain focal length.
3. Explain microscope resolution.
4. Explain potential gradient.
5. Stains used in staining SDS-PAGE gel.