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| **ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27** |
| **col LOGO outlineM.Sc. MICROBIOLOGY – II SEMESTER** |
| **SEMESTER EXAMINATION: APRIL 2019** |
| **MB 8118: Microbial Physiology**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Time- 2 1/2 hrs** | |  | **Max Marks-70** | | |  | |  |  |  |  |  |  |  | | **This paper contains 2printed pages and 4 parts**  Register Number:  DATE:08-04-2019  DATE:  **I. Answer any Five of the following 5x3=15**  1. What are Epimers? How many possible epimers of D-glucose exist?  2. What is the overall reaction catalyzed by Pyruvate dehydrogenase complex?  3.What is the complete base composition of adouble-stranded eukaryotic DNA that contains 22%  Guanine?  4. Why is the α-helix more prevalent than other conformations?  5. Name the four classes of ATP-powered pumps that produce active transport of ions and  molecules. Indicate which of these classes transport ions only and which transport primarily  small molecules.  6.What features distinguish enzymes that undergo allosteric control from those that obey the  Michaelis-Menten equation?  7. How does the conversion of Pyruvate to Ethanol take place in Alcohol fermentation?  **II. Answer any Five of the following 5x5=25**  8.Outline the events that take place at the photosynthetic reactioncenter in *Rhodopseudomonas*.  9.Explain how many ATPs can be produced from one molecule of glucose aerobically?  10. What are the models use to explain the binding of substrate to an enzyme?  11. Explain the formation of peptide bond between two amino acids?  12.Summarize the steps in the electron transport chainfrom NADH to oxygen.  13. Describe the β-oxidation pathway of Palmitic acid.  14. Explain the different kinds of non-covalent interactions that stabilize the tertiary structure of  proteins.  **III. Answer any Two of the following 2x10=20**  15 a. The following half reactions play important rolesin metabolism.  1/2 O2 + 2H+ + 2e–→ 3H2O  NADH + H+ →3NAD+ + 2H+ + 2e–  Which of these two is a half reaction of oxidation and which one is ahalf reaction of reduction?  Write the equation for the overall reaction and identify the oxidizing agent and the reducing  agent? **5**  b. Explain heat shock response in microbes. What are the different proteins induce as a  response to heat shock? **5**  16. Describe the Urea cycle. How is it linked to the Citric acid cycle?  17a. Differentiate between oxygenic and anoxygenic photosynthesis. **5**  b.There are two physiologically irreversible reaction in glycolysis starting with glucose-6-  phosphate and ending with pyruvate. Which ones are they? How is glycolysis different from the  ED pathway. **5**  **IV. Answer the following 1x10=10**  18 a.Suggest a reason why heating a solution containingan enzyme markedly decreases its  activity. **5**  b. A person is suffering from*diabetes mellitus*, a condition that causes high levels of glucose in  urine and blood. As a biochemistry student how will you diagnose it? **5** | | | | | | | |  | | | | | | | |  | | | | | | | |