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| Image result for adamas university logo | **ADAMAS UNIVERSITY**  **END SEMESTER EXAMINATION**  (Academic Session: 2020 – 21) | | |
| **Name of the Program:** | B. TECH | **Semester:** | I |
| **Paper Title:** | LIFE SCIENCE | **Paper Code:** | SBT41108 |
| **Maximum Marks:** | 50 | **Time Duration:** | 3 Hrs |
| **Total No. of Questions:** | 17 | **Total No of Pages:** | 3 |
| *(Any other information for the student may be mentioned here)* | 1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. 2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. 3. Assumptions made if any, should be stated clearly at the beginning of your answer. | | |

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| **Group A**  **Answer All the Questions (5 x 1 = 5)** | | | | | | | | | | | | | | | | | | | |
| 1 | Define a prokaryotic cell. | 1 | | | | **Remembering** | | | | | | | **CO1** | | | | | | |
| 2 | Explain the term enzyme. | 1 | | | | **Understanding** | | | | | | | **CO2** | | | | | | |
| 3 | Which types of lamps are used in UV-Visible spectrophotometer ? | 1 | | | | **Understanding** | | | | | | | **CO3** | | | | | | |
| 4 | Electrophoresis is also known as Molecular sieving, explain why? | 1 | | | | **Analyzing** | | | | | | | **CO4** | | | | | | |
| 5 | What is the name of an enzyme that is not a protein molecule? | 1 | | | | **Analyzing** | | | | | | | **CO5** | | | | | | |
| **Group B**  **Answer Allthe Questions (5 x 2 = 10)** | | | | | | | | | | | | | | | | | | | |
| 6 a) | i)What do you mean by Competitive inhibition?  ii) What is phospholipid? | | 1  1 | | | | **Remembering** | | | | | | | **CO1** | | | | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | |
| 6 b) | i)Define the International Unit of an enzyme.  ii)What is the relation between IU and Katal. | | | 1  1 | | | | **Remembering** | | | | | | | **CO1** | | | | |
| 7 a) | Summarize the types of centrifuge along with their usage. | | | 2 | | | | **Understanding** | | | | | | | **CO2** | | | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | |
| 7 b) | What is PAGE? Discuss its applications. | 2 | | | | | **Remembering** | | | | **CO2** | | | | | | | | |
| 8 a) | What do you mean by essential amino acid? Give example. | 2 | | | | | **Analyzing** | | | | **CO3** | | | | | | | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | |
| 8 b) | Summarize the types of spindle fibre and their orientation during mitosis. | | | | 2 | | | | **Understanding** | | | | **CO3** | | | | | | |
| 9 a) | Distinguish between benign and malignant tumour. | | | | 2 | | | | **Analyzing** | | | | **CO4** | | | | | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | |
| 9 b) | Distinguish between Density gradient and Differential Centrifugation. | | | | 2 | | | | **Analyzing** | | | | | | | **CO4** | | | |
| 10 a) | Explain Isoelectric point with example. | | | | 2 | | | | **Applying** | | | | | | | **CO5** | | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | |
| 10 b) | Tell the example of two proteins show tertiary and quarternary protein structure. | | | | 2 | | | | **Remembering** | | | | | | | | | **CO5** | |
| **Group C**  **Answer Allthe Questions (7 x 5 = 35)** | | | | | | | | | | | | | | | | | | | |
| 11 a) | 1. Tell the principle of electrophoresis and present the electrophoretic mobility of a sample in numerical form. 2. What is the utility of agarose gel electrophoresis and polyacrylamide gel electrophoresis and one disadvantage for this. | | | | 3  2 | | | | **Remembering** | | | | | | | | **CO1** | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | |
| 1. b) | 1. What are the factor that affect rate of enzymatic reaction?   ii)What is activation energy? | | | | 3  2 | | | | **Remembering** | | | | | | | **CO1** | | | |
| 12 a) | Match the following words   |  |  | | --- | --- | | **A** | **B** | | 1. i. Plant Cell | 1. anionic detergent | | 1. ii. SDS | 1. Autographs | | 1. iii. Spectrophotometer | 1. tumor suppressor | | 1. iv*. E. coli* | 1. Concentration measurement | | 1. v. *p53* | 1. Bacteria | | | | | 5 | | | | **Remembering** | | | | | | | **CO2** | | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | |
| 12 b) | Demonstrate the Lambert –Beer’s Law with their mathematical equation . | | | | 5 | | | | **Understanding** | | | | | | **CO2** | | | | |
| 13 a) | Illustrate the characteristics of enzyme. | | | | 5 | | | | **Understanding** | | | | | | **CO3** | | | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | |
| 13 b) | Relate the importance of *p35* gene in tumor formation? | | | | 5 | | | | **Analyzing** | | **CO3** | | | | | | | | |
| 14 a) | A crude cell extract contained 20 mg/ml protein, which catalyzed the formation of 30 nmoles of product in 1 minute in 0.5 ml. Evaluate the activity and specific activity of enzyme in this cell free extract. | | | | 5 | | | | **Analyzing** | | | | | | **CO4** | | | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | | |
| 14 b) | State Michaelis-Menten equation. What is Km? | | | | 3+2 | | | | **Understanding** | | | | | | | | | | **CO4** | |
| 15 a) | A solution containing 2 g/litre of a light absorbing substance in 1 cm cuvette transmits 75% of the incident light of the incident light of a certain wavelength.Evaluate the transmission of a solution containing 6gm/litre . | | | | 5 | | | | **Evaluating** | | | | | | | | | | **CO4** | |
| **(OR)** | | | | | | | | | | | | | | | | | | | | |
| 15 b) | Elaborate the steps of mitosis with suitable diagrams. | | | | 5 | | | | **Creating** | | | | | | | | **CO4** | | | |
| 16 a) | The power house of eukaryotic cell contains its own genome. Do you agree with this statement if yes then discuss why? | | | | 5 | | | | **Evaluating** | | | | | | | | **CO5** | | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | | |
| 16 b) | RNA is unstable in alkaline medium – Explain. | | | | 5 | | | | **Analyzing** | | | **CO5** | | | | | | | | |
| 17 a) | What are reducing sugars? Explain with example. | | | | 5 | | | | **Evaluating** | | **CO5** | | | | | | | | | |
| **(OR)** | | | | | | | | | | | | | | | | | | | | |
| 17 b) | Suppose you have been given a test tube containing different DNA fragments of 20bp, 100bp, 300bp and 500b. Which technique you need to follow to separate DNA from the given sample, demonstrate the method and its principle also discuss the expected results. | | | | 5 | | | | | **Creating** | **CO5** | | | | | | | | | |