

**SCHOOL OF COMPUTER SCIENCE AND APPLICATIONS**

**Odd Semester 2024-2025**

**Assignment III**

Programme: PG – MCA Course Code: M23DE0101

Semester: I Course Title: Mathematics for Computer Applications

Section: A Name of the Faculty: Dr. M Vinayaka Murthy

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| **Sl.No** | **Assignment Question** | **CO** | **PO** | **PSO** |
| **1.** | A random variable X has the following probability function:   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | x | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | P(x) | a | 3a | 5a | 7a | 9a | 11a | 13a | 15a | 17a |   i) find the value of ‘a’, ii) P( 2 ≤ X ≤ 5), iii) Determine the distribution function of x | **3** | **1,2** | **1,3** |
| 2 | Given the following bivariate probability distribution,   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | X \ Y | 1 | 2 | 3 | 4 | 5 | 6 | | 0 | 0 | 0 |  |  |  |  | | 1 |  |  |  |  |  |  | | 2 |  |  |  |  | 0 |  |   Obtain i) P(X ≤ 1, Y = 2) ii) P( Y = 3), iii) P( X < 3, Y < 4), iv) marginal distribution of X and Y, | **3** | **1,3** | **1,2** |
| 3. | Verify the function  is PDF or not. Hence determine its mean. | **3** | **1,3** | **1,2** |
| 4 | Given the following Joint Probability distribution,   |  |  |  |  | | --- | --- | --- | --- | | Y \ X | 0 | 1 | 2 | | 0 | 0 |  |  | | 1 |  |  |  | | 2 |  |  |  |   Obtain i) Marginal distribution of X and Y, ii) the conditional distribution of X given Y = 1 | **3** | **1,3** | **1,2** |
| 5 | The number of accidents occurring in a city in a day is a Poisson variate with mean 0.8. Find the probability that on a randomly selected day i) there are no accidents, ii) there are accidents. | **3** | **1,2** | **1,3** |
| 6 | The length of a telephone conversation has been found to have an exponential distribution with mean 3 minutes. What is the probability that a call may last more than 1 minute? | **3** | **1,2** | **1,2** |
| 7 | A random variable X has the following probability function:   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | x | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | P(x) | 0 | k | 2k | 2k | 3k | k2 | 2 k2 | 7 k2 + k |   i) find the value of k, ii) P( 1 < X < 6), iii) Determine the distribution function of x | **3** | **1,2** | **1,2** |
| 8 | The number of persons joining a cinema queue in a minute has Poisson distribution with parameter 5.8. Find the probability that i) no one joins the queue, ii) At least one person’s join the queue. | **3** | **1,2** | **1,3** |
| 9 | Let X is normal variate with mean 42 and standard deviation 4. Find the probability that a value taken by X is i) less than 50, ii) between 43 and 46. | **3** | **1,2** | **1,3** |
| 10 | Given the following bivariate probability distribution,   |  |  |  |  | | --- | --- | --- | --- | | Y \ X | -1 | 0 | 1 | | 0 |  |  |  | | 1 |  |  |  | | 2 |  |  |  |   Obtain i) verify PDF or not and find marginal distribution of X and Y, ii) the conditional distribution of X given Y = 2 | **3** | **1,2** | **1,3** |
| 11 | Let X is normal variate with mean 45 and standard deviation 4. Find the probability that a value taken by X is between 42 and 48. | **3** | **1,2** | **1,2** |
| 12 | The life time of a certain kind of battery is a random variable which has exponential distribution with mean of 250 hours, find the probability that such a battery will last anywhere between 300 and 500 hours | **3** | **1,2** | **1,3** |



**Subject Teacher H O D Director**