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|  | **ENGINEERING MATHEMATICS IV**  **(AAS0402)**  **UNIT-IV** | | **SESSION: 2022-23** |
| **CLASS/SEM: (IT)- IV(EVEN)** |
| Assignment Given Date: 20/04/23  Assignment Submission Date: 30/04/23 | | Maximum Points: 100 | |
| Weightage in University Exam: 34 Marks | |
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**Note: Write solution of each question in clear handwriting.**

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| Q. N. | Question Statement | Pts | CO | BLOOM’S KNOWLEDGE LEVEL |
| 1 | If is a random variable for which and  Find the values of and such that has expectation 0 and variance 1. | 5 | 4 | K5 |
| 2 | Obtained the moment generating function of the random variable having probability distribution  f  Also determine mean and variance of the distribution. | 5 | 4 | K5 |
| 3 | In 800 families with 5 children each ,how many families would be expected to have   1. boys and 2 girls 2. No girl 3. At most 2 girls 4. Either 2 or 3 boys (Assume equal probabilities for boys and girls) | 5 | 4 | K5 |
| 4 | The probability that a bulb produced by a factory will fuse after a use 0f 150 days is 0.05. find the probability that out of 5 such bulbs   1. None 2. Atmost one 3. More than one 4. At least one will fuse after 150 days of use | 10 | 4 | K3, K5 |
| 5 | Fit a binomial distribution to the data given in the following table:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | 0 | 1 | 2 | 3 | 4 | |  | 24 | 41 | 28 | 5 | 2 | | 10 | 4 | K3, K5 |
| 6 | It is given that 2% of the electric bulbs manufactured by a company are defective.Using Poisson distribution find the probability that a sample of 200 bulbs will contain   1. No defective bulb 2. Two defective bulbs 3. Atmost three defective bulbs. | 10 | 4 | K5 |
| 7 | Fit a Poisson distribution to the following data and calculate theoretical frequencies:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | 0 | 1 | 2 | 3 | 4 | |  | 122 | 260 | 15 | 2 | 1 | | 10 | 4 | K2, K5 |
| 8 | In a test on 2000 electric bulbs,it was found that the life of a particular make, was normally distributed with an average life of 2040 hours and S.D. of 60 hours, estimate the number of bulbs likely to burn for   1. More than 2150 hours 2. Less than 1950 hours 3. More than 1920 hours but less than 2160 hours | 10 | 4 | K5 |
| 9 | In a distribution exactly Normal, 7% of the items are under 35 and 89% are under 63. What are the mean and Standard deviation of this Distribution? | 10 | 4 | K5 |
| 10 | Suppose that longevity of a light bulb is exponential with mean lifetime of 8 years. If a bulb has already lasted at least 12 years,  find the probability that it will last a total of over 19 years. | 10 | 4 | K5 |

**Answer:**

1. **0.2, 2**
2. **250, 25, 400, 25**
4. **0.0183, 0.1465, 0.4332**
5. **67,134,1909**
6. **50.3, 10.33**
7. **0.4169**