

Assignment

1	The life length X of an electronic component follows an exponential distribution. There are 2 processes by which the component may be manufactured. The expected life length of the component is 100 h. if process I is used to manufacture, while it is 150 h. if process II is used. The cost of manufacturing a single component by process I is Rs. 10, while it is Rs. 20 for process II. Moreover if the component lasts less than the guaranteed life of 250 h., a loss of Rs. 70 is to be borne by the manufacturer. Which process is advantageous to the manufacturer?	2																		
2	In an examination the mean of marks scored by 20,000 students is 50 and the standard deviation is 15. Assuming distribution to be normal find (i) the number of students who scored marks between 35 and 75, (ii) the limits between which the marks of the middle 60% students lie.	2																		
3	The daily consumption of milk in excess of 20,000 litres in a town is approximately exponentially distributed with parameter $1/3000$. The town has a daily stock of 35,000 L. what is the probability that of 2 days selected at random, the stock is insufficient for both days?	2																		
4	The RVs a and b are independently and uniformly distributed in the intervals $(0,6)$ and $(0,9)$ respectively. Find the probability that the roots of the quadratic equation $x^2 - ax + b = 0$ are real.	2																		
5	Out of 800 families with 4 children each, how many families would be expected to have i). 2 boys and 2 girls ii). At least 1 boy iii). At most 2 girls. Assume equal probability for boys and girls.	2																		
6	The income tax, of a man has exponential distribution with pdf is given by: $f(x) = \begin{cases} \frac{1}{4} e^{-x/4}, & x \geq 0 \\ 0, & x < 0 \end{cases}$ If income tax is levied at the rate of 5%, what is the probability that his income exceed Rs. 10,000?	2																		
7	Find the coefficient of correlation between height of father and height of son, the two lines of regression from the following data. Also estimate height of son if father's height is 84. <table border="1"><tr><td>Height of father</td><td>65</td><td>66</td><td>67</td><td>67</td><td>68</td><td>69</td><td>71</td><td>73</td></tr><tr><td>Height of son</td><td>67</td><td>68</td><td>64</td><td>68</td><td>72</td><td>70</td><td>69</td><td>70</td></tr></table>	Height of father	65	66	67	67	68	69	71	73	Height of son	67	68	64	68	72	70	69	70	3
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Submission Date : On or before 17/10/2019