

SPRING – 2016 - ASSIGNMENT

PROGRAM	MCA(REVISED FALL 2012)
SEMESTER	FOURTH
SUBJECT CODE & NAME	MCA4020- PROBABILITY AND STATISTICS
CREDIT	4
BK ID	B1779
MAX. MARKS	60

Answer all the questions

Q. No.	Questions	Total Marks																								
1	Three machines A, B and C produce respectively 60%, 30% and 10% of the total number of items of a factory. The percentage of defective output of these machines are respectively 2%, 3% and 4%. An item is selected at random and is found to be defective. Find the probability that the item was produced by machine C.	10																								
2	Find the constant k so that $f(x, y) = \begin{cases} k(x+1)e^{-y}, & 0 < x < 1, y > 0 \\ 0 & \text{elsewhere} \end{cases}$ Is a joint probability density function. Are X and Y independent?	10																								
3	The data shows the distribution of weight of students of 1 st standard of a school. Find the quartiles. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Class Interval</th> <th>13 - 18</th> <th>18 - 20</th> <th>20 - 21</th> <th>21 - 22</th> <th>22 - 23</th> <th>23 - 25</th> <th>25 - 30</th> </tr> </thead> <tbody> <tr> <td>Frequency</td> <td>22</td> <td>27</td> <td>51</td> <td>42</td> <td>32</td> <td>16</td> <td>10</td> </tr> </tbody> </table>	Class Interval	13 - 18	18 - 20	20 - 21	21 - 22	22 - 23	23 - 25	25 - 30	Frequency	22	27	51	42	32	16	10	10								
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Frequency	22	27	51	42	32	16	10																			
4	Fit a trend line to the following data by the freehand method: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Year</th> <th>Production of wheat (in tonnes)</th> <th>Year</th> <th>Production of wheat (in tonnes)</th> </tr> </thead> <tbody> <tr> <td>1995</td> <td>20</td> <td>2000</td> <td>25</td> </tr> <tr> <td>1996</td> <td>22</td> <td>2001</td> <td>23</td> </tr> <tr> <td>1997</td> <td>24</td> <td>2002</td> <td>26</td> </tr> <tr> <td>1998</td> <td>21</td> <td>2003</td> <td>25</td> </tr> <tr> <td>1999</td> <td>23</td> <td>2004</td> <td>24</td> </tr> </tbody> </table>	Year	Production of wheat (in tonnes)	Year	Production of wheat (in tonnes)	1995	20	2000	25	1996	22	2001	23	1997	24	2002	26	1998	21	2003	25	1999	23	2004	24	10
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5	Let X be a random variable and its probability mass function is $p(X = r) = q^{r-1}p, r = 1, 2, 3, \dots$ Find the m.g.f. of X and hence its mean and variance.	10																								



6	The diastolic blood pressures of men are distributed as shown in table. Find the standard deviation and variance.						10	
	Pressure(men	78-80	80-82	82-84	84-86	86-88		88-90
	No. of Men	3	15	26	23	9		4