SMU SIKKIM MANIPAL UNIVERSITY
DIRECTORATE OF DISTANCE EDUCATION

ASSIGNMENT

DRIVE	**WINTER – 2016**
PROGRAM	**MCA(REVISED FALL 2012)**
SEMESTER	**4**
SUBJECT CODE & NAME	**MCA4020- PROBABILITY AND STATISTICS**
BK ID	**B1779**
CREDITS	**4**
MARKS	**60**

Note: Answer all questions. Kindly note that answers for 10 marks questions should be approximately of 400 words.

<table>
<tr><th>Q. No.</th><th>Question</th><th>Total Marks</th></tr>
<tr><td>1</td><td>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.</td><td>10</td></tr>
<tr><td>2</td><td>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?</td><td>10</td></tr>
<tr><td>3</td><td>The data shows the distribution of weight of students of 1st standard of a school. Find the quartiles.
<table>
<tr><td>Class Interval</td><td>13 - 18</td><td>18 - 20</td><td>20 - 21</td><td>21 – 22</td><td>22 - 23</td><td>23 - 25</td><td>25 – 30</td></tr>
<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>
</table></td><td>10</td></tr>
<tr><td>4</td><td>Fit a trend line to the following data by the freehand method:
<table>
<tr><th>Year</th><th>Production of wheat (in tonnes)</th><th>Year</th><th>Production of wheat (in tonnes)</th></tr>
<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>
</table></td><td>10</td></tr>
<tr><td>5</td><td>Let X be a random variable and its probability mass function is</td><td>10</td></tr>
</table>

	$p(X = r) = q^{r-1}p, r = 1,2,3, \ldots$ Find the m.g.f. of X and hence it's mean and variance.	
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