

**Shivaji University, Kolhapur**  
**S.Y.B.Tech. Computer Science & Engineering(Data Science) (Semester -III)**

**Question Bank**

**Applied Mathematics (CBCS)**

**Sub. Code: 83940**

1	Find the equations of the lines of regression and also the coefficients of correlation from following data. <table><tr><td><math>x:</math></td><td>62</td><td>64</td><td>65</td><td>69</td><td>70</td><td>71</td><td>72</td><td>74</td></tr><tr><td><math>y:</math></td><td>126</td><td>125</td><td>139</td><td>145</td><td>165</td><td>152</td><td>180</td><td>208</td></tr></table>	$x:$	62	64	65	69	70	71	72	74	$y:$	126	125	139	145	165	152	180	208				
$x:$	62	64	65	69	70	71	72	74															
$y:$	126	125	139	145	165	152	180	208															
2	Find the coefficients of correlation and regression lines to the following data: <table><tr><td><math>x:</math></td><td>5</td><td>7</td><td>8</td><td>10</td><td>11</td><td>13</td><td>16</td></tr><tr><td><math>y:</math></td><td>33</td><td>30</td><td>28</td><td>20</td><td>18</td><td>16</td><td>9</td></tr></table>	$x:$	5	7	8	10	11	13	16	$y:$	33	30	28	20	18	16	9						
$x:$	5	7	8	10	11	13	16																
$y:$	33	30	28	20	18	16	9																
3	Find the regression lines of given data. <table><tr><td><math>x:</math></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td><math>y:</math></td><td>10</td><td>12</td><td>16</td><td>28</td><td>25</td><td>36</td><td>41</td><td>49</td><td>40</td><td>50</td></tr></table>	$x:$	1	2	3	4	5	6	7	8	9	10	$y:$	10	12	16	28	25	36	41	49	40	50
$x:$	1	2	3	4	5	6	7	8	9	10													
$y:$	10	12	16	28	25	36	41	49	40	50													
4	From the following data find the line of regression of $x$ on $y$ and estimate $x$ when $y = 105$ <table><tr><td><math>x =</math></td><td>44</td><td>58</td><td>49</td><td>46</td><td>58</td><td>56</td><td>48</td><td>46</td><td>48</td><td>47</td></tr><tr><td><math>y =</math></td><td>88</td><td>114</td><td>102</td><td>113</td><td>91</td><td>89</td><td>102</td><td>93</td><td>114</td><td>94</td></tr></table>	$x =$	44	58	49	46	58	56	48	46	48	47	$y =$	88	114	102	113	91	89	102	93	114	94
$x =$	44	58	49	46	58	56	48	46	48	47													
$y =$	88	114	102	113	91	89	102	93	114	94													
5	Fit a straight line to the following data Year $x:$ 1951   1961   1971   1981   1991 Production                      10     12     8     10     13 $y:$ Also estimate the production in 1987.																						
6	Fit a straight line to the following data $x:$ 1            2            3            4            6            8 $y:$ 2.4        3            3.4        4            5            6																						
7	Fit a curve $y = ab^x$ to the following data $x =$ 2        3        4        5        6 $y =$ 144   172.8   207.4   248.8   298.5																						
8	The population of a city is given below Year            1911   1921   1931   1941   1951   1961   1971   1981 Population   3.9     5.3     7.3     9.6     12.9     17.1     23.2     30.5 ( in lakhs) Fit a curve of the form $y = ab^x$ to this data and estimate the production in 1991.																						
9	Fit a curve $y = ax^b$ to the following data <table><tr><td><math>x =</math></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td><math>y =</math></td><td>1200</td><td>900</td><td>600</td><td>200</td><td>110</td><td>50</td></tr></table>	$x =$	1	2	3	4	5	6	$y =$	1200	900	600	200	110	50								
$x =$	1	2	3	4	5	6																	
$y =$	1200	900	600	200	110	50																	
10	Fit a curve $y = ax^b$ to the following data <table><tr><td><math>x =</math></td><td>70</td><td>72</td><td>74</td><td>76</td><td>78</td><td>80</td></tr><tr><td><math>y =</math></td><td>163</td><td>170</td><td>179</td><td>180</td><td>196</td><td>220</td></tr></table>	$x =$	70	72	74	76	78	80	$y =$	163	170	179	180	196	220								
$x =$	70	72	74	76	78	80																	
$y =$	163	170	179	180	196	220																	
11	Fit the best values of $a$ and $b$ in the law $y = ae^{bx}$ by the method of least squares from $x =$ 0    5    8    12    20 $y =$ 3   1.5   1   0.55   0.18																						

12	Fit a curve $y = ae^{bx}$ to the following data $x = \quad 1 \quad 5 \quad 7 \quad 9 \quad 12$ $y = \quad 10 \quad 15 \quad 12 \quad 15 \quad 21$																										
13	Calculate the correlation coefficient for the following heights in inches of father (X) and their sons (Y). <table><tr><td>X</td><td>65</td><td>66</td><td>67</td><td>67</td><td>68</td><td>69</td><td>70</td><td>72</td></tr><tr><td>Y</td><td>67</td><td>68</td><td>65</td><td>68</td><td>72</td><td>72</td><td>69</td><td>71</td></tr></table>									X	65	66	67	67	68	69	70	72	Y	67	68	65	68	72	72	69	71
X	65	66	67	67	68	69	70	72																			
Y	67	68	65	68	72	72	69	71																			
14	Fitting the second-degree parabolic curve $y = a + bx + cx^2$ for the following data <table><tr><td>x</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>y</td><td>1</td><td>1.8</td><td>1.3</td><td>2.5</td><td>7.3</td></tr></table>							x	0	1	2	3	4	y	1	1.8	1.3	2.5	7.3								
x	0	1	2	3	4																						
y	1	1.8	1.3	2.5	7.3																						
15	If the two lines of regression are $x + 3y - 5 = 0$ and $4x + 3y - 8 = 0$ then the find correlation coefficient between x and y																										
16	Find the Least square fit for straight line $y = ax + b$ to the data <table><tr><td>x</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>5</td><td>7</td><td>9</td></tr></table>							x	1	2	3	y	5	7	9												
x	1	2	3																								
y	5	7	9																								
17	If x is random variable with distribution given below <table><tr><td>X</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>P(x)</td><td>K</td><td>3K</td><td>3K</td><td>K</td></tr></table> Then find the value of k.							X	0	1	2	3	P(x)	K	3K	3K	K										
X	0	1	2	3																							
P(x)	K	3K	3K	K																							
18	A random variable X has the following probability distribution: <table><tr><td>X</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>P(X)</td><td>0.1</td><td>k</td><td>0.2</td><td>2k</td><td>0.3</td><td>k</td></tr></table> Then find the value of constant k.							X	-2	-1	0	1	2	3	P(X)	0.1	k	0.2	2k	0.3	k						
X	-2	-1	0	1	2	3																					
P(X)	0.1	k	0.2	2k	0.3	k																					
19	On an average a packet containing 10 blades is likely to have two defective blades. In a box containing 100 packets number of packets expected to contain less than two defective blades																										
20	Out of 2000 families with 4 children each, the number of families you would expect to have no girls is, P=probability of having a boy =1/2 q=probability of having a girl = 1-1/2= ½																										
21	If X is normally distributed. The mean of X is 15 and standard deviation 3. Given that z=0 to 1, Area=0.3413 then find P(X≥18)																										
22	<table><tr><td>X</td><td>0</td><td>1</td><td>2</td><td>3</td></tr></table>							X	0	1	2	3															
X	0	1	2	3																							

		P(x)	1/10	1/5	3/10	2/5	
	The mathematical expectation E(x) is.						
23	If a random variable X follows Poisson distribution such that $P(X=1) = 2P(X=2)$ then find the variance of the distribution.						
24	Find the mean of the discrete random variable X whose probability distribution is						
		x	-2	1	2	3.5	
		P(x)	0.21	0.34	0.24	0.21	
24	Between 2 pm to 3pm the average number of phone calls per minute coming into company are 2. Using Poisson Probability Distribution, the probability that one particular minute there will be no phone call at all						
25	The probability that a missile will strike the target is $1/5$ . If six missiles are fired. Find the probability that : i) exactly two will strike the target ii)at least two will strike the target.						
26	A manufacturer of envelopes knows that the weight of the envelopes is normally distributed with mean 1.9 gm & variance 0.01 gm . Find how many envelopes weighing i) 2 gm or more ,ii) 2.1 gm or more can be expected in a given packet of 1000 envelopes given Z is normal variable with $P(0 \leq z \leq 1) = 0.3413$ & $P(0 \leq z \leq 2) = 0.4772$						
27	A sample of 100 dry battery cells tested to find the length of life produced the following results mean 12 hrs , S.D. 3 hrs. Assuming the data to be normally distributed , what percentage of battery cells are expected to have life i) more than 15 hrs , ii) less than 6 hrs , iii) between 10 & 14 hrs $P(0 < z < 1) = 0.3413$ & $P(0 < z < 2) = 0.4772$						
28	If the heights of 300 students are normally distributed with mean 172 cms. & S.D. 8 cms. , how many students have heights ? i) greater than 184 cms. ii) less than or equal to 160 cms.(Area under S.N.V.Z=0 to Z=1.5 is 0.4332 & Z=0 to Z=0.06 is 0.0239)						
29	The marks of 1000 students in a university are found to be normally distributed with mean 70 & S.D. 5. Estimate the number of students whose marks will be : i) between 60 & 75 ii) more than 75 iii) less than 68(Given: For S.N.V. z the area between z=0 to z=1 is 0.3413 & between z=0 to z=2 is 0.4772 & between z=0 to z=0.4 is 0.1554)						
30	The income of a group of 10000 persons were found to be normally distributed with mean Rs.520 & S.D. Rs.60. Find i) the number of persons having incomes between Rs.400 & Rs.550 ii) the lowest income of the richest 500.( Given: For S.N.V. z the area between z=0 to z=0.5 is 0.1915 & between z=0 to z=2 is 0.4772 & between z=0 to z=1.645 is 0.45)						
31	If 10% of bolts produced by a machine are defective. Determine the probability that out of 10 bolts, chosen at random, i) 1 ii) none iii)atmost 2 bolts will be defective						
32	The probability that a pen manufactured by a company will be defective is $\frac{1}{10}$ . If 12 such pens						

	are manufactured, find the probability that a) exactly two will be defective b) at least two will be defective c) none will be defective																
33	For the data: <table><tr><td>x</td><td>3</td><td>6</td><td>9</td><td>12</td><td>15</td></tr><tr><td>f(x)</td><td>-1</td><td>1</td><td>2</td><td>3</td><td>4</td></tr></table> Find the value of the $\int_3^{12} f(x)dx$ when computed by Simpson's 3/8 <sup>th</sup> rule	x	3	6	9	12	15	f(x)	-1	1	2	3	4				
x	3	6	9	12	15												
f(x)	-1	1	2	3	4												
34	<table><tr><td>X</td><td>0</td><td>0.2</td><td>0.4</td><td>0.6</td><td>0.8</td><td>1</td></tr><tr><td>Y</td><td>0</td><td>0.008</td><td>0.064</td><td>0.216</td><td>0.512</td><td>1</td></tr></table> By using above table and Simpsons one third rule, the value of integral $\int_0^1 x^3 dx$	X	0	0.2	0.4	0.6	0.8	1	Y	0	0.008	0.064	0.216	0.512	1		
X	0	0.2	0.4	0.6	0.8	1											
Y	0	0.008	0.064	0.216	0.512	1											
35	<table><tr><td>x</td><td>3</td><td>6</td><td>9</td><td>12</td><td>15</td><td>18</td><td>21</td></tr><tr><td>f(x)</td><td>-1</td><td>1</td><td>2</td><td>3</td><td>4</td><td>-2</td><td>1</td></tr></table> Find the value of the $\int_3^{21} f(x)dx$ when computed by Weddles Rule	x	3	6	9	12	15	18	21	f(x)	-1	1	2	3	4	-2	1
x	3	6	9	12	15	18	21										
f(x)	-1	1	2	3	4	-2	1										
36	For the data: <table><tr><td>x</td><td>3</td><td>6</td><td>9</td><td>12</td><td>15</td></tr><tr><td>f(x)</td><td>-1</td><td>1</td><td>2</td><td>3</td><td>4</td></tr></table> Find the value of the $\int_3^{12} f(x)dx$ when computed by Simpson's $\frac{1}{3}$ <sup>rd</sup> rule	x	3	6	9	12	15	f(x)	-1	1	2	3	4				
x	3	6	9	12	15												
f(x)	-1	1	2	3	4												
37	Find the value of $\int_1^2 \frac{1}{x} dx$ by Trapezoidal and Simpson's $\frac{1}{3}$ <sup>rd</sup> rule taking $h = 0.5$																
38	For the tabulated data Speeds of moving object at different times are recorded as <table><tr><td><math>\theta</math></td><td>0</td><td><math>\frac{\pi}{6}</math></td><td><math>\frac{\pi}{3}</math></td><td><math>\frac{\pi}{2}</math></td></tr><tr><td><math>\sin \theta</math></td><td>0</td><td>0.5</td><td>0.866</td><td>1</td></tr></table> Evaluation of $\int_0^{\frac{\pi}{2}} \sin \theta d\theta$ using Trapezoidal rule	$\theta$	0	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\sin \theta$	0	0.5	0.866	1						
$\theta$	0	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$													
$\sin \theta$	0	0.5	0.866	1													
39	A curve passes through the set of points (0,1), (1, 3), (2, 7), (3, 13). Find the Value of $\int_0^3 y dx$ by Trapezoidal rule																
40	Find the value integral $\int_1^5 \frac{1}{x+2}$ by using Simpson's one-third rule taking n=4																
41	If $y_0 = 1, y_1 = 0.9730, y_2 = 0.9000, y_3 = 0.8000, y_4 = 0.6923, y_5 = 0.5902, y_6 = 0.5000$ and $h = 0.2$ then find the value of integral I by using Simpson's $\left(\frac{3}{8}\right)$ <sup>th</sup> rule.																
42	Consider the fuzzy sets A and B whose membership function is given as, $A(x) = \frac{x}{x+1} \text{ and } B(x) = 1 - \frac{x}{4} \text{ where } x \in \{0,1,2,3,4\}$ Calculate $ \tilde{A} ,  \tilde{B} ,  \tilde{A} \cup \tilde{B} ,  \tilde{A} \cap \tilde{B} $																

43	<p>Let <math>A, B, \in F(x)</math>, where <math>F(x)</math> is the family of fuzzy sets, then for any <math>\alpha, \beta \in [0,1]</math>, prove that,</p> <p>i) If <math>\alpha \leq \beta</math> then <math>\beta^+ A \subseteq \alpha^+ A</math></p> <p>ii) <math>\alpha(A \cup B) = \alpha A \cup \alpha B</math></p> <p>iii) <math>\alpha^+(A \cap B) = \alpha^+ A \cap \alpha^+ B</math></p> <p>iv) <math>\alpha(\bar{A}) = \overline{(1-\alpha)^+ A}</math></p>
44	<p>Compute fuzzy numbers <math>A+B</math>, <math>A-B</math> and <math>A/B</math> if,</p> $A(x) = \begin{cases} \frac{x-1}{3}, & 1 < x \leq 4 \\ \frac{7-x}{3}, & 4 \leq x \leq 7 \\ 0 & \text{otherwise} \end{cases}, \quad B(x) = \begin{cases} \frac{x-7}{3}, & 7 < x \leq 10 \\ \frac{13-x}{3}, & 10 \leq x \leq 13 \\ 0 & \text{otherwise} \end{cases}$
45	<p>Consider the fuzzy sets <math>A</math> and <math>B</math> whose membership function is given as</p> <p><math>A(x) = \frac{x}{x+1}</math> and <math>B(x) = 1 - \frac{x}{10}</math> where <math>x \in \{0,1,2, \dots 5\}</math>. Calculate <math> \tilde{A} </math>, <math> \tilde{B} </math>, <math> \tilde{A} \cup \tilde{B} </math>, <math> \tilde{A} \cap \tilde{B} </math></p>
46	<p>Using extension principle find <math>f(A,B)</math> where, <math>f(x_1, x_2) = x_1 + x_2</math> where <math>A</math> and <math>B</math> are given by</p> <p><math>A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}</math> and <math>B = \frac{0.5}{2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{5}</math></p>
47	<p>Solve the fuzzy equation <math>AX = B</math> if <math>A</math> and <math>B</math> are fuzzy numbers whose membership function is given by</p> $A(x) = \begin{cases} \frac{x}{2} - 1 & \text{for } 2 < x \leq 4 \\ 3 - \frac{x}{2} & \text{for } 4 \leq x < 6, \\ 0 & \text{otherwise} \end{cases}, \quad B(x) = \begin{cases} \frac{x}{2} - 3 & \text{for } 6 < x \leq 8 \\ 5 - \frac{x}{2} & \text{for } 8 \leq x < 10 \\ 0 & \text{otherwise} \end{cases}$
48	<p>Consider the fuzzy sets defined by, <math>A(x) = \frac{x}{x+2}</math>, <math>B(x) = \frac{x}{x+5}</math>, <math>x \in \{0,1,2,3,4,5\}</math>.</p> <p>Calculate <math> \tilde{A} </math>, <math> \tilde{B} </math>, <math>S( \tilde{B} ,  \tilde{A} )</math></p>
49	<p>Using extension principle find <math>f(A,B)</math> where, <math>f(x_1, x_2) = 2x_1 + x_2</math> where <math>A</math> and <math>B</math> are given by</p> <p><math>A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2} + \frac{0.8}{3}</math> and <math>B = \frac{0.2}{2} + \frac{0.3}{3} + \frac{1}{4} + \frac{0.5}{5} + \frac{0.3}{6}</math>.</p>
50	<p>Calculate the fuzzy numbers <math>A+B</math> and <math>A/B</math> where</p> $A(x) = \begin{cases} \frac{x-1}{3} & \text{for } 1 \leq x \leq 4 \\ \frac{7-x}{3} & \text{for } 4 \leq x \leq 7 \\ 0 & \text{elsewhere} \end{cases} \quad \text{and} \quad B(x) = \begin{cases} \frac{x-7}{3} & \text{for } 7 \leq x \leq 10 \\ \frac{13-x}{3} & \text{for } 10 \leq x \leq 13 \\ 0 & \text{elsewhere} \end{cases}$

51	<p>Compute scalar cardinality and relative cardinality for each of the following sets.</p> <p>i) <math>A = \frac{0.4}{v} + \frac{0.2}{w} + \frac{0.5}{x} + \frac{0.4}{y} + \frac{1}{z}</math> ii) <math>B = \frac{1}{x} + \frac{1}{y} + \frac{1}{z}</math></p> <p>iii) <math>c = \frac{x}{x+1}</math> for all <math>x \in X = 0,1,2,3,4,5,6,7,8,9,10</math></p>										
52	<p>Two fuzzy sets A and B defined on X are</p> <p><math>A = \left\{ \frac{0.1}{x_1} + \frac{0.6}{x_2} + \frac{0.8}{x_3} + \frac{0.9}{x_4} + \frac{0.7}{x_5} + \frac{0.1}{x_6} \right\}</math> <math>B = \left\{ \frac{0.9}{x_1} + \frac{0.7}{x_2} + \frac{0.5}{x_3} + \frac{0.2}{x_4} + \frac{0.1}{x_5} + \frac{0}{x_6} \right\}</math></p> <p>Find the following <math>\alpha</math>-cuts</p> <p><math>0.7_{\bar{A}}, 0.6_{(A \cup \bar{B})}, 0.5_{(\bar{A} \cap B)}, 0.4_{(A \cup B)}, 0.3_{(A \cap B)}</math></p>										
53	<p>Solve the equation <math>A+X=B</math> where</p> <p><math>A = \frac{0.2}{[0,1]} + \frac{0.6}{[1,2]} + \frac{0.8}{[2,3]} + \frac{0.9}{[3,4]} + \frac{1}{4} + \frac{0.5}{(4,5)} + \frac{0.1}{(5,6]}</math></p> <p><math>B = \frac{0.1}{[0,1]} + \frac{0.2}{[1,2]} + \frac{0.6}{[2,3]} + \frac{0.7}{[3,4]} + \frac{0.8}{[4,5]} + \frac{0.9}{[5,6]} + \frac{1}{6} + \frac{0.5}{(6,7]} + \frac{0.4}{(7,8]} + \frac{0.2}{(8,9]} + \frac{0.1}{(9,10]}</math></p>										
54	<p>Calculate the fuzzy numbers <math>A+B</math>, <math>A-B</math>.</p> <p><math>A(x) = \begin{cases} \frac{x+1}{2} ; -1 &lt; x \leq 1 \\ \frac{3-x}{2} ; 1 &lt; x \leq 3 \\ 0 ; \text{ otherwise} \end{cases}</math> <math>B(x) = \begin{cases} \frac{x-1}{2} ; 1 &lt; x \leq 3 \\ \frac{5-x}{2} ; 3 &lt; x \leq 7 \\ 0 ; \text{ otherwise} \end{cases}</math></p>										
55	<p>Find the Height of fuzzy set <math>A(x) = \frac{0.9}{a} + \frac{0.23}{b} + \frac{0.29}{c} + \frac{0.36}{d}</math></p>										
56	<p>If <math>A(x) = \frac{x}{x+2}</math>, for <math>x \in \{0,1,2,3,4\}</math> then <math> A  = \dots</math></p>										
57	<p>If <math>A(x) = \frac{2x}{x+5}</math> &amp; <math>B(x) = 1 - \frac{x}{5}</math>, for <math>x \in \{0,1,2,3,4,5\}</math></p> <p>then <math>s(B,A) = \dots</math></p>										
58	<p>To solve the assignment problem and find minimum cost. There are four jobs to be assigned, one each to four machines and the cost matrix is</p> <table><tr><th>Jobs</th><th colspan="4">Machine</th></tr><tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td></tr></table>	Jobs	Machine					1	2	3	4
Jobs	Machine										
	1	2	3	4							

	<table><tr><td>A</td><td>12</td><td>30</td><td>21</td><td>15</td></tr><tr><td>B</td><td>18</td><td>33</td><td>9</td><td>31</td></tr><tr><td>C</td><td>44</td><td>25</td><td>24</td><td>21</td></tr><tr><td>D</td><td>23</td><td>30</td><td>28</td><td>4</td></tr></table>	A	12	30	21	15	B	18	33	9	31	C	44	25	24	21	D	23	30	28	4									
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### MCQ QUESTION BANK

Q. 1)	Least square fit for straight line $y=ax+b$ to the data			
	x	1	2	3
	y	5	7	9
	is			
	A) $y = 2x+4$		B) $y = 2x-3$	
	C) $y = 2x+3$		D) $y = 3x-4$	
Q. 2)	Least square fit for the curve $y=ax^b$ to the data			
	x	1	2	3
	y	2	16	54
	is			
	A) $y = 2x^3$		B) $y = 2x^2$	
	C) $y = 3x^2$		D) $y = 4x^3$	
Q.3)	For least square fit of parabola $y=ax^2+bx+c$ to the data			
	x	0	1	2
	y	4	3	6
The normal equations are				

	A) $5a+3b+3c=0$ ; $9a+5b+3c=0$ ; $17a+9b+5c=0$		B) $5a+3b+3c=15$ ; $9a+5b+3c=27$ ; $17a+9b+5c=13$		
	C) $13a+3b+3c=13$ ; $9a+13b+3c=15$ ; $17a+9b+13c=27$		D) $5a+3b+3c=13$ ; $9a+5b+3c=15$ ; $17a+9b+5c=27$		
Q. 4)	If the regression coefficient of X on Y and Y on X are -0.5 and -0.5 respectively then the correlation coefficient between X and Y is				
	A) 1		B) 0.5		
	C) -0.5		D) -1		
Q. 5)	If $\sum x^2=1980$ , $\sum y^2=2465$ , $\sum xy=2160$ , $n=10$ , $\sum x=140$ , $\sum y=150$ then $r(x,y)$ is				
	A) 0.753		B) 0.4325		
	C) 0.556		D) 0.9013		
Q. 6)	For Least square fit of the straight-line $y=ax+b$ with n points, the normal equation are				
	A) $a \sum x + nb = \sum y$ ; $a \sum x^2 + b \sum x = \sum xy$		B) $a \sum x^2 + nb = \sum x$ ; $a \sum x + nb = \sum y$		
	C) $a \sum y^2 + nb = \sum y$ ; $a \sum y + b \sum x = \sum x$		D) $a \sum y + b \sum x = nb$ ; $a \sum x^2 + nb = \sum y$		
Q. 7)	For least square fit for straight line $x=ay+b$ to the data				
	x	2	3	4	
	y	1	4	7	
	The normal equations are				
	A) $12a+3b=9$ ; $12a+66b=42$		B) $12a+3b=9$ ; $66a+12b=42$		
	C) $12a+3b=9$ ; $66a+42b=12$		D) $12a+3b=42$ ; $66a+12b=9$		
Q. 8)	If $\sum x = 0, \sum y = 0, \sum x^2 = 20, \sum y^2 = 30 \sum (xy) = 15$ , $n = 7$ , then the regression coefficient $b_{yx}$ is				
	A) 0.7222		B) 0.2722		
	C) 0.2272		D) 0.7500		
Q. 9)	If x is random variable with distribution given below.				
	X	0	1	2	3
	P(x)	K	3K	3K	K
	The value of k is				
	A) $\frac{1}{4}$		B) $\frac{1}{6}$		
	C) $\frac{1}{8}$		D) $\frac{2}{3}$		
Q. 10)	Between 2 pm to 3pm the average number of phone calls per minute coming into company are 2. Using Poisson Probability Distribution, the probability that one particular minute there will be no phone call at all, is given by				





D) -2.1



C	44	25	24	21
D	23	30	28	4

- A) 40  
B) 50  
C) 60  
D) 70

Q.37) To fit a curve  $y=ax^b$  it is necessary to find

- A)  $\Sigma \log y, \Sigma x$   
B)  $\Sigma \log y, \Sigma \log x$   
C)  $\Sigma y, \Sigma \log x$   
D) None of these

Q.38) If the two lines of regression are  $x + 3y - 5 = 0$  and  $4x + 3y - 8 = 0$  then the correlation coefficient between x and y is

- A) -0.5  
B) -0.6  
C) 0.6  
D) 0.5

Q.39) If the regression coefficient of X on Y and Y on X are -0.5 and -0.5 respectively then the correlation coefficient between X and Y is

- A) -0.5  
B) -1  
C) 1  
D) 0.5

Q.40) If  $\sum x^2 = 1980$ ,  $\sum y^2 = 2465$ ,  $\sum xy = 2160$ ,  $n=10$ ,  $\sum x=140$ ,  $\sum y=150$  then  $r(x,y)$  is

- A) 0.753  
B) 0.4325  
C) 0.556  
D) 0.9013