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 constitute of the lines of managing and the three of the constitute of a small time from										
1	Find the equations of the lines of regression and also the coefficients of correlation from										
	following data.										
	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:										
	x: 5 7 8 10 11 13 16										
	y: 33 30 28 20 18 16 9										
3	Find the regression lines of given data.										
	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 $y = 105$										
	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										
,											
0	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										
	$x = \begin{vmatrix} 1 & 2 & 3 & 4 & 5 & 6 \end{vmatrix}$										
	y = 1200 900 600 200 110 50										
10	Fit a curve $y = ax^b$ to the following data										
	$x = \begin{array}{ c c c c c c c c c c c c c c c c c c c$										
	$y = 163 \ 170 \ 179 \ 180 \ 196 \ 220$										
11											
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 cu	•					_	ıa							
		x = y = 0	1	_											
		у —	10	15	12	15	21								
13	Calculations (Y		corre	latio	n coef	ficie	nt for	the fol	llov	ving he	ight	ts in ir	nches o	of father (X) and the	eir
	X	65	66	5	67	67	'	68	69	70)	72	7		
	Y	67	68	3	65	68		72	72	69	,	71			
14	Fitting	the se	cond-	degre	ee par	aboli	c cur	ve y =a	ı+b	x+cx ² f	or t	he fol	lowing	g data	
		X	0		1	2		3		4					
		у	1		1.8	1.3	3	2.5		7.3					
						l		I							
15	If the t														
	4x + 3	3y - 8	= 0 t	hen t	he fin	d cor	relati	ion coe	ffic	cient be	twe	een x a	and y		
16	Find th	ne Leas	st squa	re fi	t for s	traigl	ht lin	e y =	ax	+ b to	the	data			
	X		1		2		3								
			5		7		9								
	У		3		,		9								
17	If x is 1	randor		ıble	with d	listrib	outior		be						
	X		0		1			2		3					
	P(x)		K		3K			3K		K					
	Then f	ind the	e value	of k											
			,												
18	A rand	om va	riable	X ha	s the	follo	wing	probab	oilit	y distri	but	ion:			
	X		-2	-1		0	1	2		3					
	P(X)		0.1	k		0.2	2k	0.	.3	k		\exists			
		n find	the va	lue o	f cons	stant	k.	L .							
19	On an	averao	re a na	cket	conta	ining	10 h	lades is	s lil	kely to	hav	e two	defect	ive blades. In a box	
. /														two defective blade	
20	Out of	2000	familie	es wi	th 4 c	hildr	en ea	ch, the	nu	mber of	f fai	milies	you w	ould expect to have	e i
	girls is		0.			۰۰ بد	•								
	P=prob	-		_	•			14							
	q=prot	oability	y oi ha	ving	a girl	= 1-	1/2=	' /2							
21	If X is Area=0		-				nean	of X is	15	and sta	nda	rd de	viation	3. Given that z=0	to
22	1 H Ca -(X	then I	0	· (21 <u>~</u>]		1		2			3			
		Λ		U			1		4			J			

		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 renders variable V whose much shilter distribution is											
	Find the mean of the discrete random variable X whose probability distribution is												
	X	-2		1		2		3.5					
	P(x	0.2	21	0.34	ļ.	0.24	ļ	0.21					
24	Between Using P	n 2 pm to 3p	m the ave	rage	number	of p	hone ca	lls pe	r minute		ning into company are 2. r minute there will be no		
25	The probability that a missile will strike the target is 1/5. If six missiles are fixed. Find the probability that: i) exactly two will strike the target ii)at least two will strike the target.												
26	A manufacturer of envelops knows that the weight of the envelops is normally distributed with mean 1.9 gm & variance 0.01 gm . Find how many envelops weighing i) 2 gm or more ,ii) 2.1 gm or more can be expected in a given packet of 1000 envelops given Z is normal variable with $P(0 \le z \le 1) = 0.3413$ & $P(0 \le z \le 2) = 0.4772$												
27	mean 12	2 hrs , S.D. 3	hrs. Assuected to h	ımin ave	g the da life i) m	ta to ore t	be norr han 15 l	nally	distribut	ted,	d the following results what percentage of hrs, iii) between 10 &		
28	many st	-	heights?	i) g	reater tha	an 18	84 cms.	ii) l	ess than		s. & S.D. 8 cms., how qual to 160 cms.(Area		
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		of bolts prod nosen at rand									pability that out of 10 we		
32	The pro	The probability that a pen manufactured by a company will be defective is $\frac{1}{10}$. If 12 such pens									We is $\frac{1}{10}$. If 12 such pens		

	are manufactured find the probability that										
	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:										
	x 3 6 9 12 15										
	Find the value of the $\int_3^{12} f(x) dx$ when computed by										
	Simpson's $3/8^{th}$ rule										
34	X 0 0.2 0.4 0.6 0.8 1										
	Y 0 0.008 0.064 0.216 0.512 1										
	By using above table and Simpsons one third rule, the value of integral $\int_{0}^{\infty} x^{3} dx$										
35	x 3 6 9 12 15 18 21										
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$										
	Find the value of the $\int_3^{21} f(x) dx$ when computed by Weddles Rule										
36	For the data: x 3 6 9 12 15										
30	f(x) -1 1 2 3 4										
	Find the value of the $\int_3^{12} f(x) dx$ when computed by										
	Simpson's $\frac{1}{3}^{rd}$ rule										
	Shipson s – Tule										
37	Γ 1.1. Γ										
	Find the value of $\int_{1}^{2} \frac{1}{x} dx$ by Trapezoidal and Simpson's $\frac{1}{3}^{rd}$ rule taking $h = 0.5$										
38	For the tabulated data Speeds of moving object at different times are recorded as										
	$\begin{vmatrix} \theta & 0 & \frac{\pi}{6} & \frac{\pi}{3} & \frac{\pi}{2} \end{vmatrix}$ Evaluation of $\int \sin \theta d\theta$ using Transzoidal rule										
	2 variation of joint we using trapezoram rate										
	$\begin{vmatrix} \sin \theta & 0 & 0.5 & 0.866 & 1 \end{vmatrix}$										
39	A curve passes through the set of points (0,1), (1, 3), (2, 7), (3, 13). Find the Value of $\int y dx$ by										
	0										
	Trapezoidal rule										
40	Find the value integral $\int_1^5 \frac{1}{x+2}$ by using Simpson's one-third rule taking n=4 If $y_0 = 1$, $y_1 = 0.9730$, $y_2 = 0.9000$, $y_3 = 0.8000$, $y_4 = 0.6923$, $y_50.5902$, $y_6 = 0.5000$ and										
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 $\left(\frac{3}{8}\right)^{\text{th}}$ rule.										
42	Consider the fuzzy sets A and B whose membership function is given as,										
	$A(x) = \frac{x}{x+1}$ and $B(x) = 1 - \frac{x}{4}$ where $x \in \{0,1,2,3,4\}$										
	Calculate $ \widetilde{A} $, $ \widetilde{B} $, $ \widetilde{A} \cup \widetilde{B} $, $ \widetilde{A} \cap \widetilde{B} $										

43 Let	$A, B, \in F(x),$	where $F(x)$ is	the family	of fuzzy sets,	, then for a	ny α,β 6	$\Xi[0,1]$, prove that,
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i) If
$$\alpha \leq \beta$$
 then $\beta^+ A \subseteq \alpha^+ A$

ii)
$${}^{\alpha}(A \cup B) = {}^{\alpha}A \cup {}^{\alpha}B$$

iii)
$$\alpha^+(A \cap B) = \alpha^+A \cap \alpha^+B$$

iv)
$$\alpha(\overline{A}) = \overline{(1-\alpha)^+ A}$$

44 Compute fuzzy numbers A+B, A-B and A/B if,

$$A(x) = \begin{cases} \frac{x-1}{3}, & 1 < x \le 4 \\ \frac{7-x}{3}, & 4 \le x \le 7 \\ 0 & otherwise \end{cases}, \quad B(x) = \begin{cases} \frac{x-7}{3}, & 7 < x \le 10 \\ \frac{13-x}{3}, & 10 \le x \le 13 \\ 0 & otherwise \end{cases}$$

45 Consider the fuzzy sets A and B whose membership function is given as

$$A(x) = \frac{x}{x+1} \quad \text{and} \quad B(x) = 1 - \frac{x}{10} \quad \text{where} \quad x \in \{0, 1, 2, \dots 5\}. \text{ Calculate } \left|\widetilde{A}\right|, \ \left|\widetilde{B}\right|, \ \left|\widetilde{A}\right| \cup \left|\widetilde{B}\right|, \\ \left|\widetilde{A}\right| \cap \left|\widetilde{B}\right|$$

Using extension principle find f(A,B) where,
$$f(x_1,x_2) = x_{1+}x_2$$
 were A and B are given by $A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$ and $B = \frac{0.5}{2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{5}$

$$A(x) = \begin{cases} \frac{x}{2} - 1 & \text{for } 2 < x \le 4 \\ 3 - \frac{x}{2} & \text{for } 4 \le x < 6, \\ 0 & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x}{2} - 3 & \text{for } 6 < x \le 8 \\ 5 - \frac{x}{2} & \text{for } 8 \le x < 10 \\ 0 & \text{otherwise} \end{cases}$$

Consider the fuzzy sets defined by,
$$A(x) = \frac{x}{x+2}$$
, $B(x) = \frac{x}{x+5}$, $x \in \{0,1,2,3,4,5\}$.

Calculate $|\widetilde{A}|$, $|\widetilde{B}|$, $S(|\widetilde{B}|, |\widetilde{A}|)$

49 Using extension principle find
$$f(A,B)$$
 where, $f(x_1,x_2) = 2x_1 + x_2$ where A and B are given by

$$A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2} + \frac{0.8}{3}$$
 and $B = \frac{0.2}{2} + \frac{0.3}{3} + \frac{1}{4} + \frac{0.5}{5} + \frac{0.3}{6}$.

$$A(x) = \begin{cases} \frac{x-1}{3} & \text{for } 1 \le x \le 4 \\ \frac{7-x}{3} & \text{for } 4 \le x \le 7 \\ 0 & \text{elsewhere} \end{cases} \quad \text{for } 1 \le x \le 10$$

51	Compute scalar cardinality and relative cardinality for each of the following
	sets.
	$i)A = \frac{0.4}{v} + \frac{0.2}{w} + \frac{0.5}{x} + \frac{0.4}{y} + \frac{1}{z} ii)B = \frac{1}{x} + \frac{1}{y} + \frac{1}{z}$
	iii) $c = \frac{x}{x+1}$ for all $x \in X = 0,1,2,3,4,5,6,7,8,9,10$
52	Two fuzzy sets A and B defined on X are
	$A = \left\{ \frac{0.1}{x_1} + \frac{0.6}{x_2} + \frac{0.8}{x_3} + \frac{0.9}{x_4} + \frac{0.7}{x_5} + \frac{0.1}{x_6} \right\} B = \left\{ \frac{0.9}{x_1} + \frac{0.7}{x_2} + \frac{0.5}{x_2} + \frac{0.2}{x_4} + \frac{0.1}{x_5} + \frac{0}{x_6} \right\}$
	Find the following $\alpha - cuts$
	$0.7_{\bar{A}}$, $0.6_{(A\cup\bar{B})}$, $0.5_{(\bar{A}\cap B)}$, $0.4_{\overline{(A\cup B)}}$, $0.3_{\overline{(A\cap B)}}$
53	Solve the equation A+X=B where
	$A = \frac{0.2}{[0.1)} + \frac{0.6}{[1.2)} + \frac{0.8}{[2.3)} + \frac{0.9}{[3.4)} + \frac{1}{4} + \frac{0.5}{(4.5)} + \frac{0.1}{(5.6)}$
	() () ()
	$B = \frac{0.1}{[0,1)} + \frac{0.2}{[1,2)} + \frac{0.6}{[2,3)} + \frac{0.7}{[3,4)} + \frac{0.8}{[4,5)} + \frac{0.9}{[5,6)} + \frac{1}{6} + \frac{0.5}{(6,7]} + \frac{0.4}{(7,8]} + \frac{0.2}{(8,9]} + \frac{0.1}{(9,10]}$
54	
	Calculate the fuzzy numbers A+B, A-B.
	$A(x) = \begin{cases} \frac{x+1}{2} ; -1 < x \le 1 \\ \frac{3-x}{2} ; 1 < x \le 3 \end{cases} B(x) = \begin{cases} \frac{x-1}{2} ; 1 < x \le 3 \\ \frac{5-x}{2} ; 3 < x \le 7 \end{cases}$
	$\begin{pmatrix} \frac{1}{2} & ; 1 < \chi \leq 3 \end{pmatrix} = \begin{pmatrix} 0 & ; 0 \\ 0 & ; 0 \end{pmatrix}$
	(0, billerwise (0, billerwise
55	Find the Height of fuzzy set $A(x) = \frac{0.9}{a} + \frac{0.23}{b} + \frac{0.29}{c} + \frac{0.36}{d}$
	a b c a
56	r
30	If $A(x) = \frac{x}{x+2}$, for $x \in \{0,1,2,3,4\}$ then $ A =$
	·· · · -
57	If $A(x) = \frac{2x}{x+5}$ & $B(x) = 1 - \frac{x}{5}$, for $x \in \{0,1,2,3,4,5\}$
	then $s(B,A) =$
58	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 Jobs Machine
	Jobs Machine 1 2 3 4

	A	12	30	21	15	
	В	18	33	9	31	
	С	44	25	24	21	
	D	23	30	28	4	
59	To solve the assign	ment pro	blem and f	find minin	num cost.	There are four jobs to be assigned, one
	each to four machin	nes and th	ne cost mat	trix is		
	Jobs		Mac	hine		
		1	2	3	4	
	A	10	4	8	9	
	В	18	40	21	42	
	С	20	25	4	6	
	D	7	8	9	11	
60	To solve the assign	nment pr	oblem and	find max	imum pro	fit. There are four jobs to be assigned,
	one each to four m	nachines	and the cos	st matrix i	S	
	Jobs		Ma	chine		
		1	2	3	4	
	A	10	34	24	52	7
	В	15	30	9	14	7
	С	40	25	20	27	1
	D	16	24	28	4	

MCQ QUESTION BANK

Q. 1)	Least squar	re fit for st	raight line	y=ax+1	b to the data
	X	1	2	3	
	у	5	7	9	
	is				
	A) y	=2x+4			B) $y = 2x-3$
	C) y	=2x+3			D) $y = 3x-4$
Q. 2)	Least squar	re fit for th	e curve y=	ax ^b to 1	the data
	X	1	2		3
	У	2	16	5	54
	is	•	<u> </u>	•	
	A) y =				B) $y = 2x^2$
	C) y=	$3x^2$			D) $y = 4x^3$
Q.3)	For least so	quare fit of	parabola y	$y=ax^2+1$	-bx+c to the data
	X	0	1	2	2
	у	4	3	6	5
	The norma	l equations	are		

	A) 5 . 21 . 2 . 0 . 0	. 51 . 2 . 0	D)	5 . 21 . 2 . 1.	5 0 .51 .2 /	27		
	A) $5a+3b+3c=0$; 9a	a+5b+3c=0;			5 ; 9a+5b+3c=2	27;		
	17a+9b+5c=0 C) 13a+3b+3c=13;			$\frac{17a+9b+5c=1}{5a+3b+3c=1}$		-15 ·		
	9a+13b+3c=15; 17a+9l	h±13c=27	<i>'</i>	D) 5a+3b+3c=13; 9a+5b+3c=15; 17a+9b+5c=27				
Q. 4)					l -0.5 respectiv	elv then		
Q . 1)	If the regression coefficient of X on Y and Yon X are -0.5 and -0.5 respective correlation coefficient between X and Y is							
	A) 1		B)	0.5				
	C) -0.5		D)	-1				
Q. 5)	If $\sum \chi^2 = 1980$, $\sum \gamma^2$	-2465 \sum_m	n – 2160	-10 \(\nabla_{\text{ri}=1}\)	40 \sum_{150}	than		
		$=2463$, $\sum x_1$	$y = 2100$, $\Pi =$	$= 10, \sum x = 1$	$40, \sum y = 130$	then		
	r(x,y) is							
	A) 0.752		D)	0.4225				
	A) 0.753			0.4325				
0 ()	C) 0.556			y=ax+b with n points, the normal equation are				
Q. 6)	For Least square fit of t	he straight-lin	ie y=ax+b w	ith n points,	the normal equ	ation are		
	$\Delta V \circ \nabla v \cdot v \cdot v \cdot \nabla v \cdot v$		D)	∇ 2 1	$\overline{}$	$\overline{}$		
	A) $a \sum x + nb = \sum y$		B)	a $\sum \chi^2 + nb =$	$=\sum x$;	$a \sum x$		
	$a \sum \chi^2 + b \sum \chi^2$	$=\sum xy$		$+nb = \sum y$				
	C) a $\sum y^2 + nb = \sum$		D)	$a \sum y + b \sum$	x=nb;	a		
	$a\sum y + b\sum x =$			$\sum \chi^2 + nb = \sum_{i=1}^{n} x^i + nb = \sum_{i=1}$	$\sum y$			
Q. 7)	For least square fit for s		av+b to the	data				
,	x 2	3 4						
	y 1	4 7						
	The normal equations as	re.						
	The normal equations as							
	A) 12a+3b=9; 12a-	+66b=42	B)	12a+3b=9;6	66a+12b=42			
	C) 12a+3b=9; 66a+	42b=12	D) 1	D) 12a+3b=42; 66a+12b=9				
Q. 8)	If $\sum x = 0, \sum y = 0, \sum x^2 = 0$	$= 20, \sum y^2 = 30$	$\sum (xy) = 15$	n = 7, then	the regression	1		
	coefficient b_{yx} is	.—•			C			
	•							
	A) 0.7222		B)	0.2722				
	C) 0.2272		D)	0.7500				
Q. 9)	If x is random variable	with distribut	ion given be	low.				
	X	0	1	2	3			
	P(x)	K	3K	3K	K			
	The value of k is							
	A) 1/4		B)	1/6				
	C) 1/8		D)	2/3				
Q. 10)	Between 2 pm to 3pm th	he average nu	,		minute coming	into		
Q. 10)	company are 2. Using P	_	-	-	_			
	particular minute there							
	<u> </u>	1						

	A) 0.354	B) 0.356							
	C) 0.135	D) 0.457							
Q. 11)	From a box containing 100 transistors 20 of which are defective,10 is selected at								
	random, then the probability that all are non-defective is								
	A) 0.8926	B) 0.1470							
	C) 0.1020	D) 0.1074							
Q. 12)	To fit a curve y=ax ^b it is necessary to fin	d							
	Α) Σlogy, Σχ	B) Σlogy, Σlogx							
	C) Σy, Σlogx	D) None of these							
Q. 13)	The mean and variance of Binomial probability distribution are 36 and 3 respectively.								
	Number of trials n is given by								
	A) 42	B) 36							
	C) 48	D) 24							
Q. 14)	In Binomial Probability distribution, Pro	bability of r successes in n trials is							
	A) $n_{C_n}p^nq^{n-r}$	B) $n_{C_r}p^rq^{n-r}$							
	C) p ^r q ^{n-r}	D) $n_{C_r}p^rq^{n+r}$							
Q. 15)	If X is normally distributed. The mean o	f X is 15 and standard deviation 3. Given that							
	$z=0$ to 1, Area=0.3413 then find $P(X \ge 18)$	s) is							
	A) 0.1587	B) 0.4231							
	C) 0.2231	D) 0.3413							

- Q. 16) In the Simpsons 1/3 rd rule the number of sub intervals should be
 - A) Even

B) Odd

C) Multiple of 3

- D) None of these
- Q. 17) The value of $\int_0^1 \frac{dx}{1+x}$ correct to three decimal places by

Trapezoidal rule with h = 0.5 is

A) 0.708

B) 0.608

C) 0.806

D) 0.907

Q.18) Simpsons
$$3/8^{th}$$
 rule states that
$$\int_{b=x_n=x_0+nh}^{a=x_0} f(x)dx$$

$$\frac{3h}{8} \Big[(y_0 + y_n) - 3(y_1 + y_2 + ...) + 2(y_3 + y_6 + ... + y_6$$

$$\frac{3h}{8} \left[(y_0 + y_n) + 3(y_1 + y_2 + ...) + 2(y_3 + y_6 +) \right]$$
 None of these

Q. 19) If
$$A = [0.1/5 + 0.7/6 + 0.9/7]$$
, $B = [0.1/5 + 0.9/6 + 1/7]$ then

A) $\overline{A \cup B} = [0.1/5 + 0.7/6 + B) \overline{A \cap B} = [0.9/5 + 0.3/6 + 0.1/7]$
0.9/7]

C)A and B both true D) none of these Q. 20) If A = [0.1/5 + 0.7/6 + 0.9/7], B = [0.2/5 + 0.8/6 + 1/7]then degree of subset hood S(A, B)=A) 1.2 B) 1.3 C) 1.0 D) 1.9 Q. 21) X 12 15 18 21 f(x)-1 3 4 -2 1 The value of the $\int_3^{21} f(x) dx$ when computed by Weddles Rule is A) 15 B) 10 C) 23 D) None of these Q. 22) 0.2 0.4 0.6 0.8 0 1 Y 0 0.0080.064 0.216 0.512 By using above table and Simpsons one third rule, the value of integral $\int x^3 dx$ is A) 0.3032 B) 0.4032 C) 0.2032 D) 0.1032 Scalar cardinality of the fuzzy set A = [0.1/5 + 0.7/6 + 0.9/7] is O. 23) A) -18 B) 18 C) -1.7D) 1.7 then ${}^{0.1}A =$ Q. 24) If A = [0.1/5 + 0.7/6 + 0.9/7]A) {5,6,7} B) 3 C) 2 D) None of these If A = [0.1/5 + 0.7/6 + 0.9/7], B = [0.1/5 + 0.9/6 + 1/7]Q. 25) then $^{0.1}(A \cup B) =$ A) {5,6,7} B) 3 C) A and B both true D) None of these If A = [0.12/5 + 0.73/6 + 1/7] then fuzzy set is Q. 26) A) subnormal B) normal C) A and B both true D) None of these Q. 27) If $A(x) = \frac{2x}{x+5}$ & $B(x) = 1 - \frac{x}{5}$, for $x \in \{0,1,2,3,4,5\}$ then s(B,A) = ...A) 1 B) -0.5 C) -1 D) 0.5 Q. 28) If $A(x) = \frac{x}{x+2}$, for $x \in \{0,1,2,3,4\}$ then |A| = ...A) 4.5 B) -4.5 C) 2.1 D) -2.1

Q. 29) Height of fuzzy set
$$A(x) = \frac{0.9}{a} + \frac{0.23}{b} + \frac{0.29}{c} + \frac{0.36}{d}$$
 is

A) 0.29 B) 0.9
C) 0.36 D) 0.23
Q. 30) Simpsons $3/8^{th}$ rule is applicable only when....

A) n is a multiple of 6 B) n is a multiple of 8
C) n is a multiple of 3 D) None of these
Q.31) In Hungarian method, tick the row having

A) square marked or encircled zero C) No square marked or encircled zero To solve the assignment problem for maximization
Q.32)

A) select the smallest element from the matrix and subtract it from other elements of the matrix.
C) select the largest element from the matrix and subtract other elements from this largest element from this largest element of the matrix.
Q.33) In Hungarian method, draw the lines on
A) ticked row and un ticked column
C) un ticked row and ticked column D) un ticked row and ticked columns column
C) un ticked row and ticked column D) un ticked row and ticked column C) and B both true
C) A and B both true
C) A and B both true
C) A and B both true
C) B and B

Q.36) 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

Jobs	Machine					
	1	2	3	4		
A	12	30	21	15		
В	18	33	9	31		

С	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) $\Sigma \log y$, Σx

B) $\Sigma \log y$, $\Sigma \log x$

C) Σy , $\Sigma log x$

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 Yon 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 $\sum \chi^2 = 1980$, $\sum y^2 = 2465$, $\sum xy = 2160$, 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