FIRST REVISION EXAM #2023 BUSINESS MATHS AND STATISTICS

Class - XII	BUSINES	SMATHS	A	Specifical Survey and	Time :3.00 hrs Marks : 90
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(i). Answer all the ques	Γλ —	0 1 (4)			
1. If the rank of the matr	$\lim_{n \to \infty} \frac{\lambda}{n} - \frac{1}{\lambda}$	-1 is 2, the	nen the val	ue of λ is .	one waim to Colonia.
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2. The system of equation)	Sandalana I D	I NO SOILL	OIL	
(a) An unique solutio	lutions	(d) None of	these 1	The said of the state of the said
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$3. \int \frac{2x+3}{\sqrt{x^2+3x+2}} dx is^{10/12}$		i 2764	2/2/2		ndelonge og de grin Franklike re i Som e
(a) $\sqrt{x^2 + 3x + 2} + $	C	(b	$) \sqrt{x^2 + 3}$	X + Z ¬C	front he re . 1914
(c) $\text{Log}(x^2 + 3x + 2x)$))+c	(d		$3x + 2)^{3/2} +$	
4. $\int A(\frac{3}{2})$ is		išii maa	er er de Gally A	i (decide àn	in the Land Age of the
		1			$1) \sqrt{\frac{3}{2}}$
(a) $\sqrt{\pi}$	$\left(\frac{\pi}{2}\right)$	(C	') √π	ALC: ALC: ALC: ALC: ALC: ALC: ALC: ALC:	The state of the s
5. The marginal revenu	e and margin	ıal cost fu	nctions of	a company	are MR = 10-5 x and N
5. The marginal revenue $\frac{1}{2}$ where x is the	ne production	n output, tl	ion die bro		Contract of the second of the
(a) $7x^2 + 34x$		$c^2 + 34x$	(c) 3	$4x-\frac{7x^2}{2}$	$(d) 34x + \frac{-7x^2}{2}$
6. Area bounded by y=	l xl between	the limits	o and 2 is		AND THE EAST
- 112 GO-2010 PORT	(b) 1,	3	(c) l	,6	(d) 1,9
(a) 2,1 7. The order and degree	e of D.E. is.	$\left(\frac{dx}{2}\right)^3 + 21$	$\mu^{1/3} = x \text{ is}$		· vine and in the little state of the
I, The order and degree		(dy)	b) Platinun	n or Zinc	Same and the same of the same
(a) Silver or platinur		1 (1 to 1	N. J. Mc Market St. Committee of the Com	Tungsten	
(c) Silicon or Platinu 8. The P.I. of (3D2+D-	uu 14) v=13e2²				
	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	The transfer of the transfer	(0)	$\frac{e^2}{2}e^{2x}$	(d) $13xe^{2x}$
$(a) \frac{x}{2} e^{2x}$	(b) x e			2	1174
9. E≡	4				(d) 1 − ∇
(a) $1 + \Delta$	(b) 1	and the state of t	(c)	L T Y	
10. For the given data, t		Δ'yo is.			LEDE CE LEDE
χΔ 5	6	9 760	11		
y 13	14	16	(c)	2	(d) -1
(a) 1 ·	(b) 0	us outlie			
11.A variable that can		possible v	alue betwe	Continuous	random variable
(a) Discrete random	variable	, ,	(4)		· 一个一个一个

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12. The probability density function P(x) cannot exceed

(c) discrete sample spae

(d) Random variable

		(c) mean	(d) infinity
(a) Zero	(b) One	(c) mean	4/3, than the probalitity p
13 If for a binomial dis	tribution b (n,p) with r	nean 4 and variance	4/3, than the probability p
$(x \ge 5) =$		(-) (1/2)6	(d) 4 (2/3)
(a) $(2/3)^6$	(b) $(2/3)^5$ $(1/3)$	(c) (1/3)	s that of failure, then out of
14.If in a binomial distr	ibution, the probability	of success is twice an	
4 trials, the probabili	ty of one success	(c) $\frac{8}{81}$	(d) $\frac{1}{81}$
(2) 16/	(b) ¹ /16		
15.Any statistical meas	ure computed from sam	ple data is	asure (d) uncountable
(a) Parameter	(b) Statistic	(c) Infinite mea	isuic (a) and
16. The standard error of	of sample mean is	4	$(4) \sigma$
	(b) $\frac{\sigma}{n}$	(c) $\frac{\sigma}{\sqrt{n}}$	(d) $\frac{\sigma}{\sqrt{n}}$
a) $\frac{\sigma}{\sqrt{2n}}$	"	· , , , , , , , , , , , , , , , , , , ,	
17. Most commonly use	ed maex numeer is	(b) Value index	number
(a) Volume index n		(d) Simple inde	ex number
(c) Price index number	r ·: for Tchart is given		
	imit for \bar{x} chart is given (b) $\bar{x} + A_2 R$	(c) $\bar{\bar{x}} + A_2 \bar{R}$	$(\mathrm{d})\;\bar{\bar{x}}+\mathrm{A}_2\bar{\bar{R}}$
(a) $\bar{x} + A_2 \bar{R}$	(b) $x + A_2 R$		
19. The transporation p	problem is said to the ur	(b) Total supp	ly = Total demand
(a) Total supply ≠	Total demand	(d) m+n-1	
(c) m=n		column in an assignm	ent problem cam be.
20. Number of basic a	llocation in any row or (b) at least one	(c) At most on	ne (d) None
	(h) at least one	(0) 1 10 1111	
(a) Exactly one	(b) at 2010		•
•	P	ART-B	7X2=14
any 7 au	P. estions. Question no .3	ART- B 0 is compulsory.	7X2=14
II. Answer any 7 qu	estions. Question no .3 ns $2x+3y=5$, $3x+5y=$	ART-B io is compulsory. =9 by Cramer's rule	7X2=14
II. Answer any 7 que 21. Solve the equation 22. Evaluate using se	estions. Question no .3 ns : $2x+3y=5$, $3x+5y=6$ econd fundamental theorem	ART-B 60 is compulsory. =9 by Cramer's rule rem: $\int_{1}^{2} \frac{xdx}{x^{2}+1}$	
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33. Using integration, find the area of the region bounded between the line x = 4 and parabola $y^2 = 16x$.

34. Solve : $\frac{dy}{dx} - \frac{y}{x} = x$

35. Find the missing entry in the following table.

$x\Delta$	0	1	2	3	4	
y_x	1	3	9	-	81	

36.Select a strategy using the rule minimax for the following pay-off matrix (in rupees)

Strategy	States o	States of nature		
	El	E2		
S1	40	60		
S2	10	-20		
S3	-40	150		

- 37. Write down any three chief characteristics of normal probability curve.
- 38. The standard deviation of a sample of size 50 is 6-3 Determine the standard error whose population standard deviation is 6?
- 39. Explain factor Reversal Test.
- 40. A person tosses a coin and is to receive Rs.6 for a head and is to pay Rs.2 for a tail. Find expectation and variance of his gain

PART-D

Answer all the questions

7x5 = 35

41. (a). Two types of soaps A and B are in the market. Their present market shares are 15% for A and 85% for B. of those who bought A the previous year, 65% continue to buy it again while 35% switch over to B. Of those who bought B the previous year, 55% buy it again and 45% switch over to A. Find their market shares after one year and when is the equilibrium reached?

(OR)

- (b). Evaluate the integral as the limit of a sum : $\int_1^2 x^2 dx$.
- 42. (a). Under perfect competition for a commodity, the demand and supply laws are $P_d = \frac{8}{x+1} 2$ and Ps $\frac{x+3}{2}$ Find the consumer's and producer's surplus under market equilibrium.

(OR)

- (b). If the probability that an individual suffers a bad reaction from injection of a given serum is 0-001, determines the probability that out of 2000 individuals.
- (i) Exactly 3 individuals (ii) more than 2 individuals will suffer a bad reaction from injection. ($e^{-2} = 0.1353$)
- 43.(a) Qd = 13-6p+2 $\frac{dp}{dt^2}$ and Qs = 3+2p respectively, where P is the price. Find the equilibrium price for market clearance.

(OR)

(b). Find the particular solution of the D,E. x^2 dy +y (x + y).d x=0 when x = 1, y = 2.

44.(a). The value of y - f(x) for x = 0, 1, 2, ..., 6 are given by,

x	0	1	2	3	4	5	6	
у	2	4	10	16	20	24	38	

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Estimate the value of y (3-2) using forward interpolation formula by choosing the four values that will give the best approximation

(OR)

(b). Using lag ranges interpolation formula. Find the value of f(x) when x = 15

х	3	7	11	19
f(y)	42	43	47	60

45.(a) The probability density function of a random variable x is $f(x) = ke^{l-xl}$, $-\infty < x < \infty$. Find the value of k and also find mean and variance for the random variable.

(OR)

(b). A continuous random variable X has the following probability function

• •								
x	0	1	2	3	4	5	6	7
v(x)	0	Κ .	2k	2k ·	3k ′	\mathbf{K}^2	$2k^2$	$7k^2+k$

(i) find k (ii) Evaluate p(x<6) and p(o< x < 5) (iii) $P(x \le) > \frac{1}{2}$ then find the minimum value of x

46. Find the initial basic feasible solution for the following transportation problem by Vogel's Approximation method,

		Distributi				
		D1	D2	D3	D4	Availability
Origin	S1	11	13	17	14	280
	S2	16	18	14	10	300
	S3 ⁻	21	24	13	10	400
	Requirement	200	225	275	250	

(OR)

- (b). A sample of 100 measurements at breaking strength of cotton thread gave a mean of 7.4 gram and a standard deviation of 1.2 gram. Find 95% confidence limits for the mean breaking strength of cotton thread.
- 47.(a) Fit a straight line by the method of least requires for the following table represents annual production of a commodity.

Year	1995	1996	1997	1998	2000	2001
Production (in tonnes)	155	162	171	182	180	178

(OR)

(b). Construct a Laspeyre's, paache's and Fishers' price index number for the following data and also comment on the result.

	Base Year	Current year				
Commodities	Price	Quantity	Price	Quantity		
Rice	15	5	16	8		
Wheat	10	6	18	9		
Rent	8	7	15	8		
Fuel	9	5	12	6		
Transport	11	4	11 .	7		
Miscellaneous	16	6	. 15	10		

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