(Please write your Exam Roll No.)

Exam Roll No. ....

END TERM EXAMINATION									
SECOND SEVERATE TO TAL LIVEY 2023									
Pap	er Code: BCA	A-102		ULER DC	Subjec	t: Applie	ed Mathe	matics	
			(Batch	2021 On	wards)		Maximum Marks: 75		
1 IM	e: 3 Hours					Maxi	which i	S	
COT	Note: Atte npulsory. Se	mpt five lect one	question	ns in all i from ea allowed.	Including ch unit.	g Q. No.1 Scientifi	c Calcul	ator is	
		c		allowea.		2			
Q1	Answer the	e followi	ng:-			is an is	4 and v	ariance	
	(a) Determin	ne the bi	inomial di	stribution	for which	h mean is	, and the	(2.5)	
	is 3.				- 10	a live a D	roblem a	e 1/3,	
	(b) The prob 2/5 + 1/5	Dabilities	that stud	ents A, B,	C and D	solve a p	ve the pr	oblem,	
	4/0.1/0		T. ICSDect			uj -		(2.5)	
	(c) Construct	the proba	ability that	t the prob	lem will D	values of	x and y	given	
(	below:	ct lorwa	ra allieren	ice table i	from the	Valued	1. A	(2.5)	
	X	0	1	10	3	4	5		
	v ·	5	11	2	18	27	2		
	(d) Prove th		T mho	22	I ∇ are		and back	ward	
C	(e) Using La	agrange i	ors. interpolation $f(1) = 2$	on, find the set of t	e unique		al of degr	(/	
)2	such tha (f) What do (g) Calculat (h) Define b (i) Write a r (j) Write a r	at $f(0) = 1$ you mean $f_1^5 Sin x$ asic fease note on unote on since con	interpolatic , $f(1) = 3$ , $f$	f(3) = 55. erical Inte t to four do on in Linea solution o urplus var <b>UNIT-I</b> ured 2000	gration? ecimal pla ar Program of LPP. iables in i scooter d	polynomi ces with h nming Pro LPP. rivers, 40	al of degr n = 1. blem (LPF 000 car di nt involv	(2.5) (2.5) (2.5) (2.5) (2.5) (2.5) (2.5) (2.5)	
22	such tha (f) What do (g) Calculat (h) Define ba (i) Write a r (j) Write a r (a) An insur and 600 scooter of respectiv is the pro (b) If X is a the mean	at $f(0) = 1$ you mean $f_1^5 Sin x$ asic fease hote on un note on sin cance com 0 truck driver, c rely. One obability Poisson and var	interpolation f(1) = 3, f in by Num dx correct ible solution ible solution inbounded lack and sub- npany insu- drivers. The ar driver of the ins- that he is variate sub- iance of X.	f(3) = 55. erical Inte t to four do on in Linea solution of urplus var UNIT-I ared 2000 he probab and truck ured perso a truck dr ch that P(	ecimal pla ar Program of LPP. riables in the scooter d pility of a c driver is on meets iver? X=2) = 9F	polynomi ces with h ming Pro LPP. rivers, 40 n accide s 0.01, 0 with an a P(X=4) + 9	al of degr h = 1. ( blem (LPF) 000 car di nt involv 0.03 and accident. 90P(X=6)	(2.5) (2.5)	
Q2	such tha (f) What do (g) Calculat (h) Define ba (i) Write a r (j) Write a r (a) An insur and 600 scooter of respectivy is the pro- (b) If X is a	at $f(0) = 1$ you mean $f_1^5 Sin x$ asic fease note on un note on se cance com 0 truck driver, c rely. One obability Poisson and var and stance 0 greater	interpolation f(1) = 3, f in by Num dx correct ible solution ible solution inbounded lack and sum npany insu- drivers. The ar driver of the ins- that he is variate sum- iance of X. 500 student lard deviation than 72 in 1 inches? dom variation	f(3) = 55. erical Inter to four de on in Linea solution of urplus van <b>UNIT-I</b> ared 2000 he probab and truck ured perso a truck dr ch that P( tion 3 incres inches (ii) Given P(Z ole X has	egration? ecimal pla ar Program of LPP. riables in : scooter d oility of a driver is on meets iver? X=2) = 9F rmally dis ches. How less than $\leq 1.33$ =0. probabilit	polynomi ces with H ming Pro LPP. rivers, 40 n accide s 0.01, 0 with an a P(X=4) + 9 stributed w many equal to 4082, P(2)	al of degr n = 1. blem (LPF 000 car di nt involv 0.03 and accident. 00P(X=6) with me students 0 64 inch Z = 1)=0.3 <sup>2</sup>	(2.5) (	
	<ul> <li>such that</li> <li>(f) What do</li> <li>(g) Calculate</li> <li>(h) Define base</li> <li>(i) Write a r</li> <li>(j) Write a r</li> <li>(a) An insurand 600 scooter of respective is the product of the second scooter of the second scoote</li></ul>	at $f(0) = 1$ you mean $f_1^5 Sin x$ asic fease hote on un hote on sin ance com 0 truck driver, c rely. One obability Poisson and var aghts of 5 nd stand 0 greater 55 and 7 hous rand	Interpolation inter	f(3) = 55. erical Intervention of the four dependence of the four	egration? ecimal pla ar Program of LPP. riables in scooter d oility of a driver is on meets iver? X=2) = 9F rmally dis ches. How less than $\leq 1.33$ =0. probabilit $< \infty$ <i>vise</i>	polynomi ces with h ming Pro LPP. rivers, 40 n accide s 0.01, 0 with an a p(X=4) + 9 stributed w many equal to 4082, P(2 y density	al of degr n = 1. blem (LPF 000 car di nt involv 0.03 and accident. 00P(X=6) with me students 0 64 inch Z = 1)=0.3 <sup>2</sup>	(2.5) (	
	such tha (f) What do (g) Calculat (h) Define ba (i) Write a r (j) Write a r (a) An insur and 600 scooter of respective is the pro- (b) If X is a the mean (a) If the hei inches an heights (i	at $f(0) = 1$ you mean $f_1^5 Sin x$ asic fease hote on un hote on sin ance com 0 truck driver, c rely. One obability Poisson and var aghts of 5 nd stand 0 greater 55 and 7 hous rand	Interpolation inter	f(3) = 55. erical Intervention of the four dependence of the four	egration? ecimal pla ar Program of LPP. riables in scooter d oility of a driver is on meets iver? X=2) = 9F rmally dis ches. How less than $\leq 1.33$ =0. probabilit $< \infty$ <i>vise</i>	polynomi ces with h ming Pro LPP. rivers, 40 n accide s 0.01, 0 with an a p(X=4) + 9 stributed w many equal to 4082, P(2 y density	al of degr n = 1. blem (LPF 000 car di nt involv 0.03 and accident. 00P(X=6) with me students 0.64 inch $Z \leq 1 = 0.3^4$	(2.5) (	

A-102

11/2

P.T.O.

## UNIT-II

						UNIT	'-II				in the magnit
			inni	na val	11e	of the f	ollow	ing t	able Ex	plain wh	ny the result <b>(6)</b>
Q4	(a) Find	the <b>n</b>	11550	ng vai	uu						(0)
	differ	s from	1 10		4	5 6					
	• X	1	2	3							1.4
	v	2	4	8		134 0		28	· - 1	alse Pos	ition method
	(b) Find	a real	root	t of th	e ec	luanon	Xº - :	$\mathbf{x} = 1$	using r	aut	ition method (6.5)
1	unto	fifth it	terat	ion.							
	upto									tural nu	mber N and (6) er of persons
05	(a) Obtai	in a fe	ormu	ıla to	cal	culate of	cube	root	of a na	luia	(6)
Q5	(a) Obtai	toev	alua	te cub	e re	oot of 2	8.			mbe	er of persons the following (6.5)
	use n		17 611	itable	me	ethod of	f inte	erpola	ation the	e nume	the following (6.5)
	(b) Estin	late D	y su	ome i	e.R	s. 19 bu	it no	t exc	eed Rs.	25 1101	(6.5)
		e dau	y inc	onic i	9.10						
	uala.						-19	19-2	28 20-0		2
	Inco	me (In	The	usan	as)			203		304	
		of pers				50 7	0	205	1		
			1								
	(a) Find t					UNIT	·III	1964	F3 2	2 7]	(6 5)
								A	4 = 2 3	3 1.	(6.5)
Q6	(a) Find t	he LU	l dec	ompo	siti	on of th	e ma	ULA	3	4 1	
Ųΰ	(a) 1 mile -				-	c		5 7 5	and y, o	btain dy	dx at $x = 4$
					able	e of value	les c	л <b>х</b> с			/dx at x = 4 (6)
	and d	$v/dx^2$	2 at 2	$\mathbf{x} = 5.$						5	
				1		2		3	4		
	x	0			+			-	6	2	
		4	6	8		15		7			
	У	S Constant		All Superior		TRASTA	-				in mothod
	And And			-	ote	m using	the	Gai	iss - Se	idel itera	ative method. (6.5)
07	(a) Solve	the fo	llow	ing sy	SIC		1				(0.3)
Cer	(a) Solve Perfor	m thr	ee it	eratio	ns c	5x - y	+ 37	= 3			
	-						1 52	7			
	Aller - Contraction					4x + 73		2 - 2			
	Variation and					6x - 3y	y + 92	Z = 9		1 hono	e obtain the
•	1	r <sup>1</sup>	dx	by 115	ing	Simps	on's	1/3	rule a	na nenc	e obtain the (6)
1	(b) Evalu	ate $J_0$	$1+x^{2}$	by us							(0)
-	appro	ximat	e val	ue of	π.						
							15° 1				
						UNIT-	IV		hlow	hv 119	sing simplex (12.5)
-	Quitra th	e foll	owir	ng lin	ear	progra	amm	ing	problem	I Dy u	(12.5)
Q8	Solve un		01142	-0							
	method: Min $Z = x$	1 . 0		3-23							
	Min 7 = 3	(I + Z.	X4 '	<b>UNU</b>							
	subject to	0									
	subject to 2x1 - x2	o + x3	≥ 4								
	subject to 2x1 - x2	o + x3	≥ 4 ≤ 8								
	subject to 2x1 - x2 $x1 + x2 + x2 - x3 \ge$	o + x3 · 2x3 : 2	≤ 8								
	subject to 2x1 - x2 $x1 + x2 + x2 - x3 \ge$	o + x3 · 2x3 : 2	≤ 8								
	subject to 2x1 - x2 x1 + x2 +	o + x3 · 2x3 : 2	≤ 8								
	subject to 2x1 - x2 $x1 + x2 + x2 - x3 \ge$	o + x3 · 2x3 : 2	≤ 8								
	subject to 2x1 - x2 $x1 + x2 + x2 - x3 \ge$	o + x3 · 2x3 : 2	≤ 8			30					

BCA-102

[-2-]

P.T.O.

## [-3-]

(a) Find the optimal solution of the following minimization transportation (6.5) problem:

		1 min	in the second		
	D1	D2	D3	D4	Supply
S1	11	13	17	14	250
S2	16	18	14	10	300
S3	21	24	13	10	400
Demand	200	225	275	250	

(b) A computer centre has 4 expert programmers. The centre wants 3 application programmes to be developed. The head of the computer centre, after studying carefully the programmes to be developed, estimates the computer time in minutes required by the experts for the application programmes as follows:

		Application Programmes				
	and and	Α	В	С		
	1	15	18	10		
	2	14	17	8		
Programmers 3	16	19	17			
	4	20	14	17		

How should the application programmes must be allocated, one per programmer, so as to minimize the total time?

**HICOLLEGE.IN** 

Q

Q9