




BLOOM’S TAXONOMY QUESTION PAPER PATTERN



THIRUTHANGAL NADAR COLLEGE
(Belongs to the Christchurch Thiruthangal Nadar Educational Group Fund)
 A Self Financing Co-Educational College of Arts & Science
 Affiliated to the University of Madras
 Re-accredited 'B++' Grade by NAAC & An ISO 9001:2015 Certified Institution
 Selasayal, Chennai, Tamil Nadu, India

Register No: _____

Department Of -----

Even Semester - Mid Semester / Model Examination February 2023
(Subject Name – Subject Code)

Date : _____

Time :1hr 30 mins

Class : _____

Marks :40

PART – A (Answer Any FIVE Questions)		(5x2 = 10 Marks)	
S.No	Question	Course Outcomes	Bloom's Taxonomy Level
1	Sample (Enter SIX Questions)	CO1	K1
PART-B (Answer Any TWO Questions)		(2x5 = 10 Marks)	
7	Sample (Enter Three Questions)	CO2	K3
PART-C(Answer Any TWO Questions)		(2x10 = 20 Marks)	
10	Sample (Enter Three Questions)	CO2	K4



THIRUTHANGAL NADAR COLLEGE

(Belongs to the Chennaivazh Thiruthangal Hindu Nadar Uravinmurai Dharma Fund)
A Self Financing Co-Educational College of Arts & Science
Affiliated to the University of Madras
Re-accredited 'B++' Grade by NAAC & An ISO 9001:2015 Certified Institution
Selavayal, Chennai, Tamil Nadu, India

Department Of Mathematics

Even Semester - Mid Semester Examination February 2023

(ALLIED MATHEMATICS-II – SM3AE)

Date : 23-02-2023

Time : 1.30 Min.

Class : I BSC CS

Marks : 40

S.No.	Question	Course Outcomes	Bloom's Taxonomy Level
PART-A (Answer Any Five Questions)		(5 X 2 = 10 MARKS)	
01	Write Bernoulli's formula.	C01	K1
02	Evaluate $\int_0^{\pi/2} \sin^5 x \cos^7 x \, dx$.	C01	K6
03	Solve $(D^2 + a^2)y = 0$.	C01	K3
04	Solve $(D^2 + 5D + 6)y = 0$.	C01	K3
05	Find $L(t^n)$	C01	K1
06	Define Gradient of a scalar point function.	C01	K1
PART-B (Answer Any Two Questions)		(2 X 5 = 10 MARKS)	
07	Evaluate $\int_0^{\pi/4} \log(1 + \tan \theta) \, d\theta$	C01	K6
08	Find the particular integral of $(D^2 + D + 1)y = x$.	C01	K1
09	Find the value of (a) $L[te^{-3t}]$ (b) $L[\sin 3t \cos 2t]$.	C01	K1
PART-C (Answer Any Two Questions)		(2 X 10 = 20 MARKS)	
10	Find the reduction formula for $I_{m,n} = \int_0^{\pi/2} \sin^m x \cos^n x \, dx$.	C01	K1
11	Solve $(D^2 + 2D + 4)y = e^{-2x} \cos 3x$.	C01	K3
12	(a). Find $\nabla \phi$ at $(1, -1, 2)$ if $\phi = x^2 y - 2y^2 z^3$. (b). Find ϕ if $\nabla \phi = (6xy + z^3)\vec{i} + (3x^2 - z)\vec{j} + (3xz^2 - y)\vec{k}$.	C04	K1



THIRUTHANGAL NADAR COLLEGE

(Belongs to the Chennai-based Thiruthangal Hindu Nadar Uranimurai Dharma Fund)
A Self Financing Co-Educational College of Arts & Science
Affiliated to the University of Madras
Re-accredited 'B++' Grade by NAAC & An ISO 9001:2015 Certified Institution
Selavayal, Chennai, Tamil Nadu, India

Department Of Mathematics

Even Semester - Mid Semester Examination February 2023

(ELEMENTS OF OPERATIONS RESEARCH – CZ34A/BS34A)

Date: 24-02-2023

Time : 1.30 Min.

Class: II BCOM A/F

Marks : 40

S.No.	Question	Course Outcomes	Bloom's Taxonomy Level																																													
PART-A (Answer Any Five Questions)		(5 X 2 = 10 MARKS)																																														
01	Define 'Initial Basic Feasible Solution'.	C04	K1																																													
02	Define 'Degenerate Solution'.	C04	K1																																													
03	What is Hungarian method?	C04	K1																																													
04	Define payoff matrix.	C05	K1																																													
05	Who is player?	C05	K1																																													
06	What is zero-sum game?	C05	K1																																													
PART-B (Answer Any Two Questions)		(2 X 5 = 10 MARKS)																																														
07	Determine basic feasible solution to the following transportation problem by using NWC rule.	C04	K3																																													
	<table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="5">Sink</th> <th rowspan="2">supply</th> </tr> <tr> <th colspan="2"></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> </tr> </thead> <tbody> <tr> <th rowspan="3">Origin</th> <th>P</th> <td>2</td> <td>11</td> <td>10</td> <td>3</td> <td>7</td> <td>4</td> </tr> <tr> <th>Q</th> <td>1</td> <td>4</td> <td>7</td> <td>2</td> <td>1</td> <td>8</td> </tr> <tr> <th>R</th> <td>3</td> <td>9</td> <td>4</td> <td>8</td> <td>12</td> <td>9</td> </tr> <tr> <th colspan="2">Demand</th> <td>3</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td></td> </tr> </tbody> </table>					Sink					supply			A	B	C	D	E	Origin	P	2	11	10	3	7	4	Q	1	4	7	2	1	8	R	3	9	4	8	12	9	Demand		3	3	4	5	6	
				Sink					supply																																							
				A	B	C	D	E																																								
	Origin			P	2	11	10	3	7	4																																						
Q		1	4	7	2	1	8																																									
R		3	9	4	8	12	9																																									
Demand		3	3	4	5	6																																										
08	Solve the following assignment problem.	C04	K3																																													
	<table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="4">TASK</th> </tr> <tr> <th colspan="2"></th> <th>I</th> <th>II</th> <th>III</th> <th>IV</th> </tr> </thead> <tbody> <tr> <th rowspan="4">WORKERS</th> <th>A</th> <td>16</td> <td>52</td> <td>34</td> <td>22</td> </tr> <tr> <th>B</th> <td>26</td> <td>56</td> <td>8</td> <td>52</td> </tr> <tr> <th>C</th> <td>76</td> <td>38</td> <td>36</td> <td>30</td> </tr> <tr> <th>D</th> <td>38</td> <td>52</td> <td>48</td> <td>20</td> </tr> </tbody> </table>					TASK						I	II	III	IV	WORKERS	A	16	52	34	22	B	26	56	8	52	C	76	38	36	30	D	38	52	48	20												
				TASK																																												
				I	II	III	IV																																									
	WORKERS			A	16	52	34	22																																								
B		26	56	8	52																																											
C		76	38	36	30																																											
D		38	52	48	20																																											
09	Obtain the optimum strategy described by the matrix.	C05	K3																																													
	<table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="4">Player B</th> </tr> </thead> <tbody> <tr> <th rowspan="3">Player A</th> <th>-5</th> <td>3</td> <td>1</td> <td>20</td> </tr> <tr> <th>5</th> <td>5</td> <td>4</td> <td>6</td> </tr> <tr> <th>-4</th> <td>-2</td> <td>0</td> <td>-5</td> </tr> </tbody> </table>					Player B				Player A	-5	3	1	20	5	5	4	6	-4	-2	0	-5																										
				Player B																																												
	Player A			-5	3	1	20																																									
5		5	4	6																																												
-4		-2	0	-5																																												



PART-C (Answer Any Two Questions)						(2 X 10 = 20 MARKS)		
10	Solve the following transportation problem.						C03	K3
		To				Available		
	From	A	B	C	D			
	1	11	20	7	8	50		
	2	21	16	20	12	40		
3	8	12	18	9	70			
Demand	30	25	35	40				
11	Solve the following assignment problem						C03	K3
		Machines						
	Jobs	M ₁	M ₂	M ₃	M ₄			
	J ₁	5	7	11	6			
	J ₂	8	5	9	6			
J ₃	4	7	10	7				
J ₄	10	4	8	3				
12	Solve the following game by dominance and find the game value.						C03	K3
		Colour chosen by Q						
	Colour chosen by P	W	0	-2	7			
		B	2	5	6			
		R	3	-3	8			