Vivekananda College of Engineering & Technology, Puttur
[A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®]
Affiliated to VTU, Belagavi & Approved by AICTE New Delhi

CRM08	Rev 1.11	BS	27-07-2022

CONTINUOUS INTERNAL EVALUATION – 1

Dept: BS	Sem / Div: IV	Sub: Additional Mathematics -2	S Code: 18MATDIP41
Date: 28-07-2022	Time: 3.30PM-5PM	Max Marks: 50	Elective: N

Note: Answer any 2 full questions, choosing one full question from each part.

QN	Questions	Marks
	PART A	
1 a	Find the Rank of the following matrix by applying elementary row transformation $\begin{bmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 1 & 3 \\ 6 & 8 & 7 & 5 \end{bmatrix}$.	8
b	Test for consistency and solve: x+y+z=6 ; x-y+2z=5 ; 3x+y+z=8	8
c	Find the values of k such that the following matrix A may have rank equal to a) 3 b)2 $A = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 2 & 4 & k \\ 1 & 4 & 10 & k^2 \end{bmatrix}$	9
	OR	
2 a	Find the Rank of the following matrix by applying elementary row transformation $\begin{bmatrix} -2 & -1 & -3 & -1 \\ 1 & 2 & 3 & -1 \\ 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & -1 \end{bmatrix}$.	8
b	Show that the following system of equations does not possess	8

	any solution : 5x+3y+7z=5 ; 3x+26y+2z=9 ; 7x+2y+10z=5	
c	Reduce the matrix to row echelon form and find its rank : $$\begin{bmatrix} 1 & 2 & 1 & 3 & 4 \\ 2 & 1 & 3 & 2 & 1 \\ 0 & 2 & 1 & 1 & 3 \\ 3 & 1 & 3 & 4 & 2 \end{bmatrix}.$$	9

PART B

3 a	Find the rank of a matrix : $A = \begin{bmatrix} 1 & 2 & 3 & 2 \\ 2 & 3 & 5 & 1 \\ 1 & 3 & 4 & 5 \end{bmatrix}.$	8
b	Show that the system of equation is consistent and hence find the solution : x+y+z=4 : 2x+y-z=1; x-y+2z=2	8
c	Investigate the values of λ and μ such that the system of equations x+y+z=6 ; x+2y+3z=10 ; x+2y+λz=μ may have (I) Unique solution (ii) Infinite solution (iii) No solution	9

OR

4 a	Find the rank of a matrix : $$\begin{bmatrix} 0 & 1 & 2 & -2 \\ 4 & 0 & 2 & 6 \\ 2 & 1 & 3 & 1 \end{bmatrix}$$	8
b	Solve :x+y+z=-3 ;3x+y-2z=-2; 2x+4y+7z=7.	8
c	Test for consistency and solve : x+2y+3z=14 4x+5y+7z=35 3x+3y+4z=21.	9

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