Enrolment No/Seat No.: _____

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT

(An Autonomous Institute U/s UGC Act 1956)

ONLINE MCA SEMESTER-I, SEMESTER END EXAMINATION – WINTER 2025

SUBJECT CODE:1MCA104 **DATE: 22-01-2026**

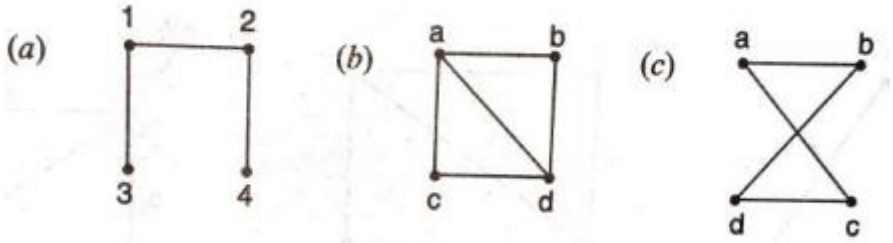
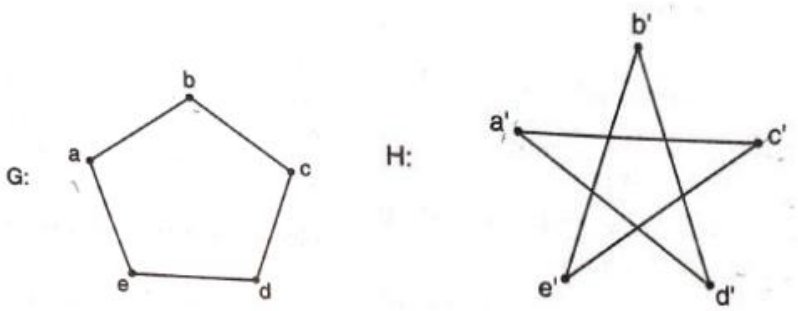
SUBJECT NAME: MATHEMATICS FOR COMPUTATION

TIME: 09:00 AM to 11:00 AM **TOTAL MARKS: 50**

Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Write answers of **Section A** and **Section B** in **separate answer books**.
3. Attempt all questions from both **Section A** and **Section B**.
4. Each section carries **25 marks**, with a total of **50 marks** for the examination.
5. The figures to the right of each question indicate full marks, make suitable assumptions with justification.
6. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A –Application, N –Analyze, E – Evaluate, C -Create), CO - Course Outcomes.

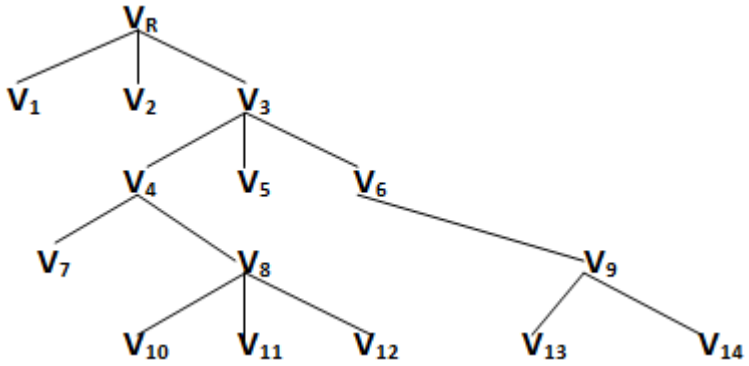
SECTION A

			Marks	BL	CO
Q.1	**(a)**	Solve the following system by Gauss elimination method: $x+y+2z=9,$ $2x+4y-3z=1$ $3x+6y-5z=0.$	**05**	**A**	**2**
Q.2		**Attempt Any Two**	**[10]**		
	(a)	Define with example: graph, trivial graph, null graph, complete graph, pseudo graph.	**05**	**R**	**5**
	(b)	Define adjacency matrix of graph. Find the adjacency of the following graphs: 	**05**	**A**	**5**
	(c)	Define Isomorphic and check whether the following pair of graphs G & H are isomorphic or not with description. 	**05**	**A**	**5**

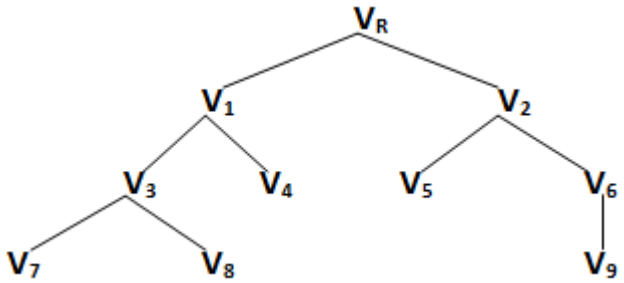
Q.3 **Attempt Any Two** **[10]**

(a) Define the following terms: **05** **R** **6**
Minimally connected graph, eccentricity of a vertex, centre of the graph, radius of a tree, diameter of a tree.

(b) Convert the following tree into a binary tree with appropriate steps: **05** **A** **6**



(c) Obtain preorder, inorder and postorder traversal for the following tree: **05** **A** **6**



SECTION B

			Marks	BL	CO
Q.4	**(a)**	Solve the following system of equations by using Gauss Jacobi Method: $6x+2y-z=4$ $x+5y+z=3$ $2x+y+4z=27$	**05**	**A**	**3**
Q.5		**Attempt Any Two**	**[10]**		
	(a)	Show that implication $(p \wedge r) \rightarrow p$ is a tautology by using truth table.	**05**	**A**	**1**
	(b)	Show that $\neg(p \wedge q)$ and $(\neg p \vee \neg q)$ are logical equivalent by using truth table.	**05**	**A**	**1**
	(c)	Find DNF of $(p \rightarrow (q \wedge r)) \wedge (\neg p \rightarrow (\neg p \wedge \neg r))$ by truth table method.	**05**	**A**	**1**
Q.6		**Attempt Any Two**	**[10]**		
	(a)	Calculate the first four moments from the following data: Also calculate the values of β_1 and β_2.	**05**	**A**	**4**
	(b)	Calculate the coefficient of correlation for the following data:	**05**	**A**	**4**
	(c)	Obtain the two regression coefficients from the following data and find correlation coefficients:	**05**	**A**	**4**

x	0	1	2	3	4	5	6	7	8
f	5	10	15	20	25	20	15	10	5

x	5	9	13	17	21
y	12	20	25	33	35

x	7	4	8	6	5
y	6	5	9	8	2

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