Enrolment No/Seat No.: _____

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

(An Autonomous Institute U/s UGC Act 1956)

B.Voc. SEMESTER-I, SEMESTER END EXAMINATION – WINTER 2025

SUBJECT CODE: 1SRE103 **DATE: 19-12-2025**

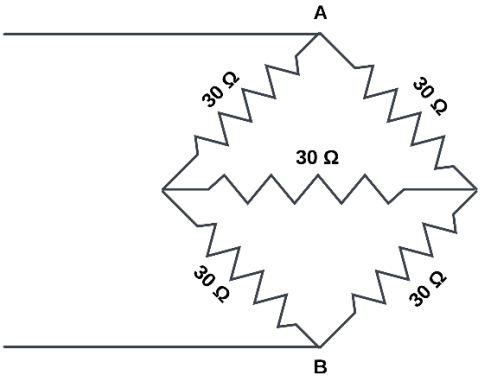
SUBJECT NAME: FUNDAMENTAL OF ELECTRICAL ENGINEERING-1

TIME: 11:00 AM to 01:00 PM **TOTAL MARKS: 50**

Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Attempt all questions in the question paper.
3. The figures to the right of each question indicate full marks. Make suitable assumptions with proper justification wherever required.
4. Simple, non-programmable scientific calculators are permitted.
5. BL - Cognitive Level (As per Revised Bloom's Taxonomy) (R-Remember, U-Understanding, A –Application, N –Analyze, E – Evaluate, C -Create), CO - Course Outcomes.

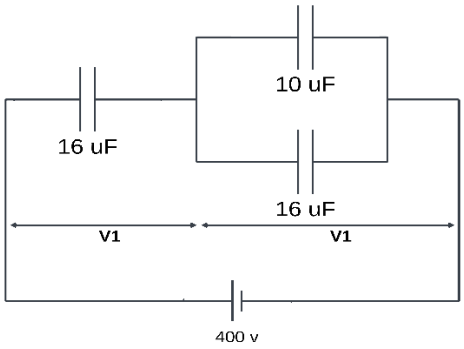
			Marks	BL	CO
Q.1	**(a)**	Explain Ohm's law and write its limitations.	**05**	**U**	**1**
	(b)	Define (i) Current, (ii) Voltage, (iii) Power, (iv) Energy.	**05**	**R**	**1**
Q.2	**(a)**	Define Node, Branch, Loop and Mesh.	**05**	**R**	**2**
	(b)	Three loads A, B, C are connected in parallel to a 240V source. Load A takes 9.6kW, Load B takes 60A and load C has a resistance of 4.8 Ω. Calculate (i) RA and RB (ii) total current (iii) total power and (iv) equivalent resistance.	**05**	**U**	**2**
		OR			
Q.2	**(a)**	Give mesh analysis method with steps.	**05**	**R**	**2**
	(b)	State and explain Kirchhoff's Current Law (KCL) with one example.	**05**	**U**	**2**
Q.3	**(a)**	With circuit diagram explain star to delta transformation.	**05**	**R**	**2**
	(b)	Explain Thevenin's theorem with example.	**05**	**U**	**2**
		OR			
Q.3	**(a)**	Write and explain Super Position Theorem.	**05**	**R**	**2**
	(b)	Find out resistance between terminal A and B.	**05**	**U**	**2**



Q.4	**(a)**	What is electrostatics? State coulomb's laws of electrostatic.	**05**	**R**	**3**
	(b)	Two capacitors having capacitance of 3uF and 6uF are connected in parallel. A 9uF capacitor is connected in series. With this combination and complete circuit is connected across 200 Volts. Calculate (i) Total capacitance of circuit (ii) Total charge in the circuit (iii) Total energy stored (iv) Charge on each capacitor.	**05**	**U**	**3**

OR

Q.4	**(a)**	Derive expression for equivalent capacitance when capacitors are connected in series.	**05**	**U**	**3**
	(b)	Calculate total charge & voltage of each capacitor in circuit.	**05**	**U**	**3**



Q.5	**(a)**	Comparison of Magnetic circuit and Electric circuit.	**05**	**R**	**4**
	(b)	Define following term. 1) M.M.F 2) Magnetic force 3)Magnetic field intensity 4) Permeability 5) Reluctance	**05**	**R**	**4**

OR

Q.5	**(a)**	Explain coupling co –efficient.	**05**	**R**	**4**
	(b)	Derive energy stored in magnetic field.	**05**	**R**	**4**

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