PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch - **ELECTRONICS**

ELECTRIC CIRCUITS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	In a series circuit, which of the following parameters remains constant across all circuit elements? a) Voltage b) Current c) Resistance d) Power	K1	CO1
	2	To obtain a high value of capacitance, the permittivity of dielectric medium should be _____. a) LOW b) ZERO c) HIGH d) UNITY	K2	CO1
2	3	The super position theorem is applicable to _____. a) only linear circuits b) only nonlinear circuits c) both linear and nonlinear circuits d) neither linear nor nonlinear circuits	K1	CO2
	4	The maximum power transfer theorem is transferring maximum power from a source to load when _____ a) The load impedance is equal to source impedance b) The load impedance is greater than source impedance c) The load impedance is less than source impedance d) The load impedance is infinite	K2	CO2
3	5	Which of the following circuits exhibits maximum power dissipation? a) Pure Inductive Circuit b) Pure Capacitive Circuit c) Pure Resistive Circuit d) None of the above	K1	CO3
	6	What happens to the quality factor of an LCR circuit if the resistance is increased? a) Increases b) Decreases c) Remains the same d) None of the above	K2	CO3
4	7	Power factor can be mathematically expressed as: a) P/Q b) Q/P c) P/S d) S/P	K1	CO4
	8	Power factor of a pure capacitor is a) unity b) zero leading c) zero lagging d) between unity and zero lagging	K2	CO4
5	9	What is the primary function of a wattmeter in a single-phase AC circuit? a) To measure voltage b) To measure current c) To measure power, considering voltage, current, and the phase angle between them d) To measure resistance	K1	CO5
	10	Shunt magnet has _____ a) large turns of wire b) small turns of wire c) medium turns of wire d) no turns or wires	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 × 7 = 35).

Module No.	Question No.	Question	K Level	CO
1	11.a.	Discuss the term power energy.	K2	CO1
		(OR)		
	11.b.	Explain the principle of RLC circuits with diagrams.		
2	12.a.	Explain the super position theorem with examples.	K3	CO2
		(OR)		
	12.b.	Describe the Norton's theorem.		
3	13.a.	Show and explain the sine wave equation.	K3	CO3
		(OR)		
	13.b.	Construct a phasor diagram in detail.		
4	14.a.	Write the function of series resonance.	K4	CO4
		(OR)		
	14.b.	Conclude the function of resonance frequency for a tank circuit.		
5	15.a.	Compare the single phase and 3- phase voltages.	K4	CO5
		(OR)		
	15.b.	Explain the principle of Power measurements in 3-phase circuits.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions
ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Examine the Kirchhoff's law with diagrams.	K4	CO1
2	17	Explain the Millman's power transform theorem with neat sketch.	K4	CO2
3	18	Justify the RL and RC parallel circuits with diagrams.	K5	CO3
4	19	Conclude the Q factor in parallel resonance with examples.	K4	CO4
5	20	Develop a circuit for generation of 3- phase voltage.	K5	CO5

Z-Z-Z END