

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(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	Relation between power, voltage and conductance is _____ a) $V = P^2 \cdot G$ b) $V = P^2 / G$ c) $P = v^2 / G$ d) $P = V^2 \cdot G$	K1	CO1
	2	In which of the following cases is Ohm's law not applicable? a) Electrolytes b) Arc lamps c) Insulators d) Vacuum ratio values	K2	CO1
2	3	In superposition theorem, when we consider the effect of one voltage source, all the other voltage sources are _____ a) Shorted b) Opened c) Removed d) Undisturbed	K1	CO2
	4	According to Millman's Theorem, if there are n voltage sources with n internal resistances respectively, are in parallel, then these sources are replaced by? a) single current source I' in series with R' b) single voltage source V' in series with R' c) single current source I' in parallel to R' d) single voltage source V' in parallel to R'	K2	CO2
3	5	The response of a second order system is? a) pulse b) saw tooth c) square d) sinusoid	K1	CO3
	6	The current in the R-L circuit at a time $t = 0^+$ is? a) V/R b) R/V c) V d) R	K2	CO3
4	7	What is the power factor in a pure resistive circuit? a) 0 b) -1 c) Infinity d) 1	K1	CO4
	8	Q-factor is also known as _____ magnification. a) Voltage b) Current c) Resistance d) Impedance	K2	CO4
5	9	A polyphase system is generated by _____ a) Having two or more generator windings separated by equal electrical angle. b) Having generator windings at equal distances c) None of the above d) a and c	K1	CO5
	10	The wattmeter method is used to measure power in a three-phase load. The wattmeter readings are 400W and -35W. Find the power factor. a) 0.43 b) 0.53 c) 0.63 d) 0.73	K2	CO5

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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.	Explain the term "voltage" in detail.	K2	CO1
		(OR)		
	11.b.	Demonstrate the Ohm's law with an example.		
2	12.a.	Select mesh analysis method and compare with nodal analysis method and explain.	K3	CO2
		(OR)		
	12.b.	Apply Norton's theorem to a circuit give the output.		
3	13.a.	Construct a sine wave and explain its properties.	K3	CO3
		(OR)		
	13.b.	Build a parallel RL circuit and explain its working.		
4	14.a.	Compare apparent power and reactive power and list its differences.	K4	CO4
		(OR)		
	14.b.	Analyze the variation of impedance with frequency and explain.		
5	15.a.	List the advantages of 3 phase system.	K4	CO5
		(OR)		
	15.b.	Examine the power measurement in 3 phase circuits and list out its process.		

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	Analyze the working of resistors when connected in series and parallel with examples.	K4	CO4
2	17	Examine the operation of Millman's theorem and write the important points.	K4	CO5
3	18	Compare the phase relation in pure resistor and inductor and list the similarities.	K4	CO4
4	19	Give a conclusion on the effects of bandwidth in Q-factor.	K4	CO5
5	20	Analyze and give a report on how to measure power in a single-phase circuit by wattmeter?	K4	CO4

Z-Z-Z

END