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23ELU310N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(Third Semester)

Branch – **ELECTRONICS**

DIGITAL AND LINEAR ICs

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	Identify the material for substrate of IC Fabrication a) Silicon b) Germanium c) Silver d) Aluminum	K1	CO1
	2	Which one of the following device is not fabricated in the IC Fabrication process ? a) Diode b) Transistor c) Resistor d) Transformer	K2	CO1
2	3	Which characteristic of IC in Digital Circuits represents a function of the switching time of a particular transistor? a) Fan – out b) Fan – in c) Power dissipation d) Propagation delay	K1	CO2
	4	Which one of the following gate is realized in TTL ? a) NOT b) NAND c) NOR d) OR	K2	CO2
3	5	Which component is placed in the feedback to use Op-Amp as Log Amplifier ? a) Capacitor b) Resistor c) Inductor d) Diode	K1	CO3
	6	Infer the CMRR for an Ideal OP-Amp a) Zero b) Infinity c) 1 MΩ d) 100 MΩ	K2	CO3
4	7	What is the voltage gain of Op-Amp voltage follower? a) 0 b) unity c) Infinity d) 100	K1	CO4
	8	At which point the virtual ground occurs in an Op-Amp? a) Inverting b) Non-Inverting c) Ground of supply d) Output	K2	CO4
5	9	Determine the time period of a monostable 555 multivibrator ? a) T = 0.33RC b) T = 1.1RC c) T = 3RC d) T = RC	K1	CO5
	10	Infer the output of the IC 555 astable circuit. a) constantly switches between two states b) is LOW until a trigger is received c) is HIGH until a trigger is received d) floats until triggered	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.	Explain about Czochralski crystal growth process.	K2	CO1
		(OR)		
	11.b.	Illustrate the ion implantation method with a neat sketch.		
2	12.a.	Discuss the working of RTL Gate	K3	CO2
		(OR)		
	12.b.	Write a note on Totempole output		
3	13.a.	Listout the characteristics of an Ideal Op-Amp	K3	CO3
		(OR)		
	13.b.	Analyze Op-Amp Adder for various inputs		
4	14.a.	With relevant waveforms and circuit explain the working of zero crossing detector	K3	CO4
		(OR)		
	14.b.	With relevant waveforms and circuit explain the working of Op-Amp schmitt trigger		
5	15.a.	Draw the functional block diagram of 555 and Discuss its working	K3	CO5
		(OR)		
	15.b.	Draw the functional block diagram of PLL and Discuss its working		

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	Elucidate the entire photolithography process with neat sketch.	K4	CO1
2	17	Construct a TTL circuit and explain its working	K3	CO2
3	18	Analyze the output of an Instrumentation Amplifier with relevant diagram	K4	CO3
4	19	Discuss the working of OP-Amp based RC phase shift oscillator	K4	CO4
5	20	Explain the working of 555 based astable multivibrator	K4	CO5

Z-Z-Z END