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23ELU413N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2026
(Fourth Semester)

Branch- **ELECTRONICS**

ELECTRONIC COMMUNICATION -I

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	Why is modulation necessary in communication systems? a) To reduce the speed of transmission b) To decrease the range of communication c) To transmit signals over long distances without distortion d) To eliminate noise completely	K1	CO1
	2	Classify the type of frequencies that mainly use space wave propagation. a) Very high frequencies (VHF) and above b) Low frequencies (LF) c) Very low frequencies (VLF) d) Medium frequencies (MF)	K2	CO1
2	3	Choose the correct output of a balanced modulator. a) Carrier only b) Message signal only c) AM with carrier d) DSB-SC	K1	CO2
	4	Infer the main reason ceramic filters are used in SSB systems. a) To amplify the carrier b) To suppress one of the sidebands c) To generate frequency modulation d) To increase antenna gain	K2	CO2
3	5	Find the formula for frequency deviation in FM. a) $\Delta f = kf \times Am$ b) $\Delta f = kp \times Am$ c) $\Delta f = ka \times Am$ d) $\Delta f = fc \times Am$	K1	CO2
	6	Outline the sequence of stages in indirect FM generation. a) Crystal oscillator → Mixer → Detector → Audio amplifier b) Crystal oscillator → Phase modulator → Frequency multiplier → Power amplifier c) Local oscillator → Mixer → IF amplifier → Detector d) Amplifier → Oscillator → Demodulator → Filter	K2	CO3
4	7	Find the typical value of IF used in AM radio receivers. a) 455 kHz b) 10 Hz c) 10.7 MHz d) 100 MHz	K1	CO4
	8	Classify the main function of the diode in an AM detector. a) Amplification b) Filtering c) Rectification d) Frequency translation	K2	CO4
5	9	How does increasing the number of quantization levels affect quantization noise? a) Decreases noise b) Increases noise c) No change d) Distorts message	K1	CO4
	10	Summarize practical applications of FSK. a) Telephone signaling, modems, wireless LANs b) Radio broadcasting c) Television transmission d) Optical fiber links only	K2	CO4

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 the mechanism of ground wave propagation.	K2	CO1
		(OR)		
	11.b.	Explain with neat sketches the conditions of under-modulation, 100% modulation, and over-modulation.		
2	12.a.	Construct a neat labeled diagram of a crystal filter used in an SSB transmitter.	K3	CO2
		(OR)		
	12.b.	Organize the sequence of operations in an SSB receiver from antenna input to audio output.		
3	13.a.	Experiment with different modulation indices for an FM signal and observe.	K3	CO3
		(OR)		
	13.b.	Apply the concept of pre-emphasis and de-emphasis to show how FM noise can be reduced in the receiver.		
4	14.a.	Electronic tuning.	K4	CO4
		(OR)		
	14.b.	Explain the working principle and functions of electronic tuning in radio receivers.		
5	15.a.	Compare PPM with Pulse Width Modulation (PWM) and Pulse Code Modulation (PCM).	K4	CO4
		(OR)		
	15.b.	Test for understanding of the block diagram of a BPSK modulator and explain each block.		

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 block diagram of an AM transmitter and explain the function of each block.	K4	CO1
2	17	Categorize the types of side band transmission.	K4	CO2
3	18	Sketch the block diagram of a direct FM generator and explain the function of each stage.	K4	CO3
4	19	Evaluate the effect of non-linearity in the discriminator characteristic.	K5	CO4
5	20	Explain how companding reduces noise in communication systems, with a neat block diagram	K5	CO4

Z-Z-Z END