22PHP314AN

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(Third Semester)

Branch - **PHYSICS**

MAJOR ELECTIVE COURSE – I : DIGITAL COMMUNICATIONS

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 type of modulation where the frequency of the modulated wave is equal to that of the carrier wave. a) Frequency modulation b) Amplitude modulation c) Carrier modulation d) Phase modulation	K1	CO1
	2	The frequency range of amplitude modulation is between ___. a) 540-1600Hz b) 940-1600Hz c) 140-1600Hz d) 240-1600Hz	K2	CO1
2	3	The amplitude modulation spectrum consists of _____ sideband frequencies and also a carrier frequency. a) Upper b) Lower c) Both upper and lower d) None of the above	K1	CO2
	4	The bandwidth of amplitude modulation is _____. a) 5KHz b) 2KHz c) 7KHz d) 10KHz	K2	CO2
3	5	The ratio of modulating signal voltage divided by carrier voltage is called _____ a) Modulation index b) Amplitude modulation c) Phase modulation d) None of the above	K1	CO3
	6	PAM signal can be detected using a) Low pass filter b) High pass filter c) Band pass filter d) All pass filter	K2	CO3
4	7	TDM requires a) Constant data transmission b) Transmission of data samples c) Transmission of data at random d) Transmission of data of only one measured	K1	CO4
	8	Which of the following is an example of Bluetooth? a) wide area network b) virtual private network c) local area network d) personal area network	K2	CO4
5	9	Which layer is responsible for process to process delivery in a general network model? a) session layer b) data link layer c) transport layer d) network layer	K1	CO5
	10	Which address is used on the internet for employing the TCP/IP protocols? a) physical address and logical address b) port address c) specific address d) all of the mentioned	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.	Write a note on Amplitude Modulation.	K2	CO1
		(OR)		
	11.b.	Derive the mathematical analysis of suppressed carrier AM.		
2	12.a.	Define angle modulation with mathematical analysis.	K2	CO2
		(OR)		
	12.b.	Explain frequency deviation and modulation percentage.		
3	13.a.	Determine (a) the peak frequency deviation, (b) minimum bandwidth, and (c) baud for a binary FSK signal with a mark frequency of 49 kHz, a space frequency of 51 kHz, and an input bit rate of 2 kbps.	K2	CO3
		(OR)		
	13.b.	Compare PAM,PWM and PPM.		
4	14.a.	Explain about mobile telephone service evolution of cellular telephone.	K2	CO4
		(OR)		
	14.b.	Explain about cellular telephone network concepts.		
5	15.a.	Define networking concepts and terminologies.	K2	CO5
		(OR)		
	15.b.	Write a note on Internet and WiFi.		

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	Explain in detail about ring and FET pushpull balanced modulators.	K3	CO1
2	17	Explain about phase locked loop direct FM transmitter.	K3	CO2
3	18	Discuss the principle of ASK and FSK.	K3	CO3
4	19	Explain global system for mobile communication in detail.	K3	CO4
5	20	Describe about broadband ISDN and ATM networks.	K3	CO5

Z-Z-Z END