Q. Code:449991

Reg. No. | | | | | | | | | | | | | |

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Sixth Semester

OE18704 – INTRODUCTION TO COMMUNICATION SYSTEMS

(Regulation 2018/2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Identify various analog communication techniques based on its application.	**3**
CO 2	Identify various digital communication techniques based on its application.	**3**
CO 3	Identify the usage of pulse communication techniques.	**3**
CO 4	Utilize the concepts of satellite communication.	**3**
CO 5	Interpret wireless communication and cellular network standards through latest applications.	**3**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Why is modulation needed for communication?	**1**	**4**
2.	List the advantages, disadvantages and the applications of angle modulation.	**1**	**4**
3.	Define Pulse Time Modulation and list its types.	**2**	**2**
4.	Define quantum, quantization and quantization error.	**2**	**2**
5.	How will the ASK, FSK and BPSK waveforms look like for the data stream 11001010.	**3**	**3**
6.	A standard telephone circuit has a signal to noise power ratio of 1000 and a bandwidth of 2.7 khz. Calculate the Shannon's Limit for Information Capacity.	**3**	**3**
7.	Why should an omnidirectional antenna be used aboard a satellite for telemetry and command during the launch phase?	**4**	**4**
8.	Differentiate between geosynchronous and geostationary orbit.	**4**	**4**
9.	Find the cluster size and co-channel reuse factor for i = 2 and j = 3.	**5**	**3**
10.	List few applications of WLAN.	**5**	**2**

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Explain in detail the theory of Amplitude Modulation. Analyze the frequency spectrum, the bandwidth requirements and the power distribution of AM signal.	**(14)**	**1**	**4**
	(OR)			
(b)	Compare DSB-FC, DSB-SC, SSB, with respect to their advantages,	**(14)**	**1**	**4**

disadvantages and applications.

12. (a)	With necessary diagrams explain the generation of PAM with Natural Sampling and Flat-Top Sampling.	**(14)**	**2**	**2**
	(OR)			
(b)	With neat block diagram explain the Generation and Detection of PWM and PPM signals using instantaneous sampling.	**(14)**	**2**	**2**
13. (a)	Explain the generation and detection of BPSK system with the help of block diagrams. Comment on the bandwidth requirements.	**(14)**	**3**	**4**
	(OR)			
(b)	Define QAM. With an illustration, explain the concept of 8-QAM transmitter and receiver.	**(14)**	**3**	**4**
14. (a)	How is a satellite placed into geostationary orbit from earth? Describe in detail.	**(14)**	**4**	**4**
	(OR)			
(b)	Describe the Telemetry, Tracking and Command Subsystem.	**(14)**	**4**	**4**
15. (a)	**(i)** With an illustration bring out the features of frequency handoff technique in cellular communication.	**(7)**	**5**	**4**
	(ii) Illustrate using a timing diagram how the call to a mobile user is initiated from a mobile subscriber.	**(7)**	**5**	**4**
	(OR)			
(b)	**(i)** Highlight the salient features of TDMA and FDMA based systems.	**(7)**	**5**	**4**
	(ii) Compare 4G and 5G in terms of Bandwidth, Modulation techniques, Frequency band, Data rate and applications.	**(7)**	**5**	**4**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	What is your opinion about the 5G technology as compared with the various cellular network standards/ technologies - 2G, 2.5G, 3G, 3.5G, 4G with respect to the Bandwidth, Modulation techniques, Frequency band, Data rate, Applications etc.	**(10)**	**5**	**5**

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