

**BACHELOR OF ENGINEERING (ELECTRICAL ENGINEERING)
FIFTH YEAR FIRST SEMESTER - 2019**

**PRINCIPLES OF COMMUNICATION ENGINEERING
AND COMPUTER NETWORKS**

Full Marks 100

Time: Three hours

(50 marks for each part)

Use a separate Answer-Script for each part

**No. of
Questions**

PART- I

Marks

Answer any THREE questions

Two marks reserved for neat and well organized answers

1. (a) **Classify the radio-frequency spectra used in Communication, according to the frequency ranges. Give the nomenclature for these classes and the corresponding application area.** 6
- (b) **Distinguish between baseband communication and carrier communication. Point out the motivations for modulating the message signal before communication. What are the different types of analog modulation? Explain in brief.** 3+4+3
2. (a) **Explain the working principle of conventional DSB AM switching modulator. Give suitable sketches and derivations in this connection.** 8
- (b) **How can several message signals be communicated over a single communication channel using the frequency-division multiplexing technique? Elucidate.** 8
3. (a) **Elaborate the fundamentals of angle modulation. Define instantaneous frequency. Use mathematical derivations to establish an interrelation between frequency modulation and phase modulation.** 8
- (b) **Examine the expression of angle-modulated signal, and obtain the block diagram representation of the arrangement for generating narrowband angle-modulated signal. Also point out how wideband frequency modulation may be achieved.** 8
4. (a) **Point out the merits of "Digital Communication" as compared to "Analogue Communication".** 8

[Turn over

*No. of
Question*

Marks

PART- I

(b) **With the help of relevant sketches, explain in brief the principle of time-division multiplexing for digital communication of messages.** **8**

5. Write short notes on *any two* of the following.

a) **Frequency Shift Keying (FSK) employed in digital communication.** **8+8**

b) **Any appropriate circuit for demodulating DSB-SC AM signals.**

c) **Theory of generation of 'Single Side Band Amplitude Modulated' (SSB-AM) signals.**

d) **Power content of conventional analog AM signals.**

**BACHELOR OF ENGINEERING (ELECTRICAL ENGINEERING) FIFTH YEAR FIRST SEMESTER
EXAM 2019**

Principles of Communication Engineering and Computer Networks

Time: Three Hours

Full Marks: 100

(50 marks for each part)

Use a separate Answer-Script for each Part

PART-II

Answer *any three* questions. *Two* marks are reserved for neat and well organised answer

1.	a) Explain the need for detection of error in data transmission system. How parity is used for detection of error in such system? Mention the drawback of parity in detecting error.	3+3+2
	b) A channel is required to carry a signal at 32mbps. The bandwidth of the channel is 4Mhz. What is the required signal-to-noise ratio of the channel in order to achieve this capacity.	4
	c) Explain the functions of data link layer and presentation layer of ISO/OSI architecture.	4
2.	a) Compare the star, ring and bus topologies in LAN.	6
	b) Why flow control is necessary in transmitting information from source to destination?	3
	c) Explain "Go-Back-N" protocol and show how it can control the error in data transmission.	7
3.	a) Explain circuit switching operation. Mention the limitations of circuit switching network. Give one example of circuit switched network.	2+2+1
	b) With neat sketches show the signals to be transmitted using i) NRZ (Non-return-to zero) and ii) Manchester encoding to transmit the binary data 110111010. Also mention the relative merits and demerits of the two methods.	5
	c) Explain the "Go Back N" flow control protocol and show how it control the error in data transmission.	6
4.	Write short notes on any two: i) Congestion control mechanisms ii) Routing in packet switched network iii) Transmission medium for data transmission iv) Transmission impairments	8+8
5.	Explain TOKEN RING protocol in LAN. What do you understand by baseband LAN and broadband LAN? Discuss the functions of LAN bridge.	7+3+6