Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Examination December 2021 (2019 scheme)

Course Code: ITT305

Course Name: DATA COMMUNICATION AND NETWORKING

Max. Marks: 100 Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks) Marks

1	Explain the role of repeaters in communication networks.	3
2	Write a note on terrestrial microwave communication.	3
3	Encode 1000000001101 using B8ZS technique.	3
4	Encode the given digital data 10100100 using NRZ-L, Manchester and differential Manchester encoding schemes.	3
5	Differentiate between synchronous and asynchronous transmission.	3
6	What is wavelength division multiplexing?	3
7	What is slotted ALOHA? How it differ from pure ALOHA	3
8	Find the minimum Hamming distance for the following code. (i) d(1111,1111) (ii) d(10101,10010) and (iii) d(1000,0000)	3
9	What are choke packets?	3
10	What is reliable flooding in Link State Routing?	3

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

11	a)	Describe any two guided transmission media used for data communication.	10
	b)	Explain the functions of routers in networks.	4

12 a) Explain ISO/OSI reference model with the help of a neat diagram. 8

b) Explain the three different categories of satellites. 6

Module -2

13 a) Explain Pulse code modulation with the help of diagrams. 8

b) Explain the process of digital to analog conversion. 6

14 a) Describe the different types of transmission impairments. 8

b) If the spectrum of a channel is between 3 MHz and 4 MHz and SNR_{db}= 24 dB, calculate the Shannon Channel capacity? Also find out the number of levels required to achieve the above capacity. 6

Module -3

15 a) What is multiplexing? Explain Time and Frequency division multiplexing. 10

b) Explain direct sequence spread spectrum 4

16 a) What is spread spectrum? Explain Frequency Hopping Spread Spectrum with help of an example. 10

b) Explain CDMA with an example. 4

Module -4

17 a) Given the data word 1111101 and the divisor 1101, using CRC show the generation of codeword at the sender side and the checking of the codeword at the receiver side (assuming no error). Now assume that the third bit from the right of the codeword is corrupted, show the detection of the error at the receiver side. 8

b) How collision is avoided in CSMA/CA? Describe the different strategies used for this. 6

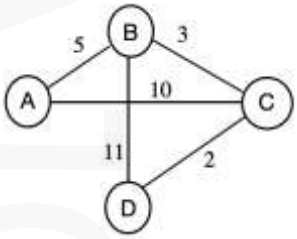
18 a) Explain Stop-and-wait, Go-back-N and Selective Repeat ARQ techniques. 8

b) Explain two dimensional parity check code with an example. 6

Module -5

19 a) Explain Link State Routing. 10

Create routing table at node D for the following network graph and explain the procedure.



b) What is leaky bucket algorithm? 4

20 a) Explain Distance vector routing with an example. 8

b) Explain the network layer design issues in communication network. 6

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