Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2019

Course: Computer Networks

Program: BCA

Semester: III
Time 03 hrs.

Course Code: CSBC2001 Max. Marks: 100

Instructions:

• Attempt all questions as per the instruction.

- Assume any data if required and indicate the same clearly.
- Unless otherwise indicated symbols and notations have their usual meanings.

• Strike off all unused blank pages

SECTION A

S. No.		Marks	CO
Q 1	(a) Assume six devices are arranged in a mesh topology. How many cables are needed? How many ports are needed for each device?(b) What is the difference between a port address, a logical address, and a physical address?	2+3	CO1
Q 2	What are different types of transmission impairments? Define them.	5	CO2
Q 3	Write a sender site and receiver site algorithm for simple protocol for noiseless channel.	5	CO3
Q 4	(a) Differentiate between TCP and UDP Protocols.(b) What do you mean by FTP? Discuss briefly.	3+2	CO4
	SECTION B		
Q 5	(a) Explain the following data transmission methods: Parallel transmission and Serial transmission(b) What is multiplexing? Describe time division multiplexing (TDM) technique.	6+4	CO2
Q 6	Write a short note on the following protocols (a) ALOHA (b) CSMA	5+5	
	 (a) One of your classmates, Singh, has pointed out that it is wasteful to end each frame with a flag byte and then begin the next one with a second flag byte. One flag byte could do the job as well, and a byte saved is a byte earned. Do you agree? Justify your answer. (b) Assume that, in a Stop-and-Wait ARQ system, the bandwidth of the line is 1 Mbps and 1 bit takes 20 ms to make a round trip. What is the bandwidth-delay 	3+3+4	CO3

	product? If the system data frames are 1000 bits in length, what is the utilization percentage of the link?		
	(c) Write short notes on (Code Division Multiple Access) CDMA.		
Q 7	Explain distance vector routing algorithm for unicast networks with an example.	10	CO4
Q 8	(a) Write a brief note on following terms : Domain Name System World Wide Web (b) Write a detailed note on E-mail in reference to Application Layer	5+5	CO5
	SECTION-C		
	Attempt any one from Q10 and Q11; Q 9 is compulsory		
Q 9	 (a) Four data channels (digital), each transmitting at 1 Mbps, use a satellite channel of 1 MHz. Design an appropriate configuration, using FDM. (b) Calculate the propagation time and the transmission time for a 5-M byte message if the bandwidth of the network is 1Mbps? Assume that the distance between the sender and the receiver is12,000 km and that light travels at 2.4×10⁸m/s. (c) The loss in a cable is usually defined in decibels per kilometer (dB/km). If the signal at the beginning of a cable with -0.3 dB/km has a power of 2 mW, what is the power of the signal at 5 km? (d) Draw the stop and wait protocol flow diagram for the following scenario: The first frame is sent and acknowledged. The second frame is resent, but it is timed-out. The second frame is resent and acknowledged. (ii) The second frame is resent, but it is timed-out. (iv) The second frame is resent and acknowledged. 	8+4+4 +4	CO2 CO3
Q 10	(a) Use Dijkstra's algorithm to find the shortest path tree and the forwarding table for node A in the Figure (b) The following is a dump of a UDP header in hexadecimal format: 0632000DOO ICE217 (i) What is the source port number? (ii) What is the destination port number? (iii) What is the total length of the user datagram? (iv) What is the length of the data? (v) Is the packet directed from a client to a server or vice versa? (vi) What is the client process?	14+6	CO3 CO4