

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST -3 EXAMINATION- MAY-2023

COURSE CODE(CREDITS): 18B11EC611(3)

MAX. MARKS: 35

COURSE NAME: WIRELESS AND DATA COMMUNICATION

COURSE INSTRUCTORS: Er. Munish Sood

MAX. TIME: 2 Hours

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

- Q1)** A slotted ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughput if the system (all stations together) produces
- a. 1000 frames per second    b. 500 frames per second    c. 250 frames per second.    **CO-2 [5]**
- Q2)**
- a) What is the hexadecimal equivalent of the following Ethernet address?  
01011010 00010001 01010101 00011000 10101010 00001111    **CO-4 [5]**
- b) If an Ethernet destination address is 07:01:02:03:04:05, what is the type of the address (unicast, multicast, or broadcast)?
- c) The address 43:7B:6C:DE: 10:00 has been shown as the source address in an Ethernet frame. The receiver has discarded the frame. Why?
- Q3)** What is the difference between a BSS and an ESS? What is the purpose of the NAV? How much time in a Bluetooth one-slot frame is used for the hopping mechanism? What about a three-slot frame and a five-slot frame?    **CO-6 [5]**
- Q4)**
- a) How is a repeater different from an amplifier?  
b) What is a transparent bridge?  
c) How does a repeater extend the length of a LAN?  
d) How is a hub related to a repeater?  
e) A bridge uses a filtering table; a router uses a routing table. Can you explain the difference?    **CO-4 [5]**
- Q5)** An organization is granted the block 16.0.0.0/8. The administrator wants to create 500 fixed-length subnets.    **CO-5 [5]**
- a) Find the subnet mask.  
b) Find the number of addresses in each subnet.  
c) Find the first and last addresses in subnet 1.  
d) Find the first and last addresses in subnet 500.
- Q6)** Compare and contrast the fields in the main headers of IPv4 and IPv6. Make a table that shows the presence or absence of each field.    **CO-5 [5]**
- Q7)** Consider a base station transmitter operating at 900 MHz carrier frequency. For a mobile moving at a speed of 72 Km/hr, calculate the received carrier frequency if the mobile is moving
- a) Directly away from the base station transmitter.  
b) Directly towards the base station transmitter.  
c) In a direction which is 60 degrees to the direction of arrival of the transmitted signal.  
d) In a direction perpendicular to the direction of arrival of the transmitted signal.    **CO-3 [5]**