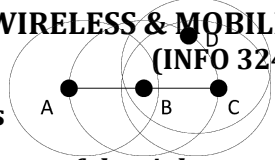


(vii)

WIRELESS & MOBILE COMPUTING

(INFO 3242)



Time Allotted : 3 hrs

Full Marks : 70

In ~~Figures out of the right margin indicate full marks~~ responsible for the exposed terminal problem?

**Candidates are required to answer Group A and**

**any 5 (five) from Group B to E, taking at least one from each group.**

**Candidates are required to give answer in their own words as far as practicable.**

- (a) When A and C want to transmit to B
- (b) A is sending to some other station E and B wants to send to C
- (c) Only B wants to transmit to A
- (d) Both B and C want to transmit to station D.

(viii) \_\_\_\_\_ architecture is a **Group A** architecture in which a multi-hop radio relaying system is overlaid on the existing cellular networks.

- (a) MCN (b) HWN (c) UCAN (d) MADF.

1. Choose the correct alternative for the following: **10 × 1 = 10**

(ix) \_\_\_\_\_ architecture is a hybrid wireless network architecture that **Group B**  
 (i) ~~is a network implementation as mobile IP. Based on IEEE 802.11B, if a mobile node discovers that it is~~  
 located in its home network, (c) NAN (d) WAN.

- (a) it sends an agent solicitation
- (b) it sends a registration
- (c) it does nothing related to mobility
- (d) it performs decapsulation on received packets

(ii) NAV signals are used by which one of the following stations in DCF?

- (a) The station that wants to send data
- (b) The station willing to receive data
- (c) All stations in the vicinity of transmitter and receiver

2. (a) What is multipath propagation? Explain how it affects signal quality.  
 (b) What is time synchronization in NAV? Give a mechanism that is used for overcoming problems arising due to inter-symbol interference.

(iii) The mobility binding table in mobile IP is maintained by **(2+3) + (3+4) = 12**  
 (a) mobile node (b) home agent

3. (a) Describe foreign agent convolutional coder with example. What would be the output of that convolutional coder for an input of 1001?  
 (iv) The RSVP protocol can be viewed as

(b) Show the phase changes corresponding to the bit pattern 10001 when  $\pi/4$  shifted PSK is used. Use following table for the phase changes used in  $\pi/4$  shifted PSK.

(v) OFDM is a multi-carrier transmission mechanism. OFDM stands for

- (a) Open FDM (b) Orthogonal FDM
- (c) Ordered FDM (d) Odec FDM.

(vi) \_\_\_\_\_ uses negotiation and resource adaptation to address the deficiencies of flooding.

- (a) SPIN (b) SAR (c) Flooding (d) Gossiping.

**(4 + 4) + 4 = 12**

**Group – C**

4. (a) What is virtual channel sensing? How virtual channel sensing is implemented in wireless network?
- (b) What is Point Coordination Function (PCF)? “Both DCF and PCF modes can coexist within one cell” – justify.

$$(2+4) + (2+4) = 12$$

5. (a) Explain the agent advertisement procedure of mobile IP. Why are the agent advertisement messages needed? What do you mean by agent solicitation?
- (b) What is the advantage of fast retransmission? Explain the basic idea of Freeze-TCP.

$$(3+1+2) + (4+2) = 12$$

**Group – D**

6. (a) Compare between DSR and AODV.
- (b) Name two wireless technologies for adhoc network. Explain which one of the coordination functions among DCF and PCF is suitable for adhoc network?

$$6 + (2 + 4) = 12$$

- 7.(a) How does the table driven protocols respond to the topology changes in MANET? Which table driven routing protocol in MANET is based on classical Bellman-Ford routing algorithm?
- (b) What is the importance of “route error” packets in route maintenance? Briefly explain AODV routing protocol.

$$(2 + 2) + (3 + 5) = 12$$

**Group – E**

8. (a) Calculate the time complexity of BAAR protocol. Assuming the BS in an MCN using BAAR protocol has to service  $n$  *RouteRequests* in unit time, calculate the computational burden at the BS.
- (b) Discuss the pros and cons of increasing the mobility margin in the power control scheme for hybrid wireless networks.

$$(4 + 4) + 4 = 12$$

9. (a) Consider sensors placed at (3, 4),(2, 5),(-4, 3),(1, 1) and (-3, -2). If the parameters  $\lambda$  and  $k$  in the sensing power computation are 1 and 2, respectively, what are  $I_A$  and  $I_C$  at the origin(0,0)?
- (b) Discuss the adaptability of the PICR-PDBR scheme as a Wi-Fi pricing/billing scheme.

Wireless optical WDM rings provide high data rate networks in metropolitan areas. Discuss possible solutions and factors to be considered for providing reliability for a wireless optical WDM ring network.

$$4+(4 + 4) = 12$$