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# MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
*(A constituent unit of MAHE, Manipal)*

## VII SEMESTER B.TECH. COMPUTER SCIENCE AND ENGINEERING

## END SEMESTER EXAMINATIONS, NOVEMBER 2019

## SUBJECT: WIRELESS NETWORKS [CSE 4016]

**REVISED CREDIT SYSTEM**
**28.11.2019**

Time: 3 Hours MAX. MARKS: 50

**Instructions to Candidates:**

- Answer **ALL FIVE** questions.
- Missing data may be suitable assumed.

**1A.** Consider the carrier signal and analog information signal in the figures Q.1A.1 and Q.1A.2:

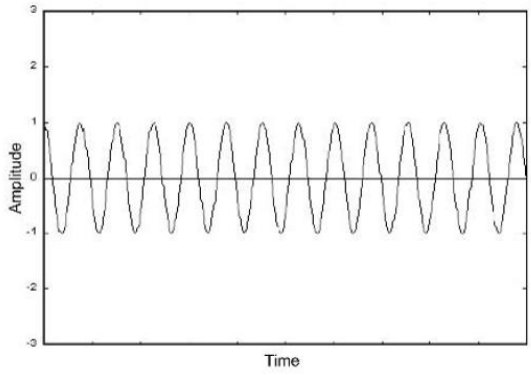


**Fig. Q.1A.1** Carrier signal

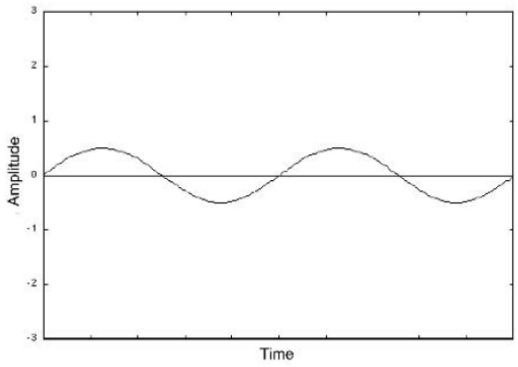


**Fig. Q.1A.2** Analog information signal

i) Draw neatly the modulated signal for amplitude modulation.
ii) Draw neatly the modulated signal for frequency modulation (Assume that the frequency is the highest and lowest at the maximum and minimum amplitudes of information signal respectively). **4M**

**1B.** Consider the carrier signal in the figure Q.1A.1. Draw neatly the modulated signal for phase shift keying for the binary string 0110101110. **2M**

**1C.** Answer the following:
i) With a neat diagram, explain FDMA.
ii) Define TDMA. List the types of TDMA. **4M**

**2A.** Consider the convolutional coder in the figure Q.2A:
i) Draw the state table for the coder.
ii) Assuming that the received bit stream is 00110110, draw the code trellis and identify the shortest path(s) using the viterbi algorithm.

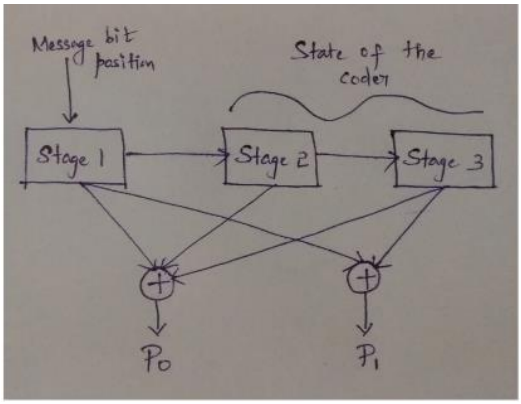


**Fig. Q.2A** Convolutional coder **4M**

**2B.** Discuss the cdmaOne protocol architecture with a neat sketch. Also, explain the cdmaOne MAC states with its state diagram. **4M**

**2C.** How is precise synchronization between the base stations attained in cdmaOne? **2M**

**3A.** Write about the concerns for 3G cellular systems in detail. **3M**

**3B.** Describe the following service classes of 3G:
i) Voice and audio.
ii) Wireless messaging.
iii) Medium multimedia. **3M**

**3C.** Define OFDM. Illustrate and discuss the operation of a simple OFDM system. **4M**

**4A.** Enumerate the advantages and drawback of local multipoint distribution service. **4M**

**4B.** With neat diagrams, explain the different topologies of WLAN. **4M**

**4C.** How is the location of a mobile station determined in signal strength method? List an advantage and disadvantage for the same. **2M**

**5A.** Explain how route discovery and route maintenance are done in dynamic source routing protocol. **4M**

**5B.** For the graph given in the figure Q.5B, perform the route discovery as per dynamic source routing.

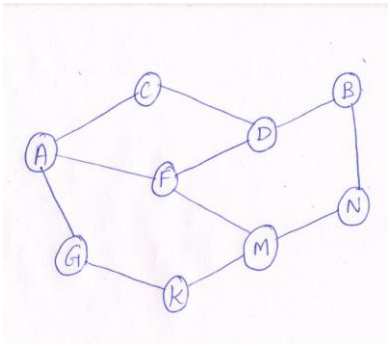


**Fig. Q.5B** Graph **2M**

**5C.** i) Elucidate piconet with an example.
ii) Elucidate scatternet with an example. **4M**