

**ADCA / MCA (II Yr)**  
**Term-End Examination**  
**December, 2007**

**CS-09 : DATA COMMUNICATION AND NETWORKS**

Time : 3 hours

Maximum Marks : 75

**Note :**

- (i) Question number 1 is **compulsory**.
  - (ii) Answer any **three** questions from the rest.
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1. (a) Explain the seven layers of OSI reference model. 10
- (b) Explain the following, using diagrams : 8
- (i) Frequency Division Multiplexing
  - (ii) Wavelength Division Multiplexing
  - (iii) Synchronous and Statistical TDM

- (c) A channel has a bit rate of 4 kbps and a propagation delay of 20 milli-seconds. For what range of frame sizes does stop-and-wait give an efficiency of at least 50 percent ? 12
2. (a) Obtain expression for throughput in Aloha and Slotted Aloha protocols. 10
- (b) What happens in a token bus if a station accepts the token and then crashes immediately ? 5
3. (a) Convert the IP address whose hexadecimal representation is C22F1582 to dotted decimal notation. 5
- (b) Explain various steps for Bellman-Ford shortest path algorithm. 10
4. (a) What is the difference between a confirmed service and an unconfirmed service ? For each of the following, tell whether it might be a confirmed service, an unconfirmed service, both or neither : 10
- (i) Connection establishment
- (ii) Data transmission
- (iii) Connection release
- (b) If a binary signal is sent over a 3 KHz channel whose signal-to-noise ratio is 20 dB, what is the maximum achievable rate ? 5

5. Write short notes on the following :

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- (i) FDDI token ring
- (ii) Point-to-Point Protocol
- (iii) Crash recovery

