

MCA (Revised)
Term-End Examination
June, 2018

02805

**MCS-042 : DATA COMMUNICATION AND
COMPUTER NETWORKS**

Time : 3 hours

Maximum Marks : 100

Note : Question no. 1 is compulsory. Attempt any three questions from the rest.

1. (a) Explain the DES algorithm with the help of a suitable example. 10
- (b) What is the need of hierarchical routing ? Explain it with an example. 10
- (c) Explain Leaky Bucket and Token Bucket traffic shaping mechanisms and compare them. 10
- (d) A high quality audio signal is limited to 10 kHz. It is to be transmitted using a 7-bit code. Calculate the required bit rate which needs to be supported by the channel. 5
- (e) Enlist any two core protocols of Internet layer in TCP/IP reference model. Describe the functionality of these two protocols. 5

2. (a) Explain the concepts of Local Procedure Call (LPC) and Remote Procedure Call (RPC) using suitable examples and diagrams. Why is RPC useful in programming? 10
- (b) State the need of broadcast routing. Discuss various broadcast routing procedures. Give an example of multicast routing. 10
3. (a) A system uses Slotted ALOHA protocol. In an observation interval, the channel is busy for 90% of the time. Calculate the system throughput. 10
- (b) Explain connection establishment and connection termination processes in TCP using three-way handshaking mechanism. 10
4. (a) Why is Stop-and-Wait protocol inefficient for satellite links? How is this inefficiency overcome in Sliding Window protocol? Explain. 10
- (b) Explain the collision occurrences in Ethernet. How is backoff algorithm implemented in Ethernet? 10
5. (a) Illustrate Count-to-Infinity problem. How can it be resolved? 10
- (b) Explain the functionalities of SSL. Discuss the merits of SSL. 10