

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

Course Code: IT307
Course Name: COMPUTER NETWORKS

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

- 1 a) How is CRC computed? Data link layer protocols usually put CRC in the trailer of the frame rather than in the header. Why? (8)
- b) Distinguish between routers, switches, gateways, hubs, bridges and modems. (7)
- 2 a) What is the major problem associated with character stuffing? How is it solved using bit stuffing? (5)
- b) How does the Presentation Layer manage the syntax and semantics of the information being transmitted? Give 3 distinct examples. (Exclude compression, encryption etc.) (6)
- c) How is data transmitted through an optic fiber? (4)
- 3 a) Show how TCP/IP reference Model incorporates the functions of all seven layers of the OSI Model. (5)
- b) Illustrate Go-back-n and Selective-Repeat Sliding Window protocols. Even though Go-back-n Sliding Window protocol is considered inefficient, why is it still used sometimes? (5)
- c) How can we use Hamming Code to deal with burst errors? (5)

PART B

Answer any two full questions, each carries 15 marks.

- 4 a) What causes count-to-infinity problem? Give any two solutions to the problem. (7)
- b) Why do Ethernet systems use Manchester Encoding? (4)
- c) What is jitter? What are the methods employed to keep it in control? (4)
- 5 a) How does link state routing build and distribute the link state packets? (8)
- b) Why does Ethernet frame have a minimum size? How does gigabit Ethernet solve this problem? (7)
- 6 a) Prove that Slotted ALOHA gives better throughput than pure ALOHA. (8)
- b) Why is *flooding* sometimes used as a metric against which other routing (3)

algorithms are compared?

- c) List the various Ethernet standards. (4)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Illustrate the steps and the states involved in TCP connection establishment and termination. Explain why each step is necessary. (9)
- b) Differentiate between browser plug-ins and helper applications. How are they implemented? (8)
- c) What is a *non-authoritative* response in DNS? (3)
- 8 a) Show how the Berkeley socket primitives are used in a client-server interaction. (8)
- b) When is an HTTP Keep-Alive header used? (4)
- c) Explain the TCP header format in detail. (8)
- 9 a) What happens in FTP if the control connection breaks, while the data connection does not? (6)
- b) “The use of the pseudo-header in TCP is a violation of layering principles”. Comment. Why is the pseudo-header used for computing checksum? (6)
- c) Explain and compare the three e-mail protocols – SMTP, POP3 and IMAP. (8)
