

**BACHELOR OF COMPUTER APPLICATIONS
(BCA) (Revised)**

Term-End Examination

December, 2016

**BCS-041 : FUNDAMENTALS OF COMPUTER
NETWORKS**

Time : 3 hours

Maximum Marks : 100

Note : Question no. 1 is compulsory. Attempt any three questions from the rest. Use of calculator is allowed.

1. (a) Differentiate between Pure ALOHA and Slotted ALOHA. If the throughput of Slotted ALOHA is $S = Ge^{-G}$, show that the maximum throughput (S_{\max}) is 0.368. 10
- (b) Discuss the error control techniques used at the data link layer. Also write the step-by-step procedure of GO-BACK-N ARQ method. 10
- (c) Differentiate between adaptive and non-adaptive routing. Explain the working of 'Hierarchical Routing' using suitable topological structure and routing table. 10
- (d) What is MD5 ? Write the step-by-step procedure for generating 128-bit MD5 digest. 10

2. (a) Compare between virtual circuits and circuit switching. Also discuss the effect of router failure in virtual circuits. 10
- (b) What is ATM Adaptation Layer (AAL) ? Explain how routing and switching is done in ATM Networks. 10
3. (a) Write CRC algorithm. Use it to demonstrate the method of error checking. 10
- (b) Differentiate between Analog and Digital Modulation. Compare and contrast between ASK, PSK and FSK (digital modulation techniques). 10
4. (a) Write the significance and usage of the following networking devices : 10
- (i) Repeaters
 - (ii) Bridges
 - (iii) Switches
 - (iv) Gateways
 - (v) Network Interface Card
- (b) What is IGMP ? Draw the header fields of IGMP. Also explain the significance of each field. 10

5. Differentiate between the following :

20

- (a) SMTP and FTP
 - (b) Guided and Unguided Media
 - (c) OSI and TCP/IP Models
 - (d) RSA and DES
-