

**BACHELOR OF COMPUTER  
APPLICATIONS (B. C. A.) (REVISED)**

**Term-End Examination**

**December, 2020**

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

*Time : 3 Hours*

*Maximum Marks : 100*

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**Note :** (i) *Question number 1 is compulsory.  
Attempt any **three** questions from the  
rest.*

(ii) *Use of calculator is allowed.*

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1. (a) Compare serial and parallel transmission.  
Give advantages and disadvantages of  
both. 5
- (b) What is Amplitude Modulation ? Give *two*  
advantages and *two* disadvantages of  
amplitude modulation. 5

- (c) What do you understand by the term sampling in digital communication ? Compare analog to digital conversion with digital to analog conversion. 5
- (d) Give at least two similarities between OSI and TCP/IP models. 5
- (e) What is Random access protocol ? Compare throughout of pure and slotted ALOHA. 5
- (f) Briefly discuss the term “classful addressing”. Give disadvantage of classful addressing. Given the network address 17.0.0.0, find the class, the block and the range of address. 5
- (g) What is stream cipher ? Give *two* advantages and *two* disadvantages of stream cipher. 5
- (h) Compare symmetric and asymmetric cryptography. 5

2. (a) Briefly discuss the functions of various layers involved in TCP/IP model, also mention the protocols defined under each layer. 10
- (b) Briefly discuss the following types of multiplexing : 10
- (i) Frequency division multiplexing
  - (ii) Time division multiplexing
  - (iii) Code division multiplexing
  - (iv) Space division multiplexing
3. (a) What is round robin technique for transmission ? How does polling differ from token passing ? 5
- (b) What are the major functions of transport layer ? How transmission control protocol differs from user datagram protocol ? 5
- (c) Briefly discuss the term Cyclic Redundancy Check (CRC). Find CRC for the data polynomial  $x^5 + x^4 + x^2 + 1$  with generator polynomial  $x^3 + 1$ . 10

4. (a) What is distance vector routing ? Briefly discuss the problem of distance vector routing. 5
- (b) Compare token bucket algorithm with leaky bucket algorithm. 5
- (c) What do you understand by the term Quality of Services (QoS). Discuss the techniques to improve QoS. 5
- (d) Differentiate between ICMP and IGMP. 5
5. Write short notes on the following : 4×5=20
- (i) X.25 Architecture
- (ii) CDMA
- (iii) RSA
- (iv) Public and private key cryptography