

**2021**

**COMPUTER SCIENCE — GENERAL**

**Paper : SEC-A-1**

**(Communication, Computer Network and Internet)**

**Full Marks : 80**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

Answer **question nos. 1 and 2** and **any four** questions from the rest.

1. Answer **any ten** questions :

2×10

- (a) What is router?
- (b) What are the functions of network layer?
- (c) Write the difference between single mode and multi-mode optical fibre.
- (d) What is the functionality of firewall?
- (e) What is channel capacity?
- (f) What are the differences between hub and bridge?
- (g) Write the drawbacks of MESH topology.
- (h) If the bit rate of a signal is 10000 bits/second, determine how many bits can be sent in 1000 milli seconds.
- (i) What is peer-to-peer process?
- (j) What is WWW?
- (k) Find out the address class of the given IP address :  
191.254.200.4
- (l) What is PSK?
- (m) What is the difference between bit rate and band rate?
- (n) What is MAC address?
- (o) What are the basic responsibilities of TCP and UDP Protocols?

2. Write short notes on **any four** of the following :

5×4

- (a) MAC
- (b) HTTP

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- (c) Web-Browser
- (d) Video conferencing
- (e) DNS
- (f) SMTP.

3. (a) Explain the roles of
- (i) Gateway
  - (ii) Hub and
  - (iii) Switch.
- (b) State the differences between SMTP and POP3. (2+2+2)+4
4. (a) What is latency?
- (b) What are the advantages and disadvantages of optical fibre for data communication?
- (c) Shortly describe Radio-wave and Infrared. 2+5+3
5. (a) Discuss the characteristics of MAN and WAN.
- (b) Shortly describe PSK and FSK.
- (c) What is URL? 5+3+2
6. (a) Compare and contrast between ASK and FSK.
- (b) What is the purpose of multiplexing?
- (c) Draw the waveform of PSK for the data 110101100. 4+4+2
7. (a) What are the functions of data-link layer and presentation layer in the OSI model?
- (b) Describe the components of fibre-optic cable with proper diagram. 5+5
8. (a) Shortly describe manchester and differential manchester encoding techniques.
- (b) What are the differences between TDM and FDM?
- (c) What are the basic functions of DNS Server? 5+3+2
9. (a) How does ADSL modulate a signal?
- (b) What is the relationship between the size of CRC remainder and divisor?
- (c) Discuss the idea of web-based electronic mail. 3+2+5
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