Et-602/DCN/6th Sem/2018/M

DATA COMMUNICATION AND NETWORKING

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks
for the questions.

PART – A

Marks – 25

Answer *all* questions.

1. Multiple choice questions :   1×5=5

   (a) Which of the following is a wireless communications medium that uses light waves to transmit signals or information ?

   (i) Cat 3

   (ii) Optical fiber

   (iii) Infrared

   (iv) Microwave

(b) Which type of network covers a large geographic distance, such as a state, a country, or even the entire world ?

    (i) LAN

    (ii) MAN

    (iii) WAN

    (iv) All of the above

(c) An internet is a

    (i) collection of WANS

    (ii) network of networks

    (iii) collection of LANS

    (iv) collection of identical LANS and WANS.

(d) Which of the following can be shared in a peer-to-peer network ?

    (i) Information

    (ii) Software

    (iii) Hardware devices

    (iv) All of the above.

(e) What type of modem uses your satellite di
to deliver an Internet connection ?

(i) Satellite modem

(ii) Telephone modem

(iii) DSL

(iv) Cable modem

2. Fill in the blanks : $1 \times 5 = 5$

(a) _____ consists of two or more computers connected so that they can communicate with each other and share information, software, peripheral devices, and / or processing power.

(b) _____ is a device that acts as a smart hub connecting computers into a network, and it also separates your network from other networks.

(c) _____ is a set of rules that every computer follows to transfer information.

(d) If you need to connect two computers so that they can share peripheral devices, consider setting up a (n) _____ network.

(e) A network that covers a limited geographic distance is called a (n) _____.

3. State true or false : $1 \times 10 = 10$

(a) A network interface card (NIC) is an expansion card or a PC card that connects your computer to a network and provides the doorway for information to flow in and out.

(b) A switch is a device that connects multiple computers into a network in which multiple communications links can be in operation simultaneously.

(c) A wireless network access point is a device that allows computers to access a wired network using radio waves.

(d) Broadband is a high-capacity telecommunications pipeline capable of providing high-speed Internet service.

(e) A telephone modem is a device that connects your computer to your phone line so that you can access another computer or network.

(f) A communications protocol is a set of rules that every computer follows to transfer information.

(g) Wireless communications media transmit information over a closed, connected path.

(h) A WAN covers a large geographic distance, such as a state, a country, or even the entire world.

(i) Coaxial cable (coax) has one central wire surrounded by insulation, a metallic shield, and a final case of insulating material.

(j) A repeater is a device that receives a radio signal, strengthens it, and sends it on.

4. Answer the following questions : $1 \times 5 = 5$

(a) Why are protocols needed ?

(b) Why are standards needed ?

(c) What is the difference between a passive and an active hub ?

(d) Discuss the mode for propagating light along optical channels.

(e) Give the relationship between propagation speed and propagation time ?

PART – B

Marks – 45

Instruction : The answers should be comprehensive and criteria for valuation are the contents but not the length of the answer.

5. Answer any *five* questions of the following :

$$3×5=15$$

   (a) Name some network operating system (NOS) software.

   (b) State the different standards introduced by IEEE for LANs.

   (c) Define synchronous communication and asynchronous communication.

   (d) What are the advantages of setting up a computer network ?

   (e) What is token ring and how it works ?

   (f) What are the different ISDN standards ?

6. Answer any *three* of the following questions :

$$5×3=15$$

   (a) What is Carrier Sense Multiple Access / Collision Detection (CSMA/CD) protocol ?

(b) Discuss about the ATM (Asynchronous Transfer Mode) structure used for high speed connection-oriented networking.

(c) Draw and explain the 802.5 frame format.

(d) Explain the drawbacks of the OSI model.

(e) Write the role of a MODEM in telephone line.

7. Answer any *two* of the following questions :

$$7.5 \times 2 = 15$$

(a) State and explain the different media that may be used in a communication system.

(b) What is RS232C ? State its important specification.

(c) Explain the merits and demerits of Bus and Star Topology.

(d) State the functions of Bridges, Repeaters, Gateways and Routers.

(e) Differentiate between Broadband and Baseband communication. Mention their areas of application.