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Et-602/DCN/6th Sem/2018/J/A

**DATA COMMUNICATION
AND NETWORKING**

Full Marks – 70

Time – Three hours

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

Instruction : Answer all questions and each question carries 1 mark.

PART– A

Marks – 25

1. Multiple choice questions : 1×5=5
- (a) Both stations can transmit and receive data simultaneously in
- (i) Simplex mode
 - (ii) Half duplex mode
 - (iii) Full duplex mode
 - (iv) None of the above

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(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) Protocols are, set of rules to govern

- (i) Communication
- (ii) Standards
- (iii) Metropolitan communication
- (iv) None of the above

(d) In mesh topology, devices are connected via

- (i) Multipoint link
- (ii) Point to point link
- (iii) No link
- (iv) None of the above

.. (e) Performance, reliability and security are criteria of

(i) Efficient network

(ii) Intranet

(iii) Ethernet

(iv) None of the above

2. Fill in the blanks :

1×5=5

(a) _____ cable is a better constructed version of the phone twisted pair cable.

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

(e) A(n) _____ must be installed in each computer on the network.

3. State true or false :

1×10=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) Bluetooth technology provides entirely wireless connections for all kinds of communication devices.
- (c) An international virtual private network uses services offered by only one telephone company at a time.
- (d) Broadband is a high-capacity telecommunications pipeline capable of providing high-speed Internet service.
- (e) A satellite is a type of wired communications media.
- (f) A communication protocol (protocol) is a set of rules that every computer follows to transfer information.
- (g) Wireless communications media transmits 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) Bandwidth refers to the capacity of the communications line.
- (j) A computer network consists of five or more computers connected to one another.

4. Answer the following : 1×5=5

- (a) Write the names of different types of connections.
- (b) Name different types of topologies.
- (c) Name the layers of TCP/IP model.
- (d) What are different Line coding techniques ?
- (e) What are different types of errors in data transmission ?

PART – B

Marks – 45

5. Attempt any *five* questions of the following : 3×5=15

- (a) Write about Guided medium.
- (b) Write about Circuit Switched Network.

- (c) Write about Redundancy, Detection versus Correction.
- (d) What are the advantages of setting up a computer network ?
- (e) What is token ring and how it works ?
- (f) Define controlled access and list three protocols in this category.
6. Attempt any *three* of the following: $5 \times 3 = 15$
- (a) What is Carrier Sense Multiple Access / Collision Detection (CSMA/CD) protocol.
- (b) Explain the working of ISDN.
- (c) TCP / IP is Internet Communication Protocol. How ?
- (d) Explain the drawbacks of the OSI model.
- (e) Write the role of a MODEM in telephone line.

7. Attempt any *two* of the following : $7.5 \times 2 = 15$

- (a) Draw and explain the CSMA/CD protocols of working.
- (b) Draw a neat diagram of OSI reference model and explain the functions of the layers.
- (c) Explain merits and demerits of Bus and Star Topology.
- (d) State the different IEEE 802 standards for LANs and give their important features.
- (e) Differentiate between Broadband and Baseband communication. Mention their areas of application.