No. of Printed Pages : **8**

Sl. No.

B2.4-R4 : DATA COMMUNICATION AND NETWORK TECHNOLOGIES

DURATION : 03 Hours **MAXIMUM MARKS : 100**

OMR Sheet No. :						

Roll No. :						

Answer Sheet No. :						

Name of Candidate : _____ **; Signature of Candidate :** _____

INSTRUCTIONS FOR CANDIDATES :

- Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English language only.
- There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
- **PART ONE** is Objective type and carries **40** Marks. **PART TWO** is Subjective type and carries **60** Marks.
- **PART ONE** is to be answered in the **OMR ANSWER SHEET** only, supplied with the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book for **PART TWO**.
- Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the Answer Sheet for **PART ONE** is returned. However, Candidates who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the Answer Sheet for **PART ONE** to the Invigilator.
- **Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his/her Answer Sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
- After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question Booklet is complete in all respects.

DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

PART ONE

(Answer ALL Questions; each question carries ONE mark)

1. Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

1.1. Which of the following is a type of guided media ?
(A) Laser light
(B) Radio waves
(C) Non-fiber cable
(D) Coaxial cable

1.2. Switches are used at which layer in TCP/IP protocol suite ?
(A) Application
(B) Transport
(C) Datalink
(D) Physical

1.3. The maximum size of the IPV6 process data that can be encapsulated in a UDP datagram is _____.
(A) 1600 bytes
(B) 34,432 bytes
(C) 65,527 bytes
(D) 3200 bytes

1.4. Which one of the below-mentioned is a LAN protocol ?
(A) HDLC
(B) Token Ring
(C) Frame Relay
(D) PPP

1.5. Most widely used multiplexing mode for 3G networks is :
(A) TDMA
(B) FDMA
(C) TDD
(D) FDD

1.6. UDP _____.
(A) establishes low-latency and loss-tolerating connections
(B) provides Host-to-host communication
(C) enables End-to-end reliable data delivery
(D) helps in Host to Network communication

1.7. Cellular mobile communication handoff means :
(A) to disturb the signal
(B) to disturb the antenna
(C) to switch to a new channel when call is in progress
(D) to switch off the MTSO

1.8. Flow control in OSI model is done by :
(A) Physical layer
(B) Network layer
(C) Transport layer
(D) Datalink layer

1.9. Firewall is installed in :
(A) Transport layer
(B) Datalink layer
(C) Network layer
(D) None of the above

1.10. Bridge operates at _____ layer of OSI model.
(A) Application Layer
(B) Physical Layer
(C) Datalink Layer
(D) None of the above

SPACE FOR ROUGH WORK

2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

2.1. RSA is a secret key encryption algorithm.

2.2. Unicast is a type of IPV6 address.

2.3. Authentication is provided using Digital Signature.

2.4. Graphical interfaces cannot be added to the Linux OS.

2.5. The transport layer adds a header to the packet coming from the upper layer that includes the logical addresses of the sender and receiver.

2.6. Mail service is one of the service provided by application layer.

2.7. UDP provides full transport layer services to applications.

2.8. Physical address identifies a process on a host.

2.9. Multicast address in IPV4 are those that start with the pattern 1100.

2.10. IPV6 uses 16 bit addresses.

3. Match words and phrases in column X with the closest related meaning / words(s) / phrase(s) in column Y. Enter your selection in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

X		Y	
3.1	Although coaxial cable has a much higher bandwidth, the signal weakens rapidly and requires the frequent use of	**A.**	HTTP
3.2	The central concept in detecting or correcting errors is	**B.**	Repeaters
3.3	The prior protocol used for accessing data on the World Wide Web is called _____.	**C.**	ATM switches
3.4	Converting plain text to cipher text and vice-versa is called	**D.**	Duplex Data Communication Signals
3.5	Client/Server application that allows a user to logon to a remote machine, giving the user access to the remote system.	**E.**	Full-duplex operation
3.6	With _____, a station can transmit and receive simultaneously.	**F.**	LDAP
3.7	The _____ determines the theoretical maximum data rate over any channel or medium.	**G.**	Redundancy
3.8	GSM uses two bands for _____.	**H.**	Cryptography
3.9	A user-to-network interface (UNI) is the interface between a user and _____.	**I.**	Shannon Capacity Theorem
3.10	Building a routing table in Link State Routing (LSR) and dissemination of LSPs to every other router is called	**J.**	Telnet
		K.	64 bytes
		L.	FTP
		M.	Flooding

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Choose the most appropriate option, enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

A	Supernetting	B	Node to Node Communication	C	Frame Bursting	D	Simple Network Management Protocol
E	Glass or Plastic	F	Bandwidth	G	2V	H	Random
I	URL	J	SONET	K	-2V	L	Delay
M	Process to Process Communication						

4.1 Datalink layer control deals with _____.

4.2 Protocols used for pulling messages from a mail server is _____.

4.3 Multiple Access Protocols are _____.

4.4 _____ defines four layers: path, line, section and photonic.

4.5 To improve efficiency of Bursting Carrier extension, _____ was proposed.

4.6 _____ combines several networks into one large one.

4.7 The inner core of an optical fiber is _____ in composition.

4.8 _____ is the difference between highest and lowest frequencies of a composite signal.

4.9 Each page is assigned _____ that effectively serves as the page's worldwide name.

4.10 The minimum amplitude of a sine wave is _____, if maximum amplitude is 2V.

PART TWO

(Answer ANY FOUR questions)

5. (a) What is subnetting ? Write down the number of blocks and block size in classful IPv4 addressing.

(b) Define the following: switches, hub, routers, gateway, repeater.

(c) What is Multiplexing ? List the types of multiplexing techniques and explain any one.

(5+5+5)

6. (a) Define and differentiate classful and classless addressing.

(b) Discuss features of NMS.

(c) What is wireless networking ? What is the relationship between wireless networking and IEEE 802.11 ? If a computer is connected to a wireless LAN, can it communicate with computers on a wired LAN as well ?

(5+5+5)

7. (a) Define E-mail. Explain about E-mail protocols – SMTP, POP3 and IMAP.

(b) What is encryption and encryption scheme ? Differentiate between Private Key Cryptography and Public Key Cryptography. **(7+8)**

8. (a) Compare three key long-distance communication technologies named X.25, frame relay and ATM.

(b) How to distinguish a multicast address in IPv4 addressing ? How can we do so in IPv6 addressing ?

(c) What is DNS ? Which protocol is used by DNS and why ?

(6+5+4)

9. Write short notes on any three :
(a) DHCP
(b) HDLC
(c) Cellular Radio
(d) Go Back-N protocol

(5+5+5)

- o O o -

SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK