

A9-R4: DATA COMMUNICATION & NETWORK TECHNOLOGIES

अवधि: 03 घंटे
DURATION: 03 Hours

अधिकतम अंक: 100
MAXIMUM MARKS: 100

ओएमआर शीट सं.:					
OMR Sheet No.:					

रोल नं.:

--	--	--	--	--	--

Roll No.:

उत्तर-पुस्तिका सं.:

--	--	--	--	--	--

Answer Sheet No.:

परीक्षार्थी का नाम:

परीक्षार्थी के हस्ताक्षर:

Name of Candidate: _____; Signature of candidate: _____

परीक्षार्थियों के लिए निर्देश:

Instructions for Candidate:

कृपया प्रश्न-पुस्तिका, ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यान पूर्वक पढ़ें।	Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
प्रश्न-पुस्तिका की भाषा अंग्रेजी है। परीक्षार्थी केवल अंग्रेजी भाषा में ही उत्तर दे सकता है।	Question Paper is in English language. Candidate can answer in English language only.
इस मॉड्यूल/पेपर के दो भाग हैं। भाग एक में चार प्रश्न और भाग दो में पाँच प्रश्न हैं।	There are TWO PARTS in this Module/Paper. PART ONE contains FOUR questions and PART TWO contains FIVE questions.
भाग एक "वैकल्पिक" प्रकार का है जिसके कुल अंक 40 हैं तथा भाग दो, "व्यक्तिपरक" प्रकार है और इसके कुल अंक 60 हैं।	PART ONE is Objective type and carries 40 Marks. PART TWO is subjective type and carries 60 Marks.
भाग एक के उत्तर, इस प्रश्न-पत्र के साथ दी गई ओएमआर उत्तर-पुस्तिका पर, उसमें दिये गए अनुदेशों के अनुसार ही दिये जाने हैं। भाग दो की उत्तर-पुस्तिका में भाग एक के उत्तर नहीं दिये जाने चाहिए।	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 .
भाग एक के लिए अधिकतम समय सीमा एक घण्टा निर्धारित की गई है। भाग दो की उत्तर-पुस्तिका, भाग एक की उत्तर-पुस्तिका जमा कराने के पश्चात दी जाएगी। तथापि, निर्धारित एक घंटे से पहले भाग एक पूरा करने वाले परीक्षार्थी भाग एक की उत्तर-पुस्तिका निरीक्षक को सौंपने के तुरंत बाद, भाग दो की उत्तर-पुस्तिका ले सकते हैं।	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 .
परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना एवं अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हाल नहीं छोड़ सकता है। ऐसा नहीं करने पर, परीक्षार्थी को इस मॉड्यूल/पेपर में अयोग्य घोषित कर दिया जाएगा।	Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his Answer sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.
प्रश्न-पुस्तिका को खोलने के निर्देश मिलने के पश्चात एवं उत्तर देने से पहले उम्मीदवार यह जाँच कर यह सुनिश्चित कर ले कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है।	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 respect.
<p>नोट: यदि हिन्दी संस्करण में कोई त्रुटि / विसंगति पाई जाती है, तो उस अवस्था में अंग्रेजी संस्करण ही मान्य होगा ।</p> <p>Note: In case of any discrepancy found in Hindi language, English version will be treated as final.</p>	

जब तक आपसे कहा न जाए तब तक प्रश्न-पुस्तिका न खोलें।

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

PART ONE
(Answer all the questions)

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 The purpose of MTA (Mail Transfer Agent) is _____.

- A) Envelope preparation
- B) Message preparation
- C) Transferal of messages over the internet
- D) All of the above

1.2 _____ is used to report error in TCP/IP protocol stack.

- A) Internet Control Message Protocol
- B) Simple Error Transfer Protocol
- C) Network Error Transfer Protocol
- D) None of the above

1.3 A _____ can forward or block packets based on the information in the network layer and transport layer headers.

- A) Packet Filter Firewall B) Proxy firewall
- C) Message Digest D) Private Key

1.4 In radio communication, spectrum is divided into bands based on _____.

- A) Region B) Frequency
- C) Cost and Hardware D) Transmission Medium

1.5 _____ is an example of unguided media.

- A) Radio Transmission B) Fiber Optic
- C) CAT 6 Cable D) None of the above

1.6 _____ is application layer protocol.

- A) Distance Vector Routing Protocol
- B) Link State Routing Protocol
- C) Hyper Text Transfer Protocol
- D) Internet Control Message Protocol

1.7 What is a protocol suite for secure Internet Protocol (IP) communications that works by authenticating and encrypting each IP packet of a communication session?

- A) Internet Control Message Protocol
- B) Network File System
- C) Simple Network Management Protocol
- D) IPSec

1.8 A Protocol which is responsible to map IP address to MAC Address

- A) Domain Name System
- B) Reverse Address Resolution Protocol
- C) Address Resolution Protocol
- D) IPv6

1.9 _____ layer provides reliable, transparent transfer of data between end points; provides end-to-end error recovery and flow control

- A) Application Layer B) Transport Layer
- C) Network Layer D) Data Link Layer

1.10 Global System for Mobile Communications is a developed to describe the protocols for _____ digital cellular networks used by mobile phones.

- A) 4G B) 3G
- C) 2G D) 1G

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 Telnet provides remote login facility.

2.2 TCP is used to report error in TCP/IP protocol stack.

2.3 CSMA/CA is used in token ring topology to access network channel.

2.4 Error Detection is not a responsibility of Data link layer.

2.5 Twisted pair cable is used to form LAN.

2.6 Multiplexing is the simultaneous transmission of multiple signals across a single data link.

2.7 Integrity is one of the characteristics of Cryptography.

2.8 ATM is cell switching Technology.

2.9 Frequency Division Multiple Access technique is used in 3G to get internet access.

2.10 In Virtual Circuit, Path is established before data transfer.

3. Match words and phrases in column X with the closest related meaning/ word(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	Cell Switching	A.	TDM
3.2	Medium Access Technique	B.	DHSS
3.3	Multiplexing	C.	802.3
3.4	Spread Spectrum Technique	D.	ATM
3.5	Guided Media	E.	RIP
3.6	Logical Link Control Protocol	F.	DNS
3.7	Ethernet	G.	Firewall
3.8	Routing Protocol	H.	FDMA
3.9	Mapping from URL to IP address	I.	FTP
3.10	Prevents unauthorized access from outside of network	J.	802.11
		K.	Twisted Pair
		L.	IPv6
		M.	HDLC

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.	OSI	B.	Circuit	C.	Core
D.	DCM	E.	LMI	F.	Router
G.	Fiber	H.	TCP	I.	Security Association
J.	TCP/IP	K.	TDMA	L.	IP
M.	Encryption				

- 4.1 _____ is a reference model.
- 4.2 In _____ switching path is established before actual communication take place.
- 4.3 _____ is a digital representation of analog signal where the magnitude of the signal is sampled regularly at uniform intervals.
- 4.4 _____ cable consists of an inner copper core and a second conducting outer stealth.
- 4.5 IPSec requires a logical connection between two hosts using a signaling protocol called _____.
- 4.6 Fiber-optic cables carry data signals in the form of light. The signal is propagated through _____ by reflection.
- 4.7 _____ is a protocol to control and manage interfaces in Frame Relay networks.
- 4.8 _____ is a connection less protocol.
- 4.9 GSM uses _____ for multiplexing.
- 4.10 _____ can act as a Gateway.

PART TWO
(Answer any FOUR questions)

5.

- a) What are the technological characteristics of GSM? What are the elements and functionalities of GSM Network?
- b) Draw and explain a graph of throughput vs traffic which shows differences between slotted aloha and pure aloha.

(9+6)

6.

- a) What are the types of multiplexing? How does it work to transfer data?
- b) What are the advantages of Mobile IP?
- c) What is a procedure followed to access media in CSMA/CD?

(5+5+5)

7.

- a) What are the operations associated with DSL to transmit digital data over telephone lines?
- b) Write a short note on VSAT.
- c) Write the layers of OSI model and explain functionality of layers.

(3+7+5)

8.

- a) Explain the method adopted by NAT to implement address translation?
- b) What is the purpose of cladding in optical fiber? What are the advantages and disadvantages of Optical Fiber?
- c) How does bridge connect two different networks? What are the types of bridges?

(4+6+5)

9.

- a) Differentiate Following:
 - i) Connection Oriented v/s connection less
 - ii) Circuit Switching v/s Packet Switching
- b) What are differences between analog and digital signal?

(8+7)

