

22634

21222

3 Hours / 70 Marks

Seat No.

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15 minutes extra for each hour

- Instructions* – (1) All Questions are *Compulsory*.
- (2) Answer each next main Question on new page.
- (3) Illustrate your answers with neat sketches wherever necessary.
- (4) Figures to the right indicate full marks.
- (5) Assume suitable data, if necessary.
- (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following:** **10**
- a) Define following terms:
- i) bit rate
- ii) baud rate
- b) Classify networks on the basis of transmission technologies.
- c) Compare TCP/IP and OSI reference model (any two points)
- d) Name the layer of the OSI model at which the mechanical, electrical, functional and procedural characteristics are defined. State its function.
- e) State two advantages of coaxial cable.
- f) List four network connecting devices.
- g) State the need for IPv6.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Draw the block diagram of data communication system and state the function of each block.
 - b) Compare Peer-to-Peer and Client - Server architecture on the basis of -
 - i) Cost
 - ii) Performance
 - iii) Backup
 - iv) Security
 - c) Explain different functions of datalink layer of OSI reference model.
 - d) Describe hamming code error correction technique with the help of example.
- 3. Attempt any THREE of the following:** **12**
- a) State the names of the layers that perform the following functions –
 - i) Data Encryption
 - ii) File transfer
 - iii) Error Correction
 - iv) Data Encoding
 - b) Summarize the frame format of PPP protocol.
 - c) Draw a diagram to establish a network for a computer laboratory with 5 computers having internet facility using the following devices.
 - i) Switch
 - ii) Router
 - d) Compare TPv4 and IPv6 on the basis of –
 - i) Address Length
 - ii) Packet Size
 - iii) Configuration
 - iv) IP Security

- 4. Attempt any THREE of the following:** **12**
- a) State the need of multiplexing and switching. Summarize the situations for the implementations of TDM, FDM, Circuit Switched Network & Packet Switched Network.
 - b) Explain a one bit sliding window protocol under normal condition and with damaged frame with suitable diagram.
 - c) Draw structural diagram of fiber optic cable and write its functions.
 - d) On which layer of OSI reference model following protocol works –
 - i) UDP
 - ii) IP
 - iii) FTP
 - iv) SCTP
 - e) Explain datagram approach for packet switching.
- 5. Attempt any TWO of the following:** **12**
- a) With a suitable diagram, explain the following topologies.
 - i) Bus topology
 - ii) Ring topology
 - b) Draw layered architecture of the OSI model. State the functions of various layers.
 - c) Explain microwave transmission with its advantages and disadvantages.
- 6. Attempt any TWO of the following:** **12**
- a) Draw and explain architecture for network using tree topology for an office in 3 - Storey building.
 - b) Explain stop and wait ARQ with example.
 - c) Explain the addressing scheme in IPv4 and IPv6, when IPv6 protocol is introduced, does the ARP protocol have to be changed? Explain in details.
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22634

12223

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following :** **10**
- a) Define Bit rate and Baud rate.
 - b) Classify networks on the basis of transmission technology.
 - c) State the function of transport layer in TCP/IP protocol suite.
 - d) Name the layer of the OSI model that is responsible for moving of data in and out of physical link in network. State its functions.
 - e) State the application of infrared waves.
 - f) State the application of firewall.
 - g) State the need for IPV6.

P.T.O.

- 2. Attempt any THREE of the following :** **12**
- a) Name of components of a data communication system. State the function of each component.
 - b) Explain the terms Synchronous, and Asynchronous transmission of data with a neat diagram.
 - c) State the functions performed by the Network layer and application layer in a TCP/I protocol.
 - d) Explain checksum error detection mechanism with a suitable example.
- 3. Attempt any THREE of the following :** **12**
- a) Name the layers of the OSI model that perform the following functions
 - i) Bit rate control
 - ii) Framing
 - iii) Logical Addressing
 - iv) Encryption / Decryption
 - b) Calculate the CRC for the frame of data to be transmitted in 100100 and the generator polynomial is $x^3 + x^2 + 1$. Generate the Codeword for the transmitted frame.
 - c) On which layer of the O.S.I. model do the following devices work.
 - i) Bridge
 - ii) Routes
 - iii) gateway
 - iv) Hub
 - d) Compare classless and classful addressing. State the disadvantages of classful addressing.

- 4. Attempt any THREE of the following :** **12**
- a) Explain the principle of working of TDM with suitable diagram.
 - b) Explain stop and wait protocol used in flow control.
 - c) With neat diagram explain the concept of datagram approach of switching.
 - d) Explain the concept of FTP with neat diagram.
 - e) Compare coaxial cable and twisted pair cable on the basis of –
 - i) Bandwidth
 - ii) Electromagnetic interference
 - iii) Construction
 - iv) Applications
- 5. Attempt any TWO of the following :** **12**
- a) Draw a diagram and describe the following topologies stating their applications.
 - i) Hybrid
 - ii) Bus
 - b) Draw the Seven layered architecture of OSI model and explain.
 - c) Draw the labelled construction of Fibre optic cable. State four advantages compared to copper cables.
- 6. Attempt any TWO of the following :** **12**
- a) Draw and describe architecture for a network using star topology to establish a laboratory with 10 computers.
 - b) With suitable diagram explain selective repeat ARQ protocol.
 - c) Draw the block diagram of Symmetric Key Cryptography and state the function of various components. Compare symmetric and Asymmetric Key Cryptography.
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17533

16172

2 Hours / 50 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
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(4) Assume suitable data, if necessary.
(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) Attempt any THREE of the following: 12
- (i) Draw neat block diagram of flat bed scanner and explain its working.
 - (ii) Compare LAN, WAN and MAN.
 - (iii) Describe data encapsulation.
 - (iv) Define cache memory. Explain different level of cache memory.
- b) Attempt any ONE of the following: 6
- (i) What is preventive maintenance? Give its importance. Explain different type of preventive maintenance.
 - (ii) Draw RS - 232 signal interface and explain the signals.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Compare between OSI and TCP/IP reference model. (4 points)
 - b) List advantages of LCD monitor over CRT monitor.
 - c) Define:
 - (i) Blackout
 - (ii) Brownout
 - (iii) Surge
 - (iv) Spikes
 - d) Write fault finding and troubleshooting procedure of peripherals of PC.
 - e) State the meaning and functions of ARP and FTP.
 - f) Compare peer - to - peer N/W and client - server N/W.
- 3. Attempt any FOUR of the following:** **16**
- a) Compare TCP and UDP with respect to:
 - (i) Speed
 - (ii) Reliability
 - (iii) Acknowledgement
 - (iv) Security
 - b) With the help of diagram. Explain working of UPS.
 - c) Draw the construction of opto-mechanical mouse and explain its working.
 - d) What is network topology? Explain star and Ring topology with its advantage (any 2)
 - e) Explain working of CD - ROM drive.
 - f) List important features of routers used in Computer Network.
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17533

16117

2 Hours / 50 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE :

12

- (a) Define the terms with reference to LCD Monitor :
 - (i) Resolution
 - (ii) Refresh Rate
 - (iii) Response time
 - (iv) Dot pitch
- (b) State four preventive maintenance measures to be taken for maintenance of scanner.
- (c) State four features of DDR2 and DDR3 RAM.
- (d) State the functions of the following layers of OSI Reference Model.
 - (i) Data link layer
 - (ii) Transport layer
 - (iii) Network layer
 - (iv) Application layer

(B) Attempt any ONE : **6**

- (a) State the step-by-step procedure for installation of TCP/IP Protocol and configuring the same.
- (b) State the function of :
 - (i) Hubs
 - (ii) Switches
 - (iii) Routers
 - (iv) Bridges
 - (v) Gateways
 - (vi) Firewalls

2. Attempt any FOUR of the following : **16**

- (a) Draw the block diagram of a flatbed scanner and state the function of each block.
- (b) State two problems related to laser printer with their symptoms. State preventive maintenance measures for Laser printer.
- (c) What is POST ? Explain. What is the meaning of the following BIOS beeps in IBM PCs.
 - (i) 1 long beep and 1 short beep.
 - (ii) 1 short beep.
- (d) Describe IP Address classes with suitable examples.
- (e) Compare TCP and UDP. (4 points)

3. Attempt any TWO of the following : **16**

- (a) Draw a neat sketch and describe the construction of CDROM. Describe the recording mechanism in CD-ROM.
 - (b) State the pin description of various pins in RS 232 serial interface.
 - (c) With the help of a neat sketch describe the construction of fibre optic cable and state four advantages over electrical cables.
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17533

15162

2 Hours / 50 Marks

Seat No.

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- Instructions :**
- (1) *All questions are compulsory.*
 - (2) *Answer each next main question on a new page.*
 - (3) *Illustrate your answers with neat sketches wherever necessary.*
 - (4) *Figures to the right indicate full marks.*
 - (5) *Assume suitable data, if necessary.*
 - (6) *Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.*

Marks

1. A) Attempt **any three** : **(4×3=12)**
- a) List four features of ISA and PCI Express.
 - b) Write preventive maintenance procedure of laser printer.
 - c) Differentiate between CRT and LCD Display (four points).
 - d) Draw OSI Reference Model. State function of any two layers.
- B) Attempt **any one** : **(6×1=6)**
- a) Draw the TCP/IP Reference Model and state the function of various layers.
 - b) List classification of network on basis of geographical area. State the benefits of networks.
2. Attempt **any four** : **(4×4=16)**
- a) List four characteristics of display and define them.
 - b) Write preventive maintenance procedure of (i) Keyboard (ii) Hard disk.
 - c) List any two problem of PC with its troubleshooting.
 - d) Define IP Addressing. List IP Address classes with their range.
 - e) Name the different TCP/IP Protocols. Explain the working of FTP.
3. Attempt **any two** : **(8×2=16)**
- a) What is cache memory ? What are its types ? With the help of neat diagram, explain the working principle of cache.
 - b) Draw block diagram of SMPS and state the function of the blocks.
 - c) List networking devices. State the function of any four devices.

17533

15116

2 Hours / 50 Marks

Seat No.

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- Instructions :** (1) All Questions are *compulsory*.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data, if necessary.
(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

- | | Marks |
|--|--------------|
| 1. (a) Attempt any THREE of the following : | 12 |
| (i) List any two features of PCI-Xpress. Give two differences between PCI-X & PCI-Xpress. | |
| (ii) Describe the importance of preventive maintenance. | |
| (iii) State any four characteristics of LCD monitor. | |
| (iv) Define MAN. Give any two differences between LAN and WAN. | |
| (b) Attempt any ONE of the following : | 6 |
| (i) Draw TCP/IP reference model and give the function of each layer. | |
| (ii) Describe the function and operation of Firewall with neat diagram. | |
| 2. Attempt any FOUR of the following : | 16 |
| (a) Compare CRT and LCD display. (Four points) | |
| (b) State any two problems related to Hard disk with their symptoms. Discuss preventive maintenance for Hard disk. | |
| (c) Describe various factors considered for passive maintenance. | |
| (d) Describe the need and importance of subnet masking. Give an example of subnet mask. | |
| (e) State the various basic and advanced properties configured for TCP/IP. | |

P.T.O.

3. Attempt any TWO of the following :**16**

- (a) Draw and explain functional block diagram of LCD monitor.
 - (b) Draw pin diagram of ATX power supply. Give the function of each pin.
 - (c) Describe the different modes of Fibre Optic Cable with neat diagram. Compare Fibre Optic cable with UTP cable.
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17533

21415

2 Hours/50 Marks

Seat No.

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- Instructions :** (1) **All** questions are **compulsory**.
(2) **Illustrate** your answers with neat sketches **wherever necessary**.
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume **suitable data**, if necessary.
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MARKS

1. Attempt **any seven** : **14**
- a) What do you understand by active preventive maintenance ?
 - b) List any four features of 8 bit ISA bus.
 - c) What is passive maintenance ?
 - d) List two important features of peer to peer network.
 - e) State characteristics of L2 Cache.
 - f) What do you understand by subnet masking ?
 - g) List two basic types of RAM.
 - h) List any two important benefits of networks.
 - i) What is a BIOS ?
 - j) Why UDP protocol is used ?
2. Attempt **any four** : **12**
- a) State any three points of difference between on-line UPS and off-line UPS.
 - b) What do you mean by POST ? Give solution for the following error indication
 - i) No beep
 - ii) Continuous beep
 - c) Explain working principle of LCD monitor.
 - d) List important features of routers used in computer network.
 - e) List any six important features of DDR 3.
 - f) Explain what do you understand by date encapsulation.

P.T.O.



3. Attempt **any four** :

12

- a) Draw the architecture of Intel 945 G Chipset.
- b) Give function of each layer of OSI reference model.
- c) Draw and explain the block diagram of SMPS.
- d) Explain the different classes of IP addressing.
- e) Explain how preventive maintenance of Laser printer is performed.
- f) What is network topology ? List their types with meaning.

4. Attempt **any four** :

12

- a) Explain the recording process of CDROM drive.
 - b) Define the following power problems.
 - i) Blackout
 - ii) Surger
 - iii) Spikes
 - c) Explain how preventive maintenance of CD ROM drive is carried out.
 - d) Explain the working principle of Firewalls.
 - e) Give function of the following TCP/IP protocols :
 - i) ARP
 - ii) F TP
 - f) Explain important characteristics of fiber optics cable.
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17533

14115

2 Hours/50 Marks

Seat No.

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- Instructions:** (1) **All** questions are **compulsory**.
(2) Answer **each** next main question on a **new** page.
(3) Illustrate your answers with neat sketches **wherever** necessary.
(4) Figures to the **right** indicate **full** marks.
(5) **Assume** suitable data, if **necessary**.
(6) Mobile Phone, Pager and any other Electronic Communication devices are **not permissible** in Examination Hall.
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MARKS

1. A) Attempt **any three** : **12**
- a) Explain architecture of Intel chipset 945G with diagram.
 - b) With the help of diagram explain working of UPS.
 - c) Explain the preventive maintenance of printers.
 - d) Draw the 20 pin ATX power connection with color code and describe the signals.
- B) Attempt **any one** : **6**
- a) Describe peer to peer and client-server networks.
 - b) Compare between OSI and TCP/IP reference model (6 points).
2. Attempt **any four** : **16**
- a) Explain BIOS with its any 3 functions.
 - b) Explain construction of DVD.
 - c) Describe data encapsulation.
 - d) Explain passive matrix LCD with diagram.
 - e) List any four advantages of optical mouse.

P.T.O.



3. Attempt **any two** :

16

- a) What is network topology ? Explain star and bus topology with its advantages (any 2).
 - b) Explain keyboard, hard disk, mouse and scanner related problems.
 - c) Explain following term :
 - i) Subnet masking
 - ii) ARP
 - iii) FTP
 - iv) IP address classes.
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17533

14115

2 Hours/50 Marks

Seat No.

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- Instructions:** (1) **All** questions are **compulsory**.
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(3) Illustrate your answers with neat sketches **wherever** necessary.
(4) Figures to the **right** indicate **full** marks.
(5) **Assume** suitable data, if **necessary**.
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MARKS

1. A) Attempt **any three** : 12
- a) Explain architecture of Intel chipset 945G with diagram.
 - b) With the help of diagram explain working of UPS.
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 - d) Draw the 20 pin ATX power connection with color code and describe the signals.
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- a) Describe peer to peer and client-server networks.
 - b) Compare between OSI and TCP/IP reference model (6 points).
2. Attempt **any four** : 16
- a) Explain BIOS with its any 3 functions.
 - b) Explain construction of DVD.
 - c) Describe data encapsulation.
 - d) Explain passive matrix LCD with diagram.
 - e) List any four advantages of optical mouse.

P.T.O.



3. Attempt **any two** :

16

- a) What is network topology ? Explain star and bus topology with its advantages (any 2).
 - b) Explain keyboard, hard disk, mouse and scanner related problems.
 - c) Explain following term :
 - i) Subnet masking
 - ii) ARP
 - iii) FTP
 - iv) IP address classes.
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17533

21718

2 Hours / 50 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
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- (3) Illustrate your answers with neat sketches wherever necessary.
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Marks

1. a) **Attempt any THREE of the following:** **12**
- (i) Explain the concept of cache memory with neat diagram.
- (ii) State any four preventive maintenance of a Hard Disk Drive.
- (iii) Draw neat labeled block diagram of flat bed scanner.
- (iv) State any four functions of Internet protocol (IP)
- b) **Attempt any ONE of the following:** **6**
- (i) Draw and explain the function of each layer of TCP/IP protocol architecture.
- (ii) Compare between UTP cable and STP cable. (6-points)

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) State any four features of PCI bus.
 - b) Explain beep error indications with reference to PC problem (any four)
 - c) Explain power on self-test (POST) of PC.
 - d) Give the ARP protocol message format.
 - e) Draw and explain the packet structure of UDP.
- 3. Attempt any TWO of the following:** **16**
- a) Explain the working of Inkjet printer with neat block diagram. State its two limitations.
 - b) Draw the block, diagram and explain the working of SMPS. Give any two functions of PWM in SMPS.
 - c) Give the classification of network topology. Explain any two network topology in details.
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17428

15162

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
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- (5) Assume suitable data if necessary.
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Marks

1. a) Attempt any SIX of the following: 12
- (i) State any two mother board selection criteria.
- (ii) What is track and sector of H.D.D.?
- (iii) What is meant by interlaced and non-interlaced monitor?
- (iv) Define the terms TWAIN and OCR with reference to scanner.
- (v) Give classification of printer with examples.
- (vi) Define:
- (1) Blackout
- (2) Surge
- (vii) State four features of bluetooth.
- (viii) Give any four features of SCSI-3.

P.T.O.

- b) **Attempt any TWO of the following:** **8**
- (i) Draw block diagram of north bridge / south bridge architecture and explain.
 - (ii) Describe passive matrix and active matrix with suitable diagrams.
 - (iii) Draw the block diagram of a video accelerator card and explain.
2. **Attempt any FOUR of the following:** **16**
- a) Explain four features of PCI bus.
 - b) List four recording techniques used in storage devices and explain any one.
 - c) What is partitioning of hard disk? How it is done? Give need of partitioning.
 - d) Describe use of jumper selection. (any four)
 - e) Write advantage and disadvantage of LCD monitor.
 - f) Draw block diagram of internal modem and state the function of various blocks.
3. **Attempt any FOUR of the following:** **16**
- a) State different function of BIOS.
 - b) Explain working and construction of plasma display technology.
 - c) Explain in brief SCSI drive configuration.
 - d) Explain the working of logic analyzer for troubleshooting of PC with a neat block diagram.
 - e) Give the test sequence of POST.
 - f) Which different testing are performed by diagnostic software?

- 4. Attempt any FOUR of the following:** **16**
- a) With neat diagram explain the working of optical mouse.
 - b) Explain in brief working of laser printer with neat diagram.
 - c) Write difference between on-line UPS and off-line UPS.
 - d) Draw pinout diagram and signal description of ATX connector.
 - e) Write features of fire wire. (any four)
 - f) Draw the diagram of centronics interface and explain function of any four signals.
- 5. Attempt any TWO of the following:** **16**
- a) What is need of cache memory? Describe the types of cache memory.
 - b) Describe real and protected mode of processor in detail.
 - c) Name the different types of key-switches in keyboard. Explain the principle of working of opto-electronic switch.
- 6. Attempt any TWO of the following:** **16**
- a) With suitable block diagram, describe construction of CDROM drive and explain the recording mechanism.
 - b) Give the eight specifications of blue-ray disk with typical value.
 - c) With suitable block diagram describe the working of SMPS.
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17428

15116

3 Hours / 100 Marks

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Marks

- 1. a) Attempt any SIX of the following:** **12**
- (i) Define the terms related to hard disk:
- 1) Cylinder
 - 2) Cluster
- (ii) Write any two points of difference between XT type and AT type motherboard.
- (iii) What is a Bluetooth? Give its function.
- (iv) List any two types of mouse with their features.
- (v) Draw the block diagram of linear power supply.
- (vi) List any four features of firewire.
- (vii) List any four types of key switches of keyboard.
- (viii) What are the different factors to be considered while selecting the power supply?

P.T.O.

- b) **Attempt any TWO of the following:** **8**
- (i) Explain the SCSI drive configuration.
 - (ii) Define the following terms related to power problems:
 - 1) Blackouts
 - 2) Brownouts
 - 3) Surges
 - 4) Spikes
 - (iii) List with meaning any eight features of USB.
2. **Attempt any FOUR of the following:** **16**
- a) Draw and explain the block diagram of SMPS.
 - b) How RLL encoding is commonly used encoding scheme for hard disk storage? Also mention its encoder/decoder table.
 - c) List with meaning any four specifications of Dot Matrix printer.
 - d) List any four points of comparison between online UPS and offline UPS.
 - e) Draw the block diagram of optical mouse. Also list any four advantages of optical mouse.
 - f) How perpendicular recording technology is used for recording on hard disk?
3. **Attempt any FOUR of the following:** **16**
- a) List any four advantages and disadvantages of LCD monitor.
 - b) Why BIOS is used? List any three functions of BIOS.
 - c) Explain the working principle of plasma display technology.
 - d) Draw and explain block diagram of an internal modem.
 - e) Explain the concept of zone bit recording.
 - f) Explain the pin signal description of RS 232.

- 4. Attempt any FOUR of the following:** **16**
- a) Explain the concept of MBR.
 - b) Explain the purpose of logic probe and logic analyzer for maintenance.
 - c) Write any four points for comparing high level and low level formatting.
 - d) Give any four important features each of PCI and AGP buses.
 - e) Draw and label block diagram of CRT monitor.
 - f) List any four points of difference between Internal Cache and External Cache.
- 5. Attempt any TWO of the following:** **16**
- a) Explain with diagram, the logical memory organisation.
 - b) Draw and explain block diagram of video accelerator card.
 - c) What do you understand by preventive maintenance? List different steps to be followed to carry out preventive maintenance.
- 6. Attempt any TWO of the following:** **16**
- a) Explain what do you understand by:
 - (i) Extended memory
 - (ii) Expanded memory
 - b) Explain the construction of DVD. How its recording is performed?
 - c) Explain with block diagram the working of flat - bed scanner.
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17428

21415

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
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- (3) Illustrate your answers with neat sketches wherever necessary.
- (4) Figures to the right indicate full marks.
- (5) Assume suitable data, if necessary.
- (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following :** **12**
- (i) Write any two modes of operation of CPU. Also mention one effect of each.
- (ii) Write any four recording techniques.
- (iii) Write two advantages and two disadvantages of LCD monitor.
- (iv) Write four types of key switches used in keyboard.
- (v) Write two advantages and two disadvantages of Opto-mechanical mouse.
- (vi) State the meaning of black out and brown out problem in power supply.
- (vii) Write any four important features of USB port.
- (viii) Write two advantages and two disadvantages of Bluetooth.

P.T.O.

b) Attempt any TWO of the following :

8

- (i) Explain the terms extended memory and expanded memory with suitable example.
- (ii) Explain the following
 - 1) Interlaced scanning
 - 2) Non interlaced scanning
- (iii) Draw functional block diagram of LCD monitor.

2. Attempt any FOUR of the following :

16

- a) Write any important function of BIOS.
- b) Explain the following with the help of neat diagram :
 - (i) Track
 - (ii) Sector
 - (iii) Cylinder
 - (iv) Cluster
- c) Draw and explain block diagram of CD drive.
- d) Distinguish between FAT-32 and NTFS.
- e) Write any four important characteristics of colour CRT monitor.
- f) Draw and explain the block diagram of external modem.

- 3. Attempt any FOUR of the following :** **16**
- a) Describe the CMOS setup. State any two importances of CMOS setup.
 - b) State the difference between touch screen monitor and normal LCD monitor.
 - c) Draw and explain the RS232.
 - d) What is POST ? Write applications of POST in trouble-shooting.
 - e) Explain active and passive maintenance with suitable example.
 - f) State and interpret the meaning of beep codes.
- 4. Attempt any FOUR of the following :** **16**
- a) Draw and explain the Block diagram flat bed scanner.
 - b) Write any four important characteristics of Dot Matrix Printers.
 - c) Draw the pin out diagram of ATX connector.
 - d) What are the symptoms of power supply problem ?
 - e) Draw and explain centronic interface diagram.
 - f) Write any four firewire features.
- 5. Attempt any TWO of the following :** **16**
- a) Write two important features of the following :
 - (i) SDRAM
 - (ii) DDR
 - (iii) Cache
 - (iv) DDR2
 - b) Draw and explain the north and south bridge chipset architecture.
 - c) Draw and explain the Laser printer block diagram and mention any two important specifications.

17428

[4]

Marks

16

6. Attempt any TWO of the following :

- a) Write two features of each of the following :
 - (i) Jumper
 - (ii) Blue Ray Disc
 - (iii) SCSI
 - (iv) IDE
 - b) Mention differences between following :
 - (i) IDE and SCSI
 - (ii) IDE and SATA
 - c) Draw and explain the functional block diagram of UPS.
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17428

14115

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data, if necessary.
(5) Preferably, write the answers in sequential order.

Marks

1. a) **Attempt any SIX of the following :** **12**
- (i) Define the following terms –
 - (1) Cache Hit
 - (2) Cache Miss.
 - (ii) What is FAT ? List two features of FAT 32.
 - (iii) Write any four advantages of LCD display over CRT display.
 - (iv) List any four advantages of Laser Printer over Dot Matrix Printer.
 - (v) Give any four disadvantages of Ink-jet Printer.
 - (vi) Define the terms Blackout and Surge.
 - (vii) Give any four features of USB.
 - (viii) List any four features of firewire.

P.T.O.

- b) **Attempt any TWO of the following :** **8**
- (i) Explain conventional memory and extended memory.
 - (ii) With neat diagram describe working principle of Plasma display.
 - (iii) Draw the block diagram of Video Accelerator card and explain its working.
2. **Attempt any FOUR of the following :** **16**
- a) Explain North Bridge and South Bridge Architecture with neat diagram.
 - b) What is formatting ? Explain low level and high level formatting.
 - c) Describe and write pre-compensation with its use.
 - d) Explain working of CD-ROM drive with block diagram.
 - e) Compare Passive matrix and Active matrix LCD display. (Any four points).
 - f) List any four advantages of optical mouse.
3. **Attempt any FOUR of the following :** **16**
- a) List any four features of BIOS.
 - b) Differentiate between CRT and LCD displays (Any four prints).
 - c) Explain the sequence of events in RS-232 communications with signals.
 - d) Name any two hardware tools and software tools used for trouble shooting of PC.
 - e) Write Active, Passive maintenance procedures.
 - f) Give the test sequence of post.

- 4. Attempt any FOUR of the following :** **16**
- a) Write working principle of Mechanical key switch with neat diagram.
 - b) With block diagram explain the working principle of Flat Bed Scanner.
 - c) Describe any four characteristics of power supply.
 - d) State any four advantages of ON-Line UPS over OFF Line UPS.
 - e) Write any four advantages of Bluetooth.
 - f) Draw the interface diagram for centronics and timing waveforms.
- 5. Attempt any TWO of the following :** **16**
- a) State any eight features of H67 or P67 chipset.
 - b) List any eight motherboard selection criterion.
 - c) Draw block diagram of Internal Modem and explain working of each block.
- 6. Attempt any TWO of the following :** **16**
- a) Give any eight specifications of Blue ray disc with typical values.
 - b) Describe FM and MFM method of recording with suitable example.
 - c) With block diagram describe the working of SMPS.
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17428

21314

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
(7) Preferably, write the answers in sequential order.

Marks

1. a) Attempt any **SIX** of the following: **12**
- i) Define the terms cache hit and cache miss.
 - ii) Give four specifications of Blue-ray disk.
 - iii) State any two differences between interlaced and non-interlaced monitor.
 - iv) State any four printer characteristics.
 - v) Enlist the types of keyswitches.
 - vi) What is 'Power Good Signal'? What is its use?
 - vii) List any four firewire features.
 - viii) State any four bluetooth features.

P.T.O.

- b) **Attempt any TWO of the following:** **8**
- i) Compare DDR2 and DDR3 with respect to clock frequency, transfer rate, bank used and voltage required.
 - ii) Describe the construction and working of resistive touch screen display.
 - iii) With neat block diagram, describe video accelerator card.
2. **Attempt any FOUR of the following:** **16**
- a) What factors to be considered in the selection of motherboard? (any four)
 - b) With suitable diagram explain zone recording.
 - c) With suitable diagram explain write precompensation.
 - d) Explain following terms related to hard disk-cluster, cylinder, sector, landing zone.
 - e) Describe any four characteristics of CRT monitor.
 - f) Explain the working of flat bed scanner with the help of neat diagram.
3. **Attempt any FOUR of the following:** **16**
- a) Compare PCI with PCI - express bus.
 - b) Describe the construction and working of plasma display.
 - c) Explain four features of USB.
 - d) Differentiate between active and passive preventive maintenance with example.
 - e) Draw and explain the use of logic probe.
 - f) Give the meaning of following POST beep codes -
 - i) 1 short beep
 - ii) No beep
 - iii) Continuous beep
 - iv) 2 short beeps

4. Attempt any FOUR of the following:**16**

- a) What is modem? Explain working of external modem with suitable diagram.
- b) Explain the working of optical mouse.
- c) List and explain power supply characteristics. (any four)
- d) With neat diagram explain
 - i) Surge
 - ii) Spike
 - iii) Blackout
 - iv) Brownout
- e) Explain the following RS-232 signals -
 - i) TXD
 - ii) RXD
 - iii) RTS
 - iv) CTS
- f) Draw the timing diagram of centronics interface and explain.

5. Attempt any TWO of the following:**16**

- a) What are the different modes of operation of CPU. Explain any two.
- b) Draw the block diagram of Northbridge / Southbridge architecture and describe various blocks.
- c) With the block diagram, explain the working of dot matrix printer.

6. Attempt any TWO of the following:**16**

- a) Describe Modified Frequency Modulation (MFM) and Run Length limited (RLL) techniques of recording with suitable example.
 - b) Enlist types of servo techniques. Describe embedded servo technique with diagram.
 - c) With the help of diagram explain the working of online UPS. Give the advantages of online UPS over offline UPS.
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17428

16117

3 Hours / 100 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following:** **12**
- (i) Define line regulation and load regulation.
 - (ii) List any four fire wire features.
 - (iii) List any four components of motherboard.
 - (iv) Define terms related to CRT monitor.
 - 1) Frame rate
 - 2) Resolution
 - (v) State any two motherboard selection criteria.
 - (vi) Define terms related to hard disk.
 - 1) Cluster
 - 2) Landing zone
 - (vii) List any four features of SD-RAM.
 - (viii) List any four features of SCSI.

P.T.O.

- b) **Attempt any TWO of the following:** **8**
- (i) What is need of cache memory? Describe types of memory.
 - (ii) Draw and explain working principle of hard disk.
 - (iii) Write any four specification of Blue_ray_disk.
- 2. Attempt any FOUR of the following:** **16**
- a) Describe passive matrix and active matrix LCD with reference to their features.
 - b) List any four specification of dot matrix printer.
 - c) Write the sequence of POST.
 - d) Draw and explain centronics parallel interface with its signals.
 - e) Explain the construction of CD-ROM drive with block diagram.
 - f) Explain working of plasma display with diagram.
- 3. Attempt any FOUR of the following:** **16**
- a) Explain internal structure of CRT with block diagram.
 - b) Write the signal voltages for the following colours of ATX connection.
 - (i) Red
 - (ii) Black
 - (iii) Orange
 - (iv) Purple
 - c) Draw and explain architecture of intel chipset 915 G.
 - d) State different functions of BIOS. (any four)
 - e) Explain following external SCSI connectors.
 - (i) D-shell
 - (ii) Centronics
 - f) State any four advantages of UPS over normal power supply.

- 4. Attempt any FOUR of the following:** **16**
- a) Explain working of flat bed scanner with diagram.
 - b) Draw and explain hub architecture in detail.
 - c) With neat block diagram explain working of SMPS.
 - d) Differentiate between low level formatting and high level formatting. (any four points)
 - e) Draw schematic of logic probe and logic pulser and describe working with suitable example.
 - f) Explain with diagram interlaced and non-interlaced monitor.
- 5. Attempt any TWO of the following:** **16**
- a) Draw waveforms of FM, MFM and RLL recording techniques for data 11011000.
 - b) List different types of key switches in keyboard. Explain the working principle of any one in detail with neat diagram.
 - c) Draw the block diagram of logic analyzer and explain.
- 6. Attempt any TWO of the following:** **16**
- a) Draw block diagram of RS232 connector and give the functions of each signals.
 - b) Describe different stages of the process of printing a document on laser printer with suitable diagram.
 - c) Explain construction and recording of DVD with diagram.
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17428

16172

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data, if necessary.
(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following:** **12**
- (i) Write two features of PCI bus.
 - (ii) Write function of R/W heads in HDD.
 - (iii) Write any two advantages of LCD over CRT display.
 - (iv) Enlist four types of key switches of keyboard.
 - (v) Write two advantages of laser printer.
 - (vi) Write any two symptoms of power problem in PC.
 - (vii) Write two features of FIREWIRE.
 - (viii) Explain two signals of RS-232 interface.
- b) **Attempt any TWO of the following:** **8**
- (i) Write four functions of BIOS.
 - (ii) Compare Active and Passive matrix LCD (any four points).
 - (iii) Draw block diagram of video accelerator card and explain its blocks.

P.T.O.

2. Attempt any FOUR of the following:**16**

- a) State any four features of H67 or P67 chipset.
- b) Describe in brief following terms related to HDD:
 - (i) Track
 - (ii) Sector
 - (iii) Cylinder
 - (iv) Cluster
- c) Draw block diagram of CD-ROM and explain its blocks.
- d) Describe procedure of partitioning of HDD.
- e) Define following characteristics of CRT monitor:
 - (i) Dot pitch
 - (ii) Resolution
 - (iii) Aspect ratio
 - (iv) Horizontal scanning frequency
- f) Describe working of membrane keyswitch with diagram.

3. Attempt any FOUR of the following:**16**

- a) Draw North/South bridge architecture block diagram.
- b) List four disadvantages of CRT.
- c) List four features of USB.
- d) State any four beep codes with their meaning in troubleshooting.
- e) Give POST sequence of PC.
- f) Explain reballing of North bridge and South bridge.

- 4. Attempt any FOUR of the following:** **16**
- a) Draw block diagram of Flat-bed scanner and describe its blocks.
 - b) Draw block diagram of Dot matrix printer and explain its working.
 - c) Explain four power supply problems.
 - d) Draw block diagram of SMPS and explain its blocks.
 - e) State any four features of USB.
 - f) Draw centronics interface. Also list and write functions of signals from PC to printer.
- 5. Attempt any TWO of the following:** **16**
- a) Explain any eight motherboard selection criteria.
 - b) Explain extended and expanded memory.
 - c) Draw block diagram of internal MODEM and explain its blocks. Also state its two disadvantages.
- 6. Attempt any TWO of the following:** **16**
- a) Give eight specifications of bluray disc with typical values.
 - b) Draw waveform and calculate number of pulses for data pattern 10011100 by encoding it using FM, MFM and RLL recording techniques.
 - c) Draw block diagram of On-line and Off-line UPS and explain their working when main supply ON and OFF. Also state their two advantages.
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17428

11718

3 Hours / 100 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. a) Attempt any SIX of the following:** **12**
- (i) Write any four features of PCI bus.
 - (ii) What is formatting? List types of formatting.
 - (iii) Write any two advantages of CRT display over LCD display.
 - (iv) Define following terms with reference to scanner.
 - 1) Resolution
 - 2) Interpolation
 - (v) List various types of keyboard switches.
 - (vi) Define following terms related to power supply -
 - 1) Line Regulation
 - 2) Load Regulation

P.T.O.

(vii) Give any four features of SCSI - 1.

(viii) Give any four features of USB.

b) **Attempt any TWO of the following:** **8**

(i) What is need of cache memory? Describe in brief internal and external cache.

(ii) Explain following:

1) Interlaced scanning

2) Non-interlaced scanning.

(iii) Draw the block diagram of Video Accelerated card and explain its working.

2. **Attempt any FOUR of the following:** **16**

a) State any four features of H67 or P67 chipset.

b) State eight features of Blue-ray.

c) Describe and write precompensation. State its use.

d) Describe following terms related to hard disk:

MBR, sector, cylinder, track

e) Differentiate between CRT and LCD display (any four points)

f) Draw the block diagram of flatbed scanner and state the function of each block.

3. **Attempt any FOUR of the following:** **16**

a) Name the different modes of operation of the processor and state their features.

b) Draw and explain functional block diagram of LCD monitor.

c) Draw and explain centronic interface with diagram.

d) State any four applications of BGA workstation.

e) Name two hardware tools and two software tools used for troubleshooting of PC.

f) Give the preventive maintenance for hard disk drive and keyboard.

- 4. Attempt any FOUR of the following:** **16**
- a) Explain working of optical mouse.
 - b) What is modem? Explain working of internal modem with diagram.
 - c) List various protection devices for power supply. Explain any one of them.
 - d) What are the symptoms of power supply problem.
 - e) Draw the pin description of RS232 interface and give the function of each signal.
 - f) Write any four advantages of bluetooth.
- 5. Attempt any TWO of the following:** **16**
- a) List any eight motherboard selection criteria.
 - b) Draw the block diagram of North bridge/South bridge architecture and explain.
 - c) Explain working of Laser printer with diagram and mention any two specification.
- 6. Attempt any TWO of the following:** **16**
- a) Describe FM, MFM, and RLL method of recording and explain how MFM recording technique will be applied for the data stream 10110111.
 - b) With suitable block diagram, describe the construction of CD-ROM drive and explain how recording is done.
 - c) With block diagram describe the working of SMPS.
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17428

21718

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following:** **12**
- (i) What is form factor? List different form factors of motherboard.
 - (ii) What is FAT? List features of FAT 32.
 - (iii) What is LCD? Write advantages of LCD.
 - (iv) What is RAM? Explain types of RAM.
 - (v) Compare online UPS and offline UPS (any 2 points)
 - (vi) Explain USB features.
 - (vii) State any four printer problems.
- b) **Attempt any TWO of the following:** **8**
- (i) Explain concept of cache memory with advantages and disadvantages.
 - (ii) List recording techniques. Explain MFM encoding scheme.
 - (iii) What are various key switches? Explain membrane switch.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Draw and explain North/South bridge architecture.
 - b) Explain hard disk drive construction.
 - c) Explain characteristic of CRT monitor.
 - d) With neat diagram explain working of opto mechanical mouse.
 - e) Draw and explain linear power supply.
 - f) Explain SCSI connectors.
- 3. Attempt any FOUR of the following:** **16**
- a) Draw and explain various terms related to hard disk.
 - b) Draw and explain block diagram of CRT colour monitor.
 - c) Explain working of flat bed scanner with the help of block diagram.
 - d) Explain following terms related to power supply problem:
 - (i) Blackouts
 - (ii) Brownouts
 - (iii) Surge
 - (iv) Spikes
 - e) Explain RS32 interface basics.
 - f) Explain any two types of maintenance of PC.
- 4. Attempt any FOUR of the following:** **16**
- a) List and explain processor modes.
 - b) Explain formatting in detail.
 - c) Explain LCD matrix types.
 - d) Describe different stages of the process of printing a document on laser printer.
 - e) Draw and explain block diagram of general UPS.
 - f) What is POST? Enlist different error codes and respective meaning provided by POST.

5. Attempt any TWO of the following:**16**

- a) Explain AGP with its types. Write advantages of AGP over PCI.
- b) Describe FAT and explain FAT types compare FAT and NTFS.
- c) Explain working of Inkjet printer with neat block diagram.

6. Attempt any FOUR of the following:**16**

- a) Explain PCI-X bus of pentium IV mother board.
 - b) State meaning of cluster? How it is rectified.
 - c) Explain block diagram of video accelerator card.
 - d) Explain use of output voltage of SMPS.
 - e) What is centronics? Explain modes of operations of centronics interface.
 - f) Explain any one software tool for debugging PC.
-

Scheme – I
Sample Test Paper - I

Program Name : Electronics Engineering Group
Program Code : DE/ EJ/ET/EX/EQ
Semester : SIXTH
Course Title : Computer Networking and Data Communication
Marks : 20

22634

Time:1 Hour

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.

(08 Marks)

- a) Draw block diagram of data communication
- b) State two advantages of computer networks.
- c) List functions of Transport layer of ISO-OSI Network Model.
- d) State the need for multiplexing.
- e) Draw labeled construction of fiber optic cable.

Q.2 Attempt any THREE.

(12 Marks)

- a) Suggest network topologies for the following applications with proper justification of parameters considered:
 - i) E-library having 10 computers.
 - ii) Administrative office with five computers.
- b) Describe the four levels of addresses used in TCP/IP protocol
- c) Compare FDM and TDM on the basis of
 - i) Bandwidth utilization
 - ii) Channel capacity
 - iii) Error control
 - iv) Transmission delay
- d) Enlist protocols with one application for following layers:
 - i) Physical Layer
 - ii) Transport Layer.

Scheme – I
Sample Test Paper - II

Program Name : Electronics Engineering Group
Program Code : DE/ EJ/ET/EX/EQ
Semester : SIXTH
Course Title : Computer Networking and Data Communication
Marks : 20

22634

Time:1 Hour

Instructions:

All questions are compulsory.

- (1) Illustrate your answers with neat sketches wherever necessary.
- (2) Figures to the right indicate full marks.
- (3) Assume suitable data if necessary.
- (4) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.

(08 Marks)

- (a) List two Unguided Transmission Media.
- (b) Define Error control and Flow control.
- (c) State functions performed by Gateway and Repeater.
- (d) Give the names of the layer where the following protocols are related to:
i) UDP ii) FTP
- (e) Explain role of NAT in network layer.

Q.2 Attempt any THREE.

(12Marks)

- (a) Compare circuit switching and packet switching on the basis of
i) Transmission Path ii) Routing iii) Information type iv) Applications.
- (b) Explain the process of single bit error detection. with suitable example
- (c) Explain the frame format of Point to Point Protocol
- (d) Define Cryptography .Explain the components of Cryptography.

Scheme – I
Sample Question Paper

Program Name : Electronics Engineering Group
Program Code : DE/ EJ/ET/EX/EQ
Semester :SIXTH
Course Title : Computer Networking and Data Communication
Marks :70

22634

Time:3Hours.

Instructions:

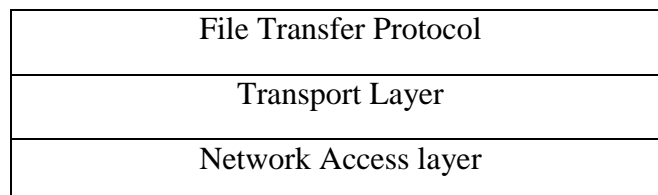
- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following: - (10 Marks)

- (a) Draw labeled frame format of Serial and Parallel data transmission method.
- (b) Classify networks on the basis of architecture.
- (c) State two functions of the data link layer of TCP/IP reference model.
- (d) Name the layer of the OSI model at which the mechanical, electrical, functional and procedural characteristics are defined. State its function.
- (e) State two limitations of twisted pair cable.
- (f) List four network connecting devices.
- (g) State two basic functions of Firewall.

Q.2) Attempt any THREE of the following: - (12 Marks)

- (a) Draw the block diagram of data communication system and state the function of each block.
- (b) Compare LAN and WAN on the basis of following parameters.
i) Geographical area ii) Speed iii) Installation Cost iv) Communication medium
- (c) The following diagram illustrates simple network architecture. It describes a layered model of a communication system used for transferring files between computers over a network



- i) State the tasks performed by the transport layer
- ii) State the function of Network access layer
- (d) In a particular data transmission system, the data received was 1 0 1 1 0 1 0. Using 7 bit odd parity hamming code, determine the correct code

Q.3) Attempt any THREE of the following. (12 Marks)

- (a) State the names of the layers that perform the following functions:
 - i) Data Encryption ii) Error correction iii) Filetransfer iv) Data Encoding
- (b) Calculate CRC for the frame 110101011 and the generator polynomial is x^4+x+1 . Generate the codeword for the transmitted frame
- (c) Draw a diagram to establish a network for a computer laboratory with 5 computers having internet facility using the following devices
 - i) Switch ii) Router
- (d) Compare IPv4 and IPv6 on the basis of
 - i) Address length ii) Packet size iii) Configuration iv) IPSecurity

Q.4) Attempt any THREE of the following. (12 Marks)

- (a) Compare transmission medium on the basis of
 - i) Bandwidth ii) Attenuation iii) Ease of Installation iv) Electromagnetic interference
- (b) Describe a One bit sliding window protocol under normal condition and with damaged frame with suitable diagram.
- (c) Describe the different modes of light propagation in a fibre optic cable with diagram.
- (d) On which layer do the following devices work:.
 - i) Hub ii) Switch iii) Router iv) Repeater
- (e) Explain principle of Frequency Division Multiplexing with block diagram .

Q.5) Attempt any TWO of the following. (12 Marks)

- (a) With a suitable diagram, describe the following topologies.
 - i) Star topology ii) Mesh topology
- (b) Draw the 7 layered architecture of the OSI model. State the function of various layers
- (c) Classify modems. State two features of each type of modem.

Q.6) Attempt any TWO of the following. (12 Marks)

- (a) Draw and describe architecture for network using tree topology for an office in 3-storey building
- (b) Describe transition phase of PPP.
- (c) Draw the block diagram of Asymmetric Key Cryptography and state the function of various components.