Jharkhand University of Technology, Ranchi

Diploma 3rd Semester Examination, 2024 (NEP)

Subject : Computer Networks **Subject Code : CSE303**

Time Allowed : 3 Hours **Full Marks : 70**

Answer in your own words.

Answer any five *questions in which* Question No. 1 *is compulsory.*

The figures in the margin indicate full marks.

All questions carry equal marks.

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1. (i) What does TCP/IP stand for? 2×7=14

(a) Transmission Control Protocol / Internet Protocol

(b) Transfer Communication Process / Internet Processing

(c) Transport Control Protocol / Internet Procedure

(d) None of the above

(ii) Which topology requires a multipoint connection?

(a) Ring (b) Bus

(c) Star (d) Mesh

(iii) What is the primary function of a router?

(a) To connect multiple networks and route data

(b) To convert analog signals to digital

(c) To store data

(d) To amplify network signals

(iv) What is the maximum length of an IPv6 address?

(a) 32 bits (b) 64 bits

(c) 128 bits (d) 256 bits

(v) Which protocol is used to retrieve the email?

(a) HTTP (b) FTP

(c) SMTP (d) POP3

(vi) The physical layer is concerned with

(a) bit-by-bit delivery (b) process to process delivery

(c) application to application delivery (d) port to port delivery

(vii) ? Which of the following

(a) Router (b) Switch

(c) Hub (d) Firewall

2. (a) Discuss the various causes of transmission impairment. State the transmission modes of a signal.

   (b) Discuss the various signals : Analog, Digital, Periodic and Non-Periodic. 7+7

3. (a) Discuss the various categories of Networks.

   (b) What is the OSI reference model? Discuss the various OSI layers and their functions. 7+7

4. (a) Discuss the TCP/IP reference model with a neat diagram.

   (b) Discuss the various TCP/IP Messages. 7+7

5. (a) Illustrate the various networking topologies with their merits and demerits.

   (b) What is NAT? Discuss how it works. 7+7

6. (a) Explain about IPV4 and compare it with IPV6.

   (b) Find the classes of each address: 7+7

   (i) 11000001 10000011 00011011 11111111

   (ii) 240.0.0.1

7. Short notes on *any four*: 3.5×4

   (a) SMTP

   (b) PoP3

   (c) Firewall

   (d) DHCP Server

   (e) VLAN

Jharkhand University of Technology, Ranchi

Diploma 3rd Semester Examination, 2024 (NEP)

Subject : Database System Concepts and PL / SQL **Subject Code : CSE 304**

Time Allowed : 3 Hours **Full Marks : 70**

Pass Marks : 21

Answer in your own words.

Answer any five *questions in which* Question No.1 *is compulsory.*

The figures in the margin indicate full marks.

All questions carry equal marks.

1. Choose the correct alternative of the following: 2×7=14

(i) In SQL, which operator would you use to combine the results of two queries and remove duplicate entries?

(a) INTERSECT (b) UNION

(c) MINUS (d) JOIN

(ii) Which of the following is NOT a feature of a Database Management System (DBMS)?

(a) Data consistency (b) Data redundancy

(c) Data security (d) Data integrity

(iii) In an ER model, what does a diamond shape represent?

(a) Entity (b) Attribute

(c) Relationship (d) Key

(iv) Which of the following is an example of a conceptual design for a database?

(a) Defining data types in SQL (b) Creating an ER diagram

(c) Writing a SELECT query (d) Defining indexes

(v) What is the main purpose of normalization in a relational database?

(a) To improve the speed of queries (b) To eliminate data redundancy

(c) To create complex queries (d) To define views

(vi) Which of the following is a Data Definition Language (DDL) command?

(a) SELECT (b) INSERT

(c) ALTER (d) UPDATE

(vii) Which of the following is a DCL (Data Control Language) command?

(a) COMMIT (b) GRANT

(c) SELECT (d) DELETE

2. (a) Explain the different types of DBMS architecture with examples.

(b) Describe the Entity-Relationship (ER) model and the different types of attributes in it. 7+7

3. (a) Explain the various types of constraints in a relational model.

(b) What are Data Definition Language (DDL) commands? Explain the use of CREATE, ALTER, and DROP commands. 7+7

4. (a) Define functional dependency and discuss its importance in database design.

(b) Explain the process of normalization and the differences between INF, 2NF and 3NF with examples. 7+7

5. (a) What are the different types of JOIN operations in SQL? Explain with examples of INNER JOIN and LEFT JOIN.

(b) Discuss the concept of aggregate functions and their use with GROUP BY and HAVING clauses. 7+7

6. (a) Explain the ACID properties of transactions and their importance in transaction management.

(b) How are transaction control commands such as COMMIT, ROLLBACK and SAVE POINT used to manage transactions? 7+7

7. Write short notes on the following (*any four*): 3·5x4=14

(a) Responsibilities of a Database Administrator (DBA)

(b) Cardinality in DBMS

(c) Integrity constraints

(d) DML (Data Manipulation Language)

(e) Anomalies in a relational database

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CSE

Jharkhand University of Technology, Ranchi

Diploma 3rd Semester Examination, 2024 (NEP)

Subject : Computer Hardware Maintenance and Administration **Subject Code : CSE 302**

Time Allowed : 3 Hours **Full Marks : 70**

Pass Marks : 21

Answer in your own words.

Answer any five *questions in which* Question No.1 *is compulsory.*

The figures in the margin indicate full marks.

All questions carry equal mark.

1. Choose the correct alternative of the following: 2×7=14

(i) Which of the following is NOT the hardware of a computer?

(a) Monitor (b) Keyboard

(c) Windows (d) CPU

(ii) The disks store information in

(a) tables (b) rows and columns

(c) blocks (d) tracks and sectors

(iii) SCSI stands for?

(a) Small Compact System Input (b) Small Controller System Interface

(c) Small Computer System Interface (d) None of these

(iv) A Parallel data port on your PC would have _____ pinouts.

(a) 25 (b) 18

(c) 9 (d) 6

(v) Which of the following is a Volatile Memory?

(a) ROM (b) Hard Disk

(c) USB Drive (d) RAM

(vi) Devices that are under the control of a computer and are directly connected to it are said to be

(a) off-line devices (b) on-line devices

(c) IN gate device (d) IF gate device

(vii) A silicon piece with a circuit on it is called

(a) chip (b) circuit

(c) logical gate (d) circuit network

2. (a) Identify the difference between USB and HDMI interfaces and also discuss the features and their types.

(b) What is the Motherboard Form factor? Discuss various types and features of Motherboard form factors. 7+7

3. (a) Explain the overview of the microarchitecture of INTEL and AMD CPU.

(b) Write down a microcomputer's hardware and software requirements for assembly. 7+7

4. (a) State the function of Chipsets and its types and features.

(b) What is the bus? Explain the System Bus Architecture in detail. 7+7

5. (a) Define the file system. How does the NTFS (New Technology File System) differ from FAT?

(b) Discuss the various causes of hard drives. What are the different methods of backing up data and recovering data? 7+7

6. (a) What are EEE and E-waste? State the various scenarios of E-waste management.

(b) What is a malware? Discuss the various types of malware, their symptoms and malware removal strategies. 7+7

7. Write short notes on the following (*any four*): 3.5×4=14

(a) Types of connectors

(b) BJT and MOSFET

(c) File Security

(d) Logical Block Addressing

(e) SSD and Optical Drive