

## 14. Computer Science Education

(a) Communication and Cyber Law (Comp.Sc.Ed.322)

EXAM 2068

Attempt ALL the questions.

Group 'B'

[6×7=42]

1. What is multiplexing? Define the Space Division Multiplexing.
2. What are the differences between packet switching and circuit switching?
3. Explain TDMA, CDMA with examples.
4. What is DNS? What is its uses? How DNS works?  
OR  
Compare Leaky bucket and Token bucket algorithm for traffic shaping.
5. What is the purpose of the physical layer? Discuss various physical media for data transmission?  
OR  
What is data link layer? Discuss the services provided by the data link layer to the network layer?
6. What are the areas of Cyber law? Describe the main features of Electronic Transaction Act 2003.

Group 'C'

[2×12=24]

7. Describe the TCP/IP model with reference OSI reference model.
8. What are the different types of communication media? Explain UTP, Coaxial and Fiber optical cable.  
OR  
What do you mean by Multiplexing? Explain the Time-division multiplexing (TDM) Frequency division multiplexing. (FDM)

Group 'A'

[14]

Attempt ALL the questions. Tick the best answers.

1. Which network topology has a central device which brings all the signal's together?  
a) Bus                      b) Star                      c) Ring                      d) Hybrid
2. A signal that repeats a pattern over a regular interval of time is called  
a) periodic signal      b) analog signal  
c) composite signal      d) digital signal
3. .... is a type of transmission impairment in which the signal loses strength due to the different propagation speeds of each frequency that makes up the signal.  
a) Attenuation                      b) Distortion  
c) Noise                              d) Decibel
4. In ..... the amplitude of the carrier signal is varied to create signal elements. Both frequency and phase remain constant.  
a) ASK                              b) PSK                              c) FSK                              d) QAM
5. Which of the following is not the guided medium?  
a) twisted-pair cable                      b) coaxial cable  
c) fiber-optic cable      d) atmosphere
6. Which error detection method consists of just one redundant bit per data unit?  
a) simple parity check                      b) two-dimensional parity check  
c) CRC                                      d) Checksum
7. What ranges of address can be used in the first octet of a Class B network address?  
a) 1-126                              b) 1-127                              c) 128-190                              d) 128-191
8. This wireless standard is widely used to connect computers to each other and to the internet.  
a) 802.11                                      b) RJ45  
c) Blue band                                      d) Broadband
9. Which layer of the OSI model contains the LLC sublayer and the MAC sublayer?  
a) Physical Layer      b) Transport Layer  
c) Data Link Layer      d) Session Layer
10. UDP and TCP are both ..... layer protocols.  
a) data link                                      b) network  
c) transport                                      b) physical
11. Which of the following IP address is invalid?  
a) 104.199.23.3                              b) 177.138.23.56  
c) 24.256.4.5.255      d) 127.0.0.1

12. It is technique of pulling out the confidential information from the bank/financial institutional account holders by deceptive means
  - a) Denial of service attack
  - b) Spoofing
  - c) Phishing
  - d) Attacked
13. Digital Signature ensures
  - a) Authenticity, data, confidentiality and non-repudiation
  - b) Authenticity, data integrity and non-repudiation.
  - c) Authenticity, and data integrity
  - d) repudiation and authenticity
14. What is the name of Nepalese Cyber Law?
  - a) Electronic Transactions Act, 2063
  - b) Electronic Transactions Act, 2061
  - c) Electronic Transactions Management Act, 2063
  - d) Cyber Law of Nepal 2063

**Exam 2069**

Attempt all the questions.

**Group "B"**

**8×7=56**

1. Define Pulse Code Modulation.
2. What are the differences between packet switching and message switching?
3. Write short notes on Simplex, Duplex, Half Duplex.
4. Explain the traffic shaping algorithms used to control congestion in the network.  
OR  
What is Topology? Explain Ring and Star topology.
5. What is a token? Discuss the protocol of token ring LAN in general.  
OR  
What is framing? Explain.
6. What are the social impacts of information technology? Is there any legal implication?  
OR  
What is Cyber space? What are the different types of cybercrime?
7. What is Protocols? Explain the protocols with class description.  
OR  
What is switching? Explain the Space-division switching and time division switching.
8. What do you mean by Multiplexing? Explain Time-Division Multiple Access (TDMA) and Code-Division Multiple Access (CDMA).

**Group "A"**

**14**

Attempt all the questions.

1. A — is a set of rules that governs data communication
  - a. demodulator
  - b. modulator
  - c. digital-to-analog converter
  - d. modem
2. Converts an analog signal into a digital signal
  - a. demodulator
  - b. modulator
  - c. digital-to-analog converter
  - d. modem
3. — is a type of transmission impairment in which an outside source such as crosstalk corrupts a signal
  - a. Attenuation
  - b. Distortion
  - c. Noise
  - d. Decibel
4. — cables are composed of a glass or plastic inner core surrounded by cladding, all encased in an outside jacket
  - a. Coaxial
  - b. Fiber-optic
  - c. Twisted-pair
  - d. STP
5. ASK, PSK are FSK are examples of — modulation
  - a. digital-to-digital
  - b. digital-to-analog
  - c. analog-to-analog
  - d. analog-to-digital
6. What range of addresses can be used in the first octet of a Class C address?
  - a. 1-127
  - b. 129-192
  - c. 203-234
  - d. 192-223
7. Which is NOT a function of the Application layer?
  - a. FTP
  - b. Email
  - c. IP
  - d. Telnet
8. TCP is a — protocol
  - a. connection-oriented
  - b. connectionless

- c. both a and b  
d. semi-connected
9. In networking, what does ATM stand for?  
a. Automatic Teller Machine  
b. Asynchronous Transfer Mode  
c. Automatic Training Module  
d. All of the above
10. Consider the IP address "202.43.10.172" and pick the correct statement from below.  
a. 202.43 is a network address  
b. 172 is the fixed address  
c. It is class C network  
d. 202 is Network address
11. What protocol is most likely used to incoming e-mail?  
a. STMP  
b. SMTP  
c. POP  
d. IMAP
12. Which of the following is NOT an example of Top-Level Domain?  
a. COM  
b. EDU  
c. MIL  
d. JP
13. Getting one computer on a network to pretend to have the identity of another computer, usually one with special access privileges, so as to obtain access to the other computers on the network  
a. Denial of Service Attack  
b. Spoofing  
c. Phishing  
d. Attacked
14. Registration of Domain Name as a —  
a. Trade Marks  
b. Copy Right  
c. Patents  
d. All of the above

**Exam 2071**

**Group "B"**

**6×7=42**

Attempt the all questions.

1. What are the differences between packet switching and message switching?  
2. Define a Pulse code Modulation.

OR

Write short note on Simplex, Duplex and Half Duplex.

3. Explain the traffic shaping algorithms used to control congestion in the network.

OR

What is token? Discuss the protocol of token ring LAN in general.

4. What is framing? Explain.

OR

What is meant by segment?

5. What are the categories of Transmission media?  
6. What are the social impacts of information technology? Is there any legal protection implication?

**Group "C"**

**2×12=24**

7. What are the five layers of the TCP/IP model? Briefly describe the functionality of each layer.

OR

What is Routing? Describe the shortest path Routing Algorithm.

8. What do you mean by Multiplexing? Explain Time-Division Multiple Access (TDMA) and Code-Division Multiple Access (CDMA).

**Group "A"**

**20**

Attempt ALL the questions. Tick (✓) the best answers.

1. .... is a type of transmission impairment in which an outside source such as crosstalk corrupts a signal  
a. Attenuation  
b. Distortion  
c. Noise  
d. Decibel
2. .... is the set of techniques that allows the simultaneous transmission of multiple signals across a signal data link  
a. Demodulating  
b. Multiplexing  
c. Compressing  
d. De-multiplexing
3. ASK, PSK are FSK are examples of ..... modulation  
a. digital-to-digital  
b. digital-to-analog  
c. analog-to-analog  
d. analog-to-digital
4. In ..... switching, the paths in the circuit are separated from one another spatially  
a. time-division  
b. space-division  
c. two-dimensional  
d. three-dimensional
5. What range of addresses can be used in the first octet of a Class C addresses?

- a. 1 - 127                      b. 129- 192                      c. 203-234d. 192-223
- Which is not a function of the application layer  
a. FTP                      b. Email                      c. IP                      d. Telnet
  - UDP and TCP are both ..... layer protocols  
a. data link                      b. network  
c. transport                      d. physical
  - The ..... routing uses the Dijkstra algorithm to build a routing table  
a. distance vector                      b. link state  
c. path vector                      d. path state
  - In networking, what does ATM stand for  
a. Automatic Teller Machine                      b. Asynchronous Transfer Mode  
c. Automatic Training Module                      d. All of the above
  - To default mask for class C is .....  
a. 255.255.0                      b. 255.255.255.0  
c. 255.0.0.0                      d. 255.255.255.255
  - What protocol is most likely used to incoming e-mail?  
a. STMP                      b. SMTP                      c. POP                      d. IMAP
  - In PPP... is a three-way hand-shaking authentication protocol in which the password is kept secret; it is never sent online.  
a. PAP                      b. LCP                      c. NCP                      d. CHAP
  - In the digital signature technique when the whole message is signed using an asymmetric key, the receiver of the message uses ..... to verify the signature  
a. her or his own symmetric key                      b. her or his own private key  
c. the sender's public key                      d. her or his own any key
  - In a (n) ..... cipher, the same key is used by both the sender and receiver  
a. symmetric key                      b. asymmetric-key  
c. secrete key                      d. public key

Exam 2072

Time: 3 hrs.

Full Marks: 80

Attempt All the questions.

Group "B"

6×7=42

- What are the differences between Space-division switching and Time-division switching?
- What do you mean by Pulse Code Modulation?  
OR  
Define the terms Unexacting, Multicasting and Broadcasting.
- What are the responsibilities of the data link layer in the Internet model?
- What is a Routing? Describe the Shortest path Routing Algorithm.  
OR  
Explain Dijkstra's shortest path algorithm
- Write a short note on HTTP, Domain Name System and FTP.  
OR  
Briefly explain ICMP. How is an ICMP message datagram constructed?
- What is a cybercrime? Describe the different types of cybercrime which are affected in your society.

Group "C"

2×12=24

- Describe the OSI reference model with functional description of each layer.  
OR  
What are the different classes of addresses used in IPv4? Describe with architecture and sub netting structure.
- What do you mean by Switching? Differentiate between Packet switching and Circuit switching.

Group "A"

14

Attempt All the questions. Tick (✓) the best answers.

- ..... is a type of transmission impairment in which the signal loses strength due to the resistance of the transmission medium.  
a. Attenuation                      b. Noise                      c. Distortion                      d. Decibel
- Which multiplexing technique involves signal composed of light beams?  
a. WDM                      b. FDM                      c. TDM                      d. SDMA
- When PCM signals are time-division multiplexed, what is the period of time called for one PCM channel?  
a. frame                      b. clock pulse                      c. multiplexed channel                      d. timeslot

4. Which are subcategories of packet-switched networks?
  - a. Virtual-circuit networks and Datagram networks
  - b. Carrier-circuit networks and Datagram networks
  - c. Virtual-circuit networks and Bitgram networks
  - d. all of the above
5. Which is the following is not a class of LAN?
  - a. Broad band
  - b. Token Bus
  - c. CSMACD
  - d. Token Ring
6. Which type of connector is typically used to connect thin net (FG-58) coaxial cabling to a network interface card?
  - a. BNC
  - b. UI
  - c. RJ-11
  - d. RJ-45
7. Intranets and extranets can use their network firewall and other security features to establish secure Internet links within an enterprise or with its trading partners is called....
  - a. Network server
  - b. Virtual private network
  - c. Network operating system
  - d. OSI
8. Which one of the following is the loopback address?
  - a. 0.0.0.1
  - b. 127.0.0.1
  - c. 255.255.255.255
  - d. 127.0.0.0
9. Which of the transport layer protocols is connectionless?
  - a. UDP
  - b. TCP
  - c. FTP
  - d. Nvt
10. Which of the following protocol keeps track of packets and divides if into efficient routing through the Internet?
  - a. Address Resolution Protocol (ARP)
  - b. Internet Protocol (IP)
  - c. Hypertext Transfer Protocol (HTTP)
  - d. Transmission Control Protocol/Internet Protocol (TCP/IP)
11. IPv6 \_\_\_\_\_ - bit addresses.
  - a. 32
  - b. 64
  - c. 128
  - d. variable
12. HDLC is an acronym for \_\_\_\_\_.
  - a. Half-duplex digital link combination
  - b. High-duplex line communication
  - c. Host double-level circuit
  - d. High-level data link control
13. Identifying words or symbols associated with a company's goods or services which distinguish them from those manufactured or sold by others is.....
  - a. Copyright
  - b. Trademark
  - c. Patents
  - d. Industry Brand
14. In \_\_\_\_\_ cryptography, the same key is used by the sender (for encryption) and the receiver (for decryption)
  - a. symmetric-key
  - b. public-key
  - c. asymmetric-key
  - d. open key

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**(b)Teaching ICT & Object Oriented Programming & Database (Comp.Sc.Ed.391)**

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**EXAM 2068**

Attempt ALL the questions.

**Group 'B'**

**[6×7=42]**

1. List the factors determining selecting of teaching methods in Computer science Education and describe any two of them briefly.
2. Explain the differences between OOP languages with procedural oriented programming languages.

OR

3. Define a class object and methods with a simple example.
3. What is object oriented programming? Describe about the Object Class Abstraction, with example.

OR

4. Explain about Constructor and Destructor with suitable C ++ coding.
4. What is database Management System? Justify its importance.
5. Define DIML, DDL and DCL.
6. Explain about Relation algebra.

OR

Explain about Mapping of Binary 1 : 1 relationship types and Binary M:N relationship types.

**Group 'C'**

[2×12=24]

7. What is various type of inheritance? What ambiguity is faced during multiple inheritance and how is it resolved?

OR

8. What is Operator Overloading? Write a program to describe the function overloading.  
What is RDBMS? Explain the E-R model with suitable E-R-diagram.

**Group 'A'**

Attempt ALL the questions. Tick the best answers.

- The role of the teacher in the parennialist classroom is as a .....  
a) tutor b) counselor  
c) supervisor d) guardian
- Which of the following is the disadvantages of observation method?  
a) it gives practical knowledge  
b) students get first hand information  
c) students can make own idea  
d) it is difficult to manage lower class students
- Kinesthetic learners learn best .....  
a) by doing  
b) by hearing  
c) by using texts and watching videos  
d) in calm, quite surroundings
- A constructor that accepts no parameter is called  
a) destructor b) parameterized constructor  
c) default constructor d) all of them
- The number 5.987 se 17 must be stored in a (n)  
a) int b) long c) double d) float
- The syntax of the template deceleration is .....  
a) Template <class> b) Template class t  
c) template class <i> d) Template <class i>
- How would you read the expression x, y as  
a) member y of object pointed by x  
b) member y of object x  
c) member x of object y  
d) all of the above
- The symbol (::) is called  
a) scope resolution operator b) inheritance operation  
c) colon operator d) derive class call
- A top-to-bottom relationship among the items in a database is established by a  
a) hierarchical schema b) network schema  
c) relational schema d) all of the above
- Which of the following constraints enforces entity integrity?  
a) PRIMARY KEY b) FOREIGN KEY  
c) CHECK d) ALTER KEY
- Database administrator (DBA) is responsible for  
a) create users b) grant or remove user rights  
c) monitor the database d) all of the above
- How do you select all the records from a table named "Persons" where the value of the column "First Name" is "Ram"?  
a) SELECT \*FROM Person WHERE First Name = 'Ram'  
b) SELECT\*FROM Person WHERE First Name LIKE 'Ram'  
c) SELECT[all] FROM Person WHERE First Name LIKE 'Ram'  
d) SELECT [all] FROM Persons WHERE First Name='Ram'
- CREATE, ALTER are ....., category of statements  
a) DDL b) DML c) UML d) both a and b above
- Which of the following ER symbol represents entity?  
a) double ellipse b) dashed ellipse  
c) rectangle d) diamond

Exam 2069

**Group "B"**

6×7=42

Attempt the all questions.

1. Prepare a model of daily lesson plan for micro-teaching in order to teach the lesson "Function of operating system."

2. Write a note on visibility of member function based on private and protected derivation.

OR

Explain about Constructor and Destructor with suitable C++ coding.

3. What are friend functions? Explain with examples.

Or

What is template class? Explain with examples.

4. What is DML & DDL? Explain.

5. What are the importances of data security? Describe the data security methods.

OR

What is disaster recovery? Explain.

6. What are the roles of DBA in Data Base Management System?

Group "C"

2×12=24

7. Write code to demonstrate the multilevel inheritance with objects.

8. What is relational data model? Draw ER including relations for Student table & Free table and Mark Table

OR

What is functional dependency in DBMS? Explain the different types of normalization form.

Group "A"

20

Attempt ALL the questions. Tick (✓) the best answers.

1. Steps you can take now to help preparing to teach include all EXCEPT:

- planning your coursework carefully
- enrolling in a traditional teacher preparation program
- developing a portfolio
- beginning to collect recommendations

2. Which of the following is the skilled oriented method?

- Lecture
- Discussion
- Question answer
- Demonstration

3. Which of the following are the disadvantages of observation method?

- It gives practical knowledge
- Students get first hand information
- students can make own idea
- It is difficult to manage the lower class students

4. Which is not a C++ access keyword?

- Public
- Private
- Privileged
- Protected

5. What is constructor?

- A class automatically called whenever a new object of this class is created
- A class automatically called whenever a new object of this class is destroyed
- A function automatically called whenever a new object of this class is created
- A function automatically called whenever a new object of this class is destroyed

6. Which of the following members do get inherited but become private members in child class

- Public
- Private
- Protected
- all of the above

7. If a member needs to have unique value for all the object of that same class, declare the member as...

- Global variable outside class
- Local variable inside constructor
- Static variable inside class
- Dynamic variable inside class

8. What defines a general set of operations that will be applied to various types of data?

- Template class
- Function template
- Class template
- Both and c above

9. A candidate key that does not have a null value and is selected to uniquely identify all other attribute values in any given row is called a

- super key
- candidate key
- primary key
- secondary key

10. Which language is used to create, modify or remove database objects?

- DDL
- DML
- DCL
- all of the above

11. E.F. Code describes about

- normalization
- de-normalization
- E.R. diagram
- procedural language

12. Which command is used to add data to the tables?  
 a. UPDATE      b. CREATE      c. ADD Data      d. INSERT INTO
13. How can you insert a new record into the "Person" table?  
 a. INSERT into persons VALUE ('Hari')  
 b. INSERT ('Hari') INTO persons  
 c. INSERT VALUES ('Hari') INTO persons VALUE  
 d. INSERT into PERSONS VALUES ('Hari')
14. How do you select all records from a table named "Persons" where the "First Name" is "Ram" and the "Last Name" is "Thapa"?  
 a. SELECT First Name='Ram', Last Name = 'Thapa' From persons  
 b. SELECT \*FROM Persons WHERE First Name LIKE 'Ram' AND Last Name LIKE 'Thapa'  
 c. SELECT \*FROM Persons WHERE First Name = 'Ram' AND Last Name= 'Thapa'  
 d. SELECT \* Persons WHERE First Name = 'Ram' AND Last Name = 'Thapa'

Exam 2071

**Group "B"**

6×7=42

Attempt the all questions.

1. What is an Object Oriented Programming? Explain any three advantages of OOP over Procedure Oriented Programming.
2. What is a virtual function? Describe with example.  
 OR  
 Explain about Constructor and Destructor with suitable example.
3. What do you mean by a functional dependency? Describe with example.
4. Define the term of ACID properties of database.  
 OR  
 Describe the serialize ability with suitable example.
5. Discuss in detail the operator SELECT, PROJEKT, UNIO with suitable example.  
 OR  
 What are the different types of constraints in Relational Database?
6. What are the teaching procedures for computer science teaching? Describe the feedback and monitoring methods in the classroom.

**Group "C"**

2×12=24

7. What are various type of inheritance? What ambiguity is faced during multiple inheritance and how is it resolved?
8. Describe the components of entity-relationship diagram with suitable diagram.  
 OR  
 How concurrence is performed? Explain the protocol that is used to maintain the concurrency concept.

**Group "A"**

20

Attempt ALL the questions. Tick (✓) the best answers.

1. .... is called the extraction operator  
 a. <-      b. ->      c. <<      d. >>
2. A constructor that accepts no parameter is called  
 a. destructor      b. parameterized constructor  
 c. default constructor      d. all of them
3. If a class x needs to be derived from a class y, which of the following ways is correct to do so?  
 a. class x : public y  
 b. class x derives public y  
 c. class y : public x  
 d. class y derives public x
4. What is a virtual member?  
 a. A member of a friend class that can be redefined in its derived classes.  
 b. A member of a virtual class that cannot be redefined in its derived classes.  
 c. A member of a static class that can be redefined in its derived classes. d. A member of a class that can be redefined in its derived classes.
5. The symbol (::) is called  
 a. scope resolution operator      b. inheritance operation  
 c. colon operator      d. derive class call
6. Which language is used to define integrity constraints?  
 a. DCL      b. DDL





2. Which operator is used to define a member of a class from outside the class definition itself?  
a. ::                      b. >>                      d. :                      d. <<
3. If a class x needs to be derived from a class y, which of the following ways is correct to do so?  
a. class x: public y    b. class x derives public y  
c. class y: public x    d. class y derives public x
4. Class derived: public base 1, public base 2 { } is an example of  
a. polymorphic inheritance                      b., Hierarchical inheritance  
c. Multilevel inheritance                      d. Multiple inheritance
5. What is meant by a polymorphism?  
a. Class having many forms  
b. Class having two forms  
c. Class having only single form  
d. None of the mentioned
6. Which of the following languages is used to define the schema of the database?  
a. DCL                      b. DDL                      c. DML                      d. all of the above
7. \_\_\_\_\_ operation can be visualized as a horizontal partition of the relation into two set of tuples.  
a. JOIN                      b. PARTITION                      c. SELECT                      d. PROJECT
8. With SQL, how do you select all the records from a table named "Persons" where the value of the column "First Name" starts with an "a"?  
a. SELECT \* FROM Persons WHERE, First Name LIKE 'a%'  
b. SELECT \* FROM Persons WHERE, First Name LIKE '%a'  
c. SELECT \* FROM Persons WHERE, First Name LIKE '%a%'  
d. SELECT \* FROM Persons WHERE, First Name LIKE a
9. Which keyword could you use in an ORDER By clause to display numeric values from highest to lowest?  
a. AS                      b. ASC                      c. DESC                      d. INTO
10. BCNF can be violated only if the table contains more than one \_\_\_\_\_ key.  
a. Primary                      b. foreign                      c. candidate                      d. secondary
11. A shared lock allows which of the following types of transactions to occur?  
a. Delete                      b. Insert                      c. Read                      d. Update
12. Which of the following is the teacher centered method of teaching?  
a. Brain Storming                      b. Lecture  
c. Field Trip                      d. Buzz Session
13. As "gatekeepers," what do teachers do?  
a. control students who enters and leaves the classroom  
b. determine who will talk, when, and for how long  
c. control who is assigned to which track or ability group  
d. keep accurate records of student progress
14. Which document provides the teaching guide line for computer teacher?  
a. lesson plan                      b. help file                      c. graphics tools                      d. practical sheet