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**M.Sc. – I (Semester – I) Examination, 2014
COMPUTER SCIENCE (Paper – I)
Object Oriented Programming Using C++**

Day and Date : Monday, 21-4-2014
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

Instructions: 1) Question No. 1 and 2 are **compulsory**.
2) Attempt **any three** questions from Q. No. 3 to Q. No. 7.
3) Figures to the **right** indicate **full** marks.

1. A) Choose correct alternatives : 10
- i) Which of the following is not a type of constructor ?
 - a) Copy constructor
 - b) Friend constructor
 - c) Default constructor
 - d) Parameterized constructor
 - ii) A _____ is a collection of objects of similar type.
 - a) Class
 - b) Object
 - c) Inheritance
 - d) None of the above
 - iii) The process of making an operator to exhibit different behaviours in different instances is known as _____
 - a) Function overloading
 - b) Inheritance
 - c) Operator overloading
 - d) None of the above
 - iv) The smallest individual unit in a program are known as _____
 - a) Tokens
 - b) Object
 - c) Class
 - d) None of the above
 - v) Which of the following is not the member of class ?
 - a) Static function
 - b) Friend function object
 - c) Const function
 - d) None of the above
 - vi) Exceptions are _____
 - a) Logical error
 - b) Compiler error
 - c) Runtime error
 - d) Syntactic error



vii) Graphical representation of a problem is known as _____

- a) Algorithm
- b) Flowchart
- c) Program
- d) None of the above

viii) _____ are operators that are used to format the data display.

- a) Manipulators
- b) Object
- c) Inheritance
- d) None of the above

ix) Which of the following concepts means wrapping up of data and functions together ?

- a) Abstraction
- b) Encapsulation
- c) Inheritance
- d) Polymorphism

x) Conditional operators are also known as _____

- a) Ternary operator
- b) Relational
- c) Assignment operator
- d) Arithmetic operator

B) State whether the following statements are **true** or **false** : **4**

- i) In C++, declarations can appear almost anywhere in the body of a function.
- ii) A C++ function can return multiple values to the calling function.
- iii) A non member function may have access to the private data of a class if it is declared as a friend of that class.
- iv) Constructors cannot be virtual.

2. A) Write short notes on the following : **8**

- i) Function prototyping
- ii) Call by reference and return by reference.

B) Answer the following : **6**

- i) Define algorithm. Explain characteristics of algorithm.
- ii) Explain inline function with suitable example.



3. Answer the following : **14**
- A) What is constructor ? Explain Parameterized constructor with example.
 - B) Write a C++ program to study the use of Friend function.
4. Answer the following : **14**
- A) What is template ? Explain function template with suitable example.
 - B) Write a C++ program to study the use multiple inheritance (assume own data).
5. Answer the following : **14**
- A) What is function overloading ? Explain with suitable example.
 - B) Explain virtual function with suitable example.
6. Answer the following : **14**
- A) Explain following function with suitable example.
 - a) put() and get() functions.
 - B) Write a C++ program to print the square of even numbers from 0 to 100.
7. Answer the following : **14**
- A) What is file ? Explain the various functions involved in opening and closing a file.
 - B) Explain the difference between structure and class in detail.
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M.Sc. (Part – II) (Semester – III) Examination, 2014
COMPUTER SCIENCE
Artificial Intelligence (Paper – X)

Day and Date : Wednesday, 23-4-2014
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

Instructions: 1) Question No. 1 and 2 are **compulsory**.
2) Attempt **any three** questions from Q. No. 3 to Q. No. 7.
3) Figures to **right** indicate **full** marks.

1. A) Choose the correct alternative : 10
- 1) Various Mathematical and game playing tasks falls under _____ domain of Artificial Intelligence.
A) Critical tasks
B) Mundane tasks
C) Group tasks
D) Formal tasks
 - 2) Define a _____ that contains all the possible configurations of the relevant objects.
A) State space
B) Abstraction
C) Control strategy
D) None of these
 - 3) In _____ step, the linear sequences of words are transformed into structures that show how the words relate each other.
A) Morphological analysis
B) Syntactic analysis
C) Semantic analysis
D) Discourse integration
 - 4) _____ is a variant of generate and test in which feedback from the test procedure is used to help the generator to decide which direction to move in the the search space.
A) Means Ends Analysis
B) Best first search
C) Hill climbing
D) Problem reduction
 - 5) Attribute _____ used to show class membership and provide the basis for property inheritance as an inference technique.
A) *instance*
B) *isa*
C) *hasa*
D) *wasa*



- 6) The statement : *All Japanese died when the volcano erupted in 1933*. Can be represented using predicate logic as _____
- A) *Erupted (volcano, 1933) $\forall x : [Japanese(x) \rightarrow died(x, 1933)]$*
 B) *Erupted (volcano, 1999) $\forall x : Japanese(y) \rightarrow died(x, 1933)$*
 C) *Erupted (volcano, 1933) $\rightarrow alive(x, 1933)$*
 D) *Calamity (drought, 1933) $\forall x : [Japanese(x) \rightarrow died(x, 1933)]$*
- 7) _____ from the goal states; begin building a tree of move sequences that might be solutions by starting with the goal configuration at the root of the tree.
- A) Reason forward B) Reason backward
 C) Both A) and B) D) None of these
- 8) _____ measures the extent to which the evidence supports the negation of the hypothesis. It is zero if the evidence supports hypothesis.
- A) Measure of disbelief B) Measure of belief
 C) Measure of hypothesis D) Measure of evidence
- 9) In _____ information is represented as a set of nodes connected to each other by a labeled arc represents relationship among the nodes.
- A) Frames B) Conceptual dependency
 C) Semantic net D) Script
- 10) _____ is an expert system program that provides advice on mineral exploration.
- A) DESIGN ADVISOR B) MYCIN
 C) TEIRESIAS D) PROSPECTOR

B) State **true/false** :

4

- 1) A plateau is an area of the search space that is higher than surrounding areas and itself has a slope.
- 2) A procedural representation is one in which the control information that is necessary to use the knowledge is considered to be embedded in the knowledge itself.
- 3) The primitive act such as movement of body part by its owner (e.g. kick) can be denoted by MTRANS.
- 4) Pragmatic analysis stands for the structure representing what was said is reinterpreted to determine what was actually meant.



2. A) Write short notes on following : **8**
1) AI technique
2) Predicate Logic.
- B) Answer the following : **6**
i) Explain in brief Dempster Shafer theory.
ii) Describe frame as weak slot and filler structure.
3. Answer the following :
A) Define Heuristic search technique. Discuss constraint satisfaction with suitable example. **7**
B) Define Semantic Net. Discuss semantic net as weak slot and filler structures. **7**
4. Answer the following :
A) State and explain in detail various issues in knowledge representation. **7**
B) Discuss procedural versus declarative knowledge with suitable example. **7**
5. Answer the following :
A) Define Artificial Intelligence. Discuss various task domains in artificial intelligence. **7**
B) State and explain water jug problem with suitable example. **7**
6. Answer the following :
A) State and explain in detail probability and Bayes theorem. Summarize fuzzy logic. **7**
B) Define Game playing. Explain in minimax search procedure with suitable example. **7**
7. Answer the following :
A) Define Expert System. Explain in detail the process of knowledge acquisition. **7**
B) Discuss conceptual dependency as a strong slot and filler structures. **7**
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**M.Sc. (Part – II) (Sem. – III) Examination, 2014
COMPUTER SCIENCE
Paper – XI : Mobile Computing**

Day and Date : Friday, 25-4-2014
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions :** 1) Question No. 1 and 2 compulsory.
2) Attempt **any 3** questions from Q. No. 3 to Q. No. 7.
3) Figures to the **right** indicate **full** marks.

1. A) Choose correct alternatives : 10
- i) The process of transferring an active call from one cell to another as the mobile unit moves from the first cell to the other cell without disconnecting the call
 - a) Frequency reuse
 - b) Handoff
 - c) Cell splitting
 - d) Cell geometry
 - ii) The Um radio interface is used to connect
 - a) MS and BSS
 - b) BTS and MS
 - c) MSC and BTS
 - d) MN and CN
 - iii) IMSI number consists of
 - a) Mobile Country Code
 - b) Mobile Network Code
 - c) MSIN
 - d) All of the above
 - iv) Larger cells are more useful in _____
 - a) Densely populated urban areas
 - b) Rural areas
 - c) Lightly populated urban areas
 - d) Mountainous areas
 - v) The GSM 900 consists of _____ channels.
 - a) 124
 - b) 128
 - c) 374
 - d) 378



- vi) The _____ provides authentication and encryption parameters that verify the users identity and ensure the confidentiality of each call.
 - a) HLR
 - b) VLR
 - c) EIR
 - d) AUC
- vii) What is the basic service unit of cellular telephony ?
 - a) Location area
 - b) Cell
 - c) PLMN service area
 - d) MSC/VLR service area
- viii) Which of the following are not telephony services supported by GSM ?
 - a) Dual-tone multifrequency
 - b) Voice mail
 - c) Fax mail
 - d) Call waiting
- ix) Which of the following signal is used for carrier sense.
 - a) RTS
 - b) CCA
 - c) CSS
 - d) Probe
- x) Current wireless MACs are based on
 - a) CSMA/CD
 - b) CSMA/CA
 - c) Hybrid technique depending on traffic
 - d) Hybrid technique with fixed time partitions

B) Fill in the blanks or **true/false** : **4**

- i) The sharing of a medium and its link by two or more devices is called _____
- ii) Moving between access points is called _____
- iii) Near/far effect is severe problem of wireless networks using CDM. TRUE/ FALSE
- iv) PRMA can not solve hidden and exposed terminal problem. TRUE/FALSE

2. A) Write short notes on the following : **4+4**

- i) Hidden and exposed terminal problem.
- ii) Bluetooth.

B) Answer the following : **3+3**

- i) Discuss about snooping TCP
- ii) Explain mobile IP.



3. Answer the following : **7+7**
- A) Explain the direct sequence spread spectrum with example and appropriate diagram.
 - B) Describe the system architecture of IEEE 802.11 with suitable diagram.
4. Answer the following : **7+7**
- A) Explain PRMA and reservation TDMA in detail with example.
 - B) What are the main reasons for using cellular system ? And also describe the dynamic channel allocation in cellular system.
5. Answer the following : **7+7**
- A) Explain packet flow in mobile IP, if mobile node is shifted to foreign network.
 - B) What are the various issues to be considered in designing the wireless LAN environment ?
6. Answer the following : **7+7**
- A) Differentiate among FDMA, TDMA and CDMA.
 - B) Discuss in detail the Mobile Terminated Call scheme.
7. Answer the following : **7+7**
- A) Explain indirect TCP with advantages.
 - B) Explain different entities and terminologies for mobile IP.
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**M.Sc. (Part – II) (Semester – III) Examination, 2014
COMPUTER SCIENCE – XII
Modeling and Simulation**

Day and Date : Monday, 28-4-2014
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

Instructions: 1) Question no. 1 and 2 are **compulsory**.
2) Attempt **any three** questions from Q. 3 to Q. 7.
3) Figures to **right** indicate **full** marks.

1. A) Select the correct alternative. 10
- i) Simulation is
 - a) Descriptive in nature
 - b) Useful to analyze problem where analytical solution is difficult
 - c) Statistical experiments as such as its results are subject to statistical errors
 - d) All of the above
 - ii) Repetition of n independent Bernoulli trials reduced to
 - a) Poisson distribution
 - b) Binomial distribution
 - c) Geometric distribution
 - d) Hypergeometric distribution
 - iii) The slack for an activity in network is equal to
 - a) LS-ES
 - b) LF-LS
 - c) EF-ES
 - d) EF-LS
 - iv) The activity which can be delayed without affecting the execution of immediate succeeding activity is determined by
 - a) Total float
 - b) Free float
 - c) Independent float
 - d) None of these



- v) In M/M/1 : ∞ /FCFS queue model if λ is mean customer arrival rate and μ is the mean service rate then the probability of server being busy is equal to
- a) $\frac{\lambda}{\mu}$ b) $\frac{\lambda}{\mu - \lambda}$
- c) $\frac{\mu}{\mu - \lambda}$ d) $\frac{\mu}{\lambda}$
- vi) In queue model completely specified in the symbolic form (a/b/c):(d/e), the last symbol 'e' specifies
- a) The queue discipline b) The number of servers
- c) The distribution of arrival d) The distribution of departure
- vii) Time gap between placing of an order and its actual arrival in the inventory is known as
- a) Lead time b) Demand
- c) Both a) and b) d) None of the above
- viii) Simulation of system in which the state changes smoothly with time are called
- a) Discrete system b) Continuous system
- c) Both a) and b) d) None of these
- ix) PERT is used for the project involving activity of non-repetitive nature in which time estimation are
- a) Certain b) Uncertain
- c) Deterministic d) Both b) and c)
- x) Markov chain said to be aperiodic chain if _____ of whose states are ergodic.
- a) One b) Some
- c) All d) None



- B) Fill in the blanks. 4
- i) The long form of PERT is _____
 - ii) In inventory model, the number of unit required per period is called _____
 - iii) Chapman-Kolmogorov equation is $P_{ij}(t + T) =$ _____
 - iv) Let λ is arrival rate and μ is service rate, if $\lambda > \mu$ the queue is formed and _____ with time.

2. A) i) A manufacturing company purchases 9000 parts of a machine for its annual requirements, ordering one month usage at a time. Each part costs Rs. 20, the ordering cost per order is Rs. 15 and the carrying charges are 15% of the average inventory per year. You have been assigned to suggest a more economical purchasing policy for company. What advice would you offer and how much would it save the company per year ? 3

ii) Write a note on queue configuration. 3

B) i) What are the advantages and disadvantages of simulation ? 4

ii) Explain the concept of anticipation inventory with example. 4

3. A) Describe the deterministic inventory model of EOQ with uniform demand and no shortages. 7

B) For various activity in the particular project the expected time (in days) of completions are as follow 7

Activity	0-1	1-3	1-2	2-3	1-4	3-4	4-5
Duration	3	16	6	8	10	5	3

Draw a network diagram and identify the critical path.

4. A) Generate the five successive random number X_i , $i = 1, 2, 3, 4, 5$ by using $X_{i+1} = X_i * a$ (modulo m), starting with seed $X_0 = 3$ and parameters $a = 7$ and $m = 15$ (where m means that the number $\{X_i * a\}$ is divided by m repeatedly till the remainder is less than m). 7

B) Define project duration, earliest event time, earliest start time, latest start time, earliest finish time in critical path computation. 7



- 5. A) Define simulation. Write the advantages and limitations of simulation. 7
 - B) The demand rate for a particular item is 12000 units/year. The ordering cost of Rs. 1,000 per order and the holding cost is Rs. 0.80 per month. If no shortage are allowed and the replacement is instantaneous the determine
 - i) Economic order quantity
 - ii) Number of order per year 7
 - 6. A) Explain the concept of inventory control. Write any four reasons for carrying inventories. 7
 - B) Explain pure birth process. 7
 - 7. A) Differentiate between PERT and CPM. 7
 - B) Explain the generation of random sample from continuous uniform distribution. 7
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M.Sc. – II (Semester – IV) Examination, 2014
COMPUTER SCIENCE
Distributed Operating System (Paper – XIII)

Day and Date : Tuesday, 22-4-2014
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- N.B. :** 1) Question No. 1 and 2 are **compulsory**.
2) Attempt **any 3** questions from Q. No. 3 to Q. No. 7.
3) Figures to the **right** indicates **marks**.

1. A) Choose correct alternatives : 10

- 1) a and b are two events on same system as $a \rightarrow b$ then clock condition between a and b is _____
a) $c_i(a) \leq c_i(b)$ b) $c_i(a) > c_j(b)$ c) $c_i(a) < c_i(b)$ d) $c_i(a) \geq c_j(b)$
- 2) _____ technology is based on cell-switching techniques.
a) ATM b) DCE c) DSM d) DFS
- 3) _____ model is simple extension of centralized time sharing system.
a) Mini computer b) Processor – pool
c) Work station d) Work station – server
- 4) _____ helps in improving the combined performance of client and server in distributed system.
a) Asynchronous RPC b) Synchronous RPC
c) Both a) and b) d) None
- 5) _____ components of DCE.
a) RPC facility b) Security service
c) DFS d) All
- 6) Communication is achieved in distributed system by _____
a) Disk sharing b) File sharing
c) Shared Memory location d) Message passing



- 7) In which state transaction executes the final statement.
- a) Committed
 - b) Abort
 - c) Active
 - d) Partially committed
- 8) Replication transparency of distributed system allows _____
- a) Enables the concealment of faults
 - b) The movement of resources
 - c) Enables multiple instances of resources
 - d) System and applications to expand
- 9) In election algorithms _____ algorithm is more efficient and easier to implement.
- a) The bully
 - b) A ring
 - c) A clock
 - d) None
- 10) A algorithm used in distributed operating system for implementing mutual exclusion must satisfy _____ requirement.
- a) Mutual exclusion
 - b) No starvation
 - c) Reliability
 - d) Both a) and b)

B) Fill in the blanks :

4

- 1) In Broadcast RPC increasing amount of time between transmission is known as _____
- 2) _____ ensures that every message sent to a group of receivers will be delivered to either all of them or none of them.
- 3) A segment of code in which a thread may be accessing some shared variable is called as _____
- 4) _____ is type of distributed system where each processor has its own local memory.

2. A) Write short notes on the following :

8

- i) Two-phase locking protocol
- ii) Time sharing operating system.

B) Answer the following :

6

- i) What is stub ? Explain methods for stub generation.
- ii) What is distributed system ? Give any example which follows the features of distributed system.



3. Answer the following : **14**
- A) Explain the architecture of RPC in detail.
 - B) What is mutual exclusion ? Explain the distributed algorithm for mutual exclusion
4. Answer the following : **14**
- A) Explain and differentiate client-server and distributed system.
 - B) Write how dead lock detection methods used for dead lock in distributed system.
5. Answer the following : **14**
- A) What is distributed file system ? Specify desirable features of good distributed file system.
 - B) Explain in brief how group communication is done in distributed system.
6. Answer the following : **14**
- A) What is thread ? Draw and explain different thread models used for organizing threads.
 - B) Write and compare the workstation model and work station – server model.
7. Answer the following : **14**
- A) What is DCE ? List and explain different DCE components.
 - B) Explain how scheduling of thread and process is done in distributed system.
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**M.Sc. – II (Semester – IV) (Computer Science) Examination, 2014
DATA MINING AND WAREHOUSE (Paper – XIV)**

Day and Date : Thursday, 24-4-2014
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:** 1) Question No. 1 and 2 are **compulsory**.
2) Attempt **any 3** questions from Q. No. 3 to Q. No. 7.
3) Figures to the **right** indicate **full** marks.

1. A) Choose correct alternatives : **10**
- 1) A _____ allows data to be modeled and viewed in multiple dimensions.
A) Data cube B) Dimension C) Query D) None of these
 - 2) The 0-D cuboid, which holds the highest level of summarization, is called the
A) Base cuboid B) Apex cuboid
C) 3-D cuboid D) None of these
 - 3) A goal of data mining includes which of the following ?
A) To explain some observed event or condition
B) To confirm that data exists
C) To analyze data for expected relationships
D) To create a new data warehouse
 - 4) An operational system is which of the following ?
A) A system that is used to run the business in real time and is based on historical data
B) A system that is used to run the business in real time and is based on current data
C) A system that is used to support decision making and is based on current data
D) A system that is used to support decision making and is based on historical data



- 5) A data warehouse in which of the following ?
- A) Can be updated by end users
 - B) Contains numerous naming conventions and formats
 - C) Organized around important subject areas
 - D) Contains only current data
- 6) The fact constellation is also called _____
- A) Galaxy
 - B) Snowflake
 - C) Star
 - D) None of these
- 7) _____, which converts data from legacy or host format to warehouse format.
- A) Data cleaning
 - B) Data extraction
 - C) Data transformation
 - D) None of these
- 8) Fact tables are which of the following ?
- A) Completely denormalized
 - B) Partially denormalized
 - C) Completely normalized
 - D) Partially normalized
- 9) CBA stands for _____
- A) Classification Based Association
 - B) Class Based Association
 - C) Classification Before Association
 - D) Classification Best Association
- 10) An _____ system manages current data that, typically, are too detailed to be easily used decision making.
- A) OLTP
 - B) OLAP
 - C) OLTA
 - D) None of these

B) True/False :

4

- 1) Successful data warehousing requires that a formal program in total quality management (TQM) be implemented.
- 2) Joining is the process of partitioning data according to predefined criteria.
- 3) The role of the ETL process is to identify erroneous data and to fix them.
- 4) Back-end tools and utilities are used to feed data into the bottom tier from operational Databases or other external sources.



2. A) Write the short notes on the following : **8**
i) Data Mart
ii) Decision Tree.
B) Answer the following questions : **6**
i) Explain data cleaning.
ii) Explain in short DMQL.
3. Answer the following : **14**
A) Differentiate between OLAP and OLTP.
B) Draw and explain the star schema for the data warehouse.
4. Answer the following : **14**
A) Explain three-tier data warehouse architecture with well labeled diagram.
B) What are the different types of data used in cluster analysis ? Explain in brief each one with an example.
5. Answer the following : **14**
A) Describe challenges to data mining regarding data mining methodology and user.
B) Describe the different classifications of Association rule mining.
6. Answer the following : **14**
A) Explain the various OLAP operations.
B) Explain different data mining primitives.
7. Answer the following : **14**
A) Briefly explain about Data Mining Application.
B) Explain social impacts of data mining.
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M.Sc. I (Semester – IV) Examination, 2014
COMPUTER SCIENCE (Paper – XV)
Digital Image Processing

Day and Date : Saturday, 26-4-2014

Max. Marks : 70

Time : 3.00 p.m. to 6.00 p.m.

- Instructions:** 1) Questions No. 1 and 2 are **compulsory**.
2) Attempt **any 3** from Q. No. 3 to Q.No. 7.
3) Figures to the **right** indicate **full** marks.

1. A) Choose the correct alternatives.

10

- i) Circular convolution can be used to perform
 - a) Extrapolation of an image
 - b) Interpolation of an image
 - c) Arithmetic operations on image
 - d) Decomposing of image
- ii) Morphological closing operation is defined as
 - a) Dilation followed by erosion b) Erosion followed by dilation
 - c) Dilation followed by opening d) Opening followed by erosion
- iii) Which among the following is not a spatial filter for noise reduction.
 - a) Mean filter b) Geometric mean filter
 - c) Harmonic mean filter d) Band-reject filter
- iv) The general form of long transformation is
 - a) $S = c \log (1 + r)$ b) $S = L - 1 - r$
 - c) $S = \log (1 + r)^2$ d) $S = \log (1 + r)$



- v) Image bits plane decomposition is used in
- a) Image compression
 - b) Image enhancement
 - c) Image segmentation
 - d) Image reconstruction
- vi) Image histogram will provide an information on
- a) Image size
 - b) Image statistics
 - c) Image color
 - d) Image type
- vii) The effect caused by under-sampling of a function is known as
- a) High pass filter
 - b) Low pass filter
 - c) Aliasing
 - d) Band-reject filter
- viii) Image 2-D interpolation is used for
- a) Shrinking an image
 - b) Zooming an image
 - c) Blurring an image
 - d) Both a and b
- ix) When Butterworth filter tends to Gaussian filter
- a) Low filter order
 - b) High filter order
 - c) Zero filter order
 - d) None of the above
- x) To process a specific band of frequencies, which filter is used
- a) Harmonic filter
 - b) High boost filter
 - c) High pass filter
 - d) Band pass filter

B) Fill in the blanks:

4

- i) Scanner converts _____ into _____ image files.
- ii) The Fourier transform of the autocorrelation function is the _____ spectrum.
- iii) Convolution in _____ domain is equal to multiplication in the _____ domain.
- iv) A histogram is invariant to _____.



2. A) Write short notes on the following : **8**
- i) Applications of 2D convolution in image processing.
 - ii) Applications of image processing.
- B) Answer the following : **6**
- i) What are the advantages of separable filters ?
 - ii) List three pattern recognition applications.
3. Answer the following : **14**
- A) What are the components of an image processing system ? Explain.
 - B) What is digital image ? Explain briefly an image interpolation.
4. Answer the following : **14**
- A) What is image transformation ? Explain log transforms.
 - B) What is image smoothing ? Explain a frequency domain filter.
5. Answer the following : **14**
- A) What is image dilation and erosion ? Discuss hit or miss transform.
 - B) What is image segmentation ? Explain region-based segmentation.
6. Answer the following : **14**
- A) What is image representation ? What are the different types of descriptors ? Explain any one.
 - B) What is object recognition ? Explain minimum distance classifier.
7. Answer the following : **14**
- A) Explain matching shape numbers algorithm for object recognition.
 - B) Mention the properties of opening and closing with an example.
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**M.Sc. II (Semester – IV) Examination, 2014
COMPUTER SCIENCE .NET (Paper – XVI)**

Day and Date : Tuesday, 29-4-2014
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) **Q.1 & Q.2 are compulsory.**
2) Attempt **any three** questions from **Q.3 to Q 7.**
3) Figures to the **right** indicates **full** marks.

1. a) Choose the correct alternative. **10**
- 1) _____ is used to kill session explicitly.
a) Session.close () b) Session.discard ()
c) Session.abandon () d) Session.end ()
- 2) Default value for editIndex property of gridview is _____
a) -1 b) 0 c) 1 d) Cannot say
- 3) _____ attribute is used to set for focus on a particular control.
a) Setfocus b) Setcontrol c) Focus d) None of these
- 4) In .Net framework _____ provides automatic memory management technique.
a) Serialization b) Garbage collection
c) Assemblies d) Overriding
- 5) A process in which web page sends data back to the same page is called as _____
a) Postback b) Session c) View d) Querystring
- 6) _____ method is used to load generated dataset in data adapter.
a) DataBind () b) Bind () c) Load () d) Fill ()



7) What is the value of Y after execution of following code ?

```
int X = 3;
object on = X;
X = 4;
int Y = (int) on;
```

- a) 3 b) 4 c) 7 d) 0

8) By using _____ you can prevent a class from being inherited.

- a) Abstract b) Static c) Sealed d) Partial

9) A value produced by an indexer cannot be passed as _____ type parameter to method.

- a) Value b) Ret c) Params d) None of these

10) Thread is a _____

- a) Instance method b) Object
c) Event d) Static method

b) State whether **true** or **false**.

4

- 1) Web controls cannot support CSS.
- 2) In ASP .Net we can add more than one web .config files.
- 3) Indexes can be overloaded.
- 4) Validation controls are only useful for server side validation.

2. a) Write short note on.

8

- 1) Com
- 2) ASP .Net page structure

b) Answer the following.

6

- 1) Boxing and unboxing
- 2) Master pages

3. Answer the following.

a) What is delegates and multicast delegates ? Explain how to create anonymous method delegate with example.

7

b) Explain ASP .Net page directives in detail.

7



4. Answer the following.
- a) Explain following terms with example. 7
 - i) Data set
 - ii) Data adapter
 - iii) Data table
 - iv) Data row
 - b) What are needs of validation controls ? Explain all validation controls in detail. 7
5. Answer the following.
- a) Explain different access specifiers for class. 7
 - b) Explain asp .Net page compilation in detail. 7
6. Answer the following.
- a) Explain different services provided by CLR. 7
 - b) Explain list class with example. 7
7. Answer the following.
- a) Design windows application which insert, delete, update records.(use staff infomation) 7
 - b) Explain image map and image control with example. 7
-



Seat No.	
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M.Sc. – I (Semester – I) Examination, 2014
COMPUTER SCIENCE (Paper – II)
Numerical Analysis

Day and Date : Wednesday, 23-4-2014
 Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 70

- Instructions :**
- i) Question no. 1 and 2 are **compulsory**.
 - ii) Attempt **any three** questions from Q. No. 3 to Q. No. 7.
 - iii) Figures to the **right** indicate **full** marks.
 - iv) **Use of simple or scientific calculator is allowed.**

1. A) Select most correct alternative : **10**
- i) If the number $X = 0.513$ and is correct to 3 decimal places, then the upper limit on the magnitude of the absolute error $\Delta X =$
 - a) 0.004
 - b) 0.005
 - c) 0.04
 - d) 0.0005
 - ii) The truncation error in calculating $f'(3)$ for $f(x) = 2x$ by $f'(x) \approx \frac{f(x+h) - f(x)}{h}$ with $h = 0.1$ is
 - a) -0.4
 - b) 0
 - c) 0.2
 - d) 0.4
 - iii) The Newton-Raphson method of finding roots of nonlinear equations falls under the category of _____ methods.
 - a) bracketing
 - b) graphical
 - c) open
 - d) random
 - iv) The following system of equations has _____ solution (s).
 $x + y = 2$ $6x = 12 - 6y$
 - a) infinite
 - b) no
 - c) two
 - d) unique



- v) Variety of problems in science and engineering can be formulated into equations of the form $f(x) = 0$, where x and $f(x)$ may be
- a) real
 - b) complex
 - c) vector quantities
 - d) all of these
- vi) In which interpolation method, we cannot use the work that has already been done if we want to incorporate another data point in order to improve the accuracy of estimation ?
- a) Newton interpolation
 - b) Lagrange interpolation
 - c) Finite difference method
 - d) None of these
- vii) Given $U = \begin{bmatrix} 4 & 0 & 0 \\ 1 & -4 & 0 \end{bmatrix}$ then U is _____ matrix.
- a) an upper triangular
 - b) a diagonal
 - c) a lower triangular
 - d) none of these
- viii) $y'' + 3y' = 2y + x^2$ is a _____ differential equation.
- a) second-order, linear
 - b) second-degree, linear
 - c) first-order, linear
 - d) second-order, nonlinear
- ix) In composite Simpson's $\frac{3}{8}$ rule the number of segments n must be
- a) any positive integer
 - b) an odd number
 - c) an even number
 - d) multiple of 3
- x) If $p(x) = a_0 + a_1x$, $p(100) = 3/7$ and $p(101) = -4/7$ then $a_0 =$ _____ (approximately).
- a) 101.4
 - b) -101.4
 - c) 100.4
 - d) 100

B) Fill in the blanks :

4

- i) The value of $\sqrt{3}$ to 4 significant digits is _____
- ii) Mathematical models which use differential calculus to express relationship between variables are known as _____ equations.
- iii) The Simpson's 1/3 rule is _____ point Newton-cotes formula.



- iv) Let $x_1 = 0$ be the first approximation to the root of the equation $f(x) = x^2 - 3x + 2$. The next approximation to the root of the equation by using Newton-Raphson method is $x_2 =$ _____
2. A) i) Define absolute error.
Given $x = 10.00 \pm 0.05$ and $y = 0.055 \pm 0.002$
Find the maximum value of the absolute error in xy . 4
- ii) Define the operators Δ , ∇ and E . Show that $E^{-1}\Delta \equiv \nabla$. 4
- B) i) State Mean-value theorem for derivatives. 3
- ii) State the theorem which states about the convergence of the root obtained by the iteration method. 3
3. A) Explain Secant method. 7
- B) Using Lagrange's interpolation, find the polynomial through (0,0), (1,1) and (2,2). 7
4. A) Explain Newton's forward difference interpolation formula. 7
- B) Find an iterative formula to find \sqrt{N} (where N is a positive number) by using Newton-Raphson method and hence find $\sqrt{5}$. 7
5. A) Explain Simpson's 1/3 rule. 7
- B) Use the modified Euler's method to estimate $y(0.6)$ when $\frac{dy}{dx} = x^2 + y^2$ with $y(0) = 0$. Assume $h = 0.3$. 7
6. A) Explain Gauss elimination method. 7
- B) Evaluate the integral $I = \int_{-3}^3 x^4 dx$ by using Trapezoidal rule and verify your result by actual integration. 7
7. A) Derive a general formula for the error committed in using a functional relation $u = f(x_1, x_2, \dots, x_n)$. 7
- B) Solve the following system of equations using LU decomposition method.
 $x + 2y + z = 3$, $2x + 3y + 3z = 10$, $3x - y + 2z = 13$. 7
-



Seat No.	
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M.Sc. (Comp. Sci.) (Part – I) (Semester – I) Examination, 2014
COMPUTER SCIENCE
Data Structures (Paper – IV)

Day and Date : Monday, 28-4-2014
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks :70

- Instructions :** 1) Question No. 1 and 2 are **compulsory**.
2) Attempt **any three** questions from Q. No. 3 to Q. No. 7.
3) Figures to **right** indicate **full** marks.

1. A) Choose the correct alternatives. **10**
- 1) A _____ is a special kind of list in which all insertions and deletions take place at one end, called the top.
a) Queue b) Linked list c) Tree d) Stack
 - 2) When a data are to be deleted from a data structure, but there is no available data (NULL); this situation is usually called
a) houseful b) overflow c) underflow d) saturated
 - 3) Sparse matrix has
a) Many non zero entries b) Many zero entries
c) Higher dimensions d) None of these
 - 4) A “queue” is also known as what ?
a) A FIFO b) A Stack c) A LIFO d) A Linked List
 - 5) An algorithm that calls itself directly or indirectly is known as
a) Sub algorithm b) Recursion
c) Polish notation d) Traversal algorithm
 - 6) The _____ of two alphabetic characters say ‘a’ and ‘b’, is said to form a sequence of characters, namely, ‘ab’.
a) Null string b) String frame
c) Concatenation d) None of this



- 7) A data structure where elements can be added or removed at either end but not in the middle.
- a) Linked lists b) Stacks c) Queues d) Deque
- 8) Which of the following case does not exist in complexity theory ?
- a) Best case b) Null case
c) Average case d) Worst case
- 9) Finding the location of the element with a given value is.
- a) Insertion b) Search
c) Sort d) None of above
- 10) To represent hierarchical relationship between elements, which data structure is suitable ?
- a) Deque b) Priority c) Tree d) All of above

B) State whether True or False :

4

- 1) Linked list is a one type of graph in which data is represented in its left and right child.
- 2) The quick sort is data structure that follows a principle of Last in First out.
- 3) Double ended queue stands for priority queue.
- 4) The term data structure refers to organization of the data and interrelationship between them.

2. A) Write short notes on following :

8

- 1) Doubly linked list
- 2) Array

B) Answer the following :

6

- i) Briefly describe primitive data types ?
- ii) What do you mean by circular queue as linked list ?



3. Answer the following :

A) Define Algorithm. Explain the complexity of an algorithm in detail. 7

B) State the principle of conversion from infix to postfix polish notation. Convert following expression from infix to postfix using stack.

Infix string : $K * ((L + M) - (N/P)) * R$ 7

4. Answer the following. :

A) What do you mean by Queue ? Discuss various operations on it with suitable example. 7

B) Define tree. Construct binary search tree of following series. Justify your answer. 7

Series : 12, 3, 4, 13, 10, 5, 1, 8, 18, 7, 9, 11, 6 and 14

5. Answer the following.

A) Define Stack. Discuss its principle, various operations and its applications. 7

B) Discuss problem of Tower of Hanoi by considering three peg having three discs to be moved all from one peg to another. 7

6. Answer the following :

A) Define linked list. Discuss the insertion operation on it by inserting data at the beginning, middle and end of list with suitable example. 7

B) What do you mean by sorting ? Perform Bubble sort on following series. 7

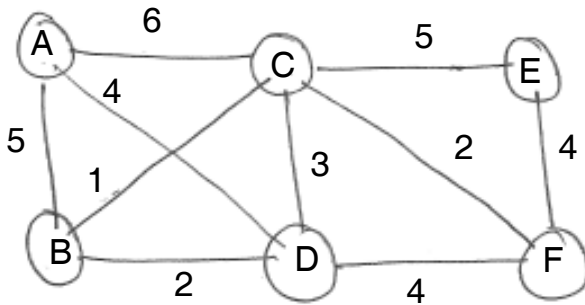
Series : 44, 55, 12, 42, 94, 18, 06, 67, 35, 89 and 15



7. Answer the following :

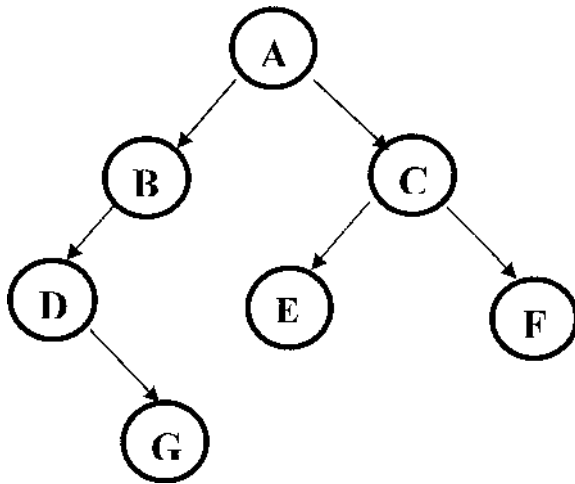
A) Discuss working of Greedy search on following graph. Justify your answer.

7



B) What do you mean traversing ? From the following binary tree, state the result of post-order and pre-order traversal.

7





Seat No.	
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M.Sc. – I (Sem – II) Examination, 2014
COMPUTER SCIENCE
Operations Research (Paper – V)

Day and Date : Tuesday, 22-4-2014
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- N. B. :** 1) Q. No. 1 and Q. No. 2 are **compulsory**.
2) Attempt **any three** questions from Q. No. 3 to Q. No. 7.
3) Figures to the right indicates **full** marks.

1. A) Fill in the blanks (**one mark each**) : 5
- 1) While finding a dual of primal problem, every unrestricted variable is replaced by _____
 - 2) In Gomory's method, any negative fraction if any in k^{th} row of optimum simplex table is expressed as sum of _____ and _____
 - 3) The convex hull of a set $X \subset \mathbb{R}^n$ is _____ convex set containing X.
 - 4) The closed half spaces are always _____
 - 5) A basic feasible solution is a basic solution which also satisfies the _____
- B) Choose the correct alternative (**one mark each**). 5
- 1) If i^{th} constraint in the primal LPP is an equality then the corresponding (i^{th}) dual variable is _____
 - a) Unrestricted in sign b) Restricted to greater than zero
 - c) Restricted to less than zero d) None of these
 - 2) An objective function in general LPP is _____
 - a) Linear function b) Non-linear function
 - c) Quadratic function d) Constant function



3) Consider the two statements

I) Every solution is feasible solution to LPP

II) Every feasible solution is solution to LPP

a) Only I is true

b) Only II is true

c) Both are true

d) Both are false

4) If there is an optimal solution to LPP then optimal solution exists at _____

a) Boundary point

b) Interior point

c) Exterior point

d) Extreme point

5) In QPP, the quadratic objective function is subjected to _____ constraints.

a) Quadratic

b) Linear

c) Non-linear

d) Constants

C) State whether the following statements are **true** or **false** (one mark each) : **4**

1) Every extreme point of a convex set is a boundary point.

2) Pure strategy is a decision rule always to select a particular course of action.

3) If the primal problem has an unbounded solution then dual has finite optimum solution.

4) In dual simplex method, initial solution is feasible and optimum.

2. a) P.T. A hyperplane in R^n is a convex set. **4**

b) Explain the need of artificial variable. **3**

c) State the general rules for converting any primal into its dual. **4**

d) Define : Pure and mixed strategies. **3**

3. a) Use penalty method to solve **8**

$$\text{Max } z = 3x_1 - x_2$$

subject to the constraints,

$$2x_1 + x_2 \geq 2$$

$$x_1 + 3x_2 \leq 3$$

$$x_2 \leq 4$$

$$\text{and } x_1, x_2 \geq 0.$$



- b) Find out whether there is any saddle point in the following problem, 6

Player B

Player A $\begin{bmatrix} -3 & 1 \\ 3 & -1 \end{bmatrix}$

4. a) Find the optimum integer solution to the following all IPP 7

Max $z = x_1 + 2x_2$

subject to the constraints,

$2x_2 \leq 7,$

$x_1 + x_2 \leq 7,$

$2x_1 \leq 11$ and $x_1, x_2 \geq 0.$

- b) Give the algorithm of Wolfe’s method for solving a QPP. 7

5. a) Prove that the set of all convex combinations of finite number of points $x^{(1)}, x^{(2)} \dots x^{(m)}$ is a convex set. 7

- b) Solve the following problem by Dual simplex method. 7

Min $z = 3x_1 + x_2$

Subject to the constraints,

$x_1 + x_2 \geq 1, 2x_1 + 3x_2 \geq 2$

and $x_1, x_2 \geq 0.$

6. a) Construct the Kuhn-Tucker conditions for solving a quadratic programming problem. 7

- b) Give the outlined procedure solving a problem by Simplex method. 7

7. a) If X is any feasible solution to the primal problem and W is any feasible solution to the dual problem then prove that, 6

$CX \leq b^T.W$ i.e. $Zx \leq Zw$

- b) Solve the following game. 8

Player B

Player A $\begin{bmatrix} 8 & -3 \\ -3 & 1 \end{bmatrix}.$



Seat No.	
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M.Sc. – I (Semester – II) Examination, 2014
COMPUTER SCIENCE (Paper – VI)
Computer Communication Network

Day and Date : Thursday, 24-4-2014
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- Instructions:** 1) Question No. 1 and 2 are **compulsory**.
2) Attempt **any 3** questions from Q. No. 3 and Q. No. 7.
3) Figures to the **right** indicate **full** marks.

1. A) Choose correct alternative : **10**
- 1) IEEE _____ is a ring based LAN operating at 4 and 16 M_{bps}.
a) 802.1 b) 802.3 c) 802.5 d) 802.7
 - 2) _____ networks can further divided into static and dynamic allocation.
a) Unicast b) Broadcast c) Multicast d) All above
 - 3) The _____ routing algorithm requires each router to know, or at least have a reasonable estimate of, the delay to each of its neighbours.
a) Distance-vector b) Link-state
c) Shortest-path d) Hierarchical
 - 4) The variations in standard derivation in the pocket arrival times is called _____
a) Jitter b) Bandwidth
c) CPU cycles d) Buffer space
 - 5) _____ is the final step and concerns what the recipient does with the message after receiving it.
a) Composition b) Reporting
c) Displaying d) Disposition



- 6) In the _____ layer, the sending side must buffer outgoing frames because they might have to be retransmitted.
- a) Network b) Physical c) Transport d) Datalink
- 7) The output of the encryption process, known as the _____, is then transmitted, often by messenger or radio.
- a) cipher text b) secrecy
c) non-secrecy d) key stream
- 8) Quantum cryptography is based on the fact that light comes in the little packets are called _____
- a) cells b) whitening
c) photons d) jitter
- 9) When a frame arrives, the _____ layer processes the frame header and passes the contents of the frame pay load field up to the network entity.
- a) physical b) application
c) data link d) presentation
- 10) The illegal combinations of time and sequence number are shown as the _____
- a) Forbidden region b) Home region
c) Foreign region d) All above

B) State **true** or **false** :

4

- 1) The envelope encapsulates the message.
- 2) Many people also use little ASCII symbols called smileys or emotions in their e-mail.
- 3) All algorithms must be public, only the keys are secret.
- 4) Except for physical layer security, nearly all security is based on cryptographic principles.

2. A) Write short note on the following :

8

- 1) Internet Usage
- 2) Different types of connection and connectionless oriented services.



- B) Answer the following questions : 6
- 1) Define adaptive and nonadaptive algorithms.
 - 2) Define flooding and selective flooding.
3. A) What is store-and-forward switching ? Explain its advantage and disadvantages. 7
- B) State and explain IPv4 header format. 7
4. A) Discuss four protocol scenarios for releasing a connection. 7
- B) How to prevent congestions ? 7
5. A) Explain encryption model for a symmetric key cipher. 7
- B) Describe the Leaky bucket algorithm with water and packet. 7
6. A) What are the problems while sending and receiving the messages ? Give the solutions of it. 7
- B) Give the simple transport service and TCP primitives. 7
7. A) Explain digital signature using message digests. 7
- B) With the help of Web Model, explain how the Web appears to the users and how it works inside. 7
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Seat No.	
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**M.Sc. – I (Semester – II) (Computer Science) Examination, 2014
UML (Paper – VII)**

Day and Date : Saturday, 26-4-2014
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 70

Instructions : I) Question No. 1 and 2 are **compulsory**.
II) Attempt **any three** questions from Q. No. 3 to Q. No. 7.
III) Figures to the **right** side indicate **full** marks.

1. A) Choose the correct alternatives : 10
- 1) _____ is a replaceable part of UML.
a) Node b) Component
c) Use case d) Note
 - 2) What is true about Sequence Diagram ?
a) It describes the behavior in many use cases
b) It describes the behavior of a person
c) It describes the behavior of single object
d) It describes the behavior of several objects
 - 3) In _____ event the system receives a signal from an external agent.
a) Signal b) Call c) Change d) Invoke
 - 4) A _____ specifies conditions that must be held true for the model to be well formed.
a) Stereotype b) Constraints
c) Component d) Tagged Value
 - 5) _____ are the things that are created and destroyed during run time by the application.
a) Use cases b) Nodes
c) Instances d) Notes



3. Answer the following : **14**
- 1) Explain process and threads in details.
 - 2) Explain the objects of activity diagram.
4. Answer the following : **14**
- 1) Explain the structural things in UML.
 - 2) What is Active Class ? Write the difference between normal class and active class.
5. Answer the following : **14**
- 1) Explain software development life cycle.
 - 2) What are the objects of interaction diagram ? Explain in detail.
6. Answer the following : **14**
- 1) Draw sequence diagram for creation of New Account in Gmail.
 - 2) Explain and draw the use case diagram for online Bill Payment System.
7. Explain the following terms in detail : **14**
- a) Relationships
 - b) Interfaces and packages.
-



Seat No.	
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M.Sc. – I (Semester – II) Examination, 2014
Computer Science
DBMS (Paper – VIII)

Day and Date : Tuesday, 29-4-2014

Max. Marks : 70

Time : 11.00 a.m. to 2.00 p.m.

- N.B. :** 1) Question No. 1 and 2 are **compulsory**.
2) Attempt **any 3** questions from Q. No. 3 to Q. No. 7.
3) Figures to the **right** indicate **full** marks.

1. A) Choose correct alternatives : 10

- 1) Which of the following index types is best suited for a column with high cardinality ?
 - a) Bitmap
 - b) B-tree
 - c) Function-based
 - d) Unique
- 2) Storing a separate copy of the database at multiple locations is which of the following ?
 - a) Data Replication
 - b) Horizontal partitioning
 - c) Vertical partitioning
 - d) Horizontal and vertical partitioning
- 3) In case of entity integrity, the primary key may be
 - a) Not Null
 - b) Null
 - c) Both Null & Not Null
 - d) Any value
- 4) The relational model feature is that there
 - a) is not need for primary key data
 - b) is much more data independence than some other database models
 - c) are explicit relationships among records
 - d) are tables with many dimensions

P.T.O.



- 5) Count function in SQL returns the number of
 - a) values
 - b) distinct values
 - c) groups
 - d) tables
- 6) A DBMS query language is designed to
 - a) Support end users who use English-like commands
 - b) Support in the development of complex applications software
 - c) Specify the structure of a database
 - d) All of the above
- 7) TRUNCATE statement in SQL is a
 - a) DML statement
 - b) DDL statement
 - c) DCL statement
 - d) None of these
- 8) A second normal form does not permit _____ dependency between a non-prime attribute and the relation key.
 - a) Partial
 - b) Multi
 - c) Functional
 - d) Valued
- 9) In a third normal form relation every _____ attribute is non-transitively and fully dependent on the every candidate key.
 - a) Prime
 - b) Non-prime
 - c) Unique
 - d) Classified
- 10) The default date format in SQL is
 - a) DD-MON-YY
 - b) DD-MM-YY
 - c) DD-MM-YYYY
 - d) MM-DD-YY

B) State True/False :**4**

- 1) You can define foreign key without existing primary key.
- 2) We use views to restrict data access.
- 3) In entity attribute modeling a many to many relationship is represented by M:M.
- 4) A conceptual model represents a picture of the information requirements of the entire organization.

2. A) Write short notes on the following :**8**

- i) Functional dependency
- ii) Fragmentation



- B) Answer the following : **6**
- i) Describe 'commit' and 'roll back' with an example.
 - ii) Explain on Delete Cascade Clause with suitable example.
3. Answer the following : **14**
- A) Describe briefly Relational Algebra. Explain various relational algebra operators giving example.
 - B) Explain in brief the concept of Distributed Databases.
4. Answer the following : **14**
- A) Explain the cursor with suitable example.
 - B) Explain steps involved in query processing with suitable diagrams.
5. Answer the following : **14**
- A) Explain the ACID properties with suitable example.
 - B) Write a PL/SQL program to reverse a number.
6. Answer the following : **14**
- A) Explain Boyce-Codd normal form with suitable example.
 - B) Consider the following database scheme :
Emp (emp_no, empname, job, mgr, sal, commission, hiredate, dep_no)
Dept (dept_no, dname, Loc)
- Solve the following queries.
- i) Display records of all clerk.
 - ii) Display all dept_no having less than two employee.
 - iii) Display name and salary of employee having salary between 5000 and 8000 Rupees.
 - iv) Display name of all employee along with the dname.
7. Answer the following : **14**
- A) Explain indexing in detail.
 - B) Explain different types of data models.
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Seat No.	
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**M.Sc. – II (Semester – III) (Computer Science) Examination, 2014
JAVA PROGRAMMING (Paper – IX)**

Day and Date : Monday, 21-4-2014
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

Instructions: 1) Question No. 1 and 2 are **compulsory**.
2) Attempt **any 3** questions from Q. No. 3 to Q. No. 7.
3) Figures to the **right** indicate **full** marks.

1. A) Choose correct alternative : **10**
- I) Which is a valid keyword in Java ?
 - A) interface
 - B) string
 - C) float
 - D) unsigned
 - II) Which class cannot be a subclass in Java ?
 - A) abstract class
 - B) parent class
 - C) final class
 - D) none of above
 - III) Suspend thread can be revived by using
 - A) start() method
 - B) suspend() method
 - C) resume() method
 - D) yield() method
 - IV) Which of the following may be part of a class definition ?
 - A) instance variables
 - B) instance methods
 - C) constructors
 - D) all of the above



- V) A constructor
- A) must have the same name as the class it is declared within
 - B) is used to create objects
 - C) may be declared private
 - D) A, B and C
- VI) Which method is used to perform DML statements in JDBC ?
- A) execute()
 - B) executeUpdate()
 - C) executeQuery()
 - D) none of above
- VII) Program which executes applet is known as
- A) applet engine
 - B) virtual machine
 - C) JVM
 - D) none of above
- VIII) What will be the output of the program ?

```
public class Foo
{
    public static void main(String[] args)
    {
        try
        {
            return;
        }
        finally
        {
            System.out.println( "Finally" );
        }
    }
}
```

- A) Finally
- B) Compilation fails
- C) The code runs with no output
- D) An exception is thrown at runtime



IX) Converting a primitive type data into its corresponding wrapper class object instance is called

- A) Mapping B) Creation C) Instantiation D) Wrapping

X) Package of drawstring() method is

- A) java.applet B) java.io C) javax.swing D) java.awt

B) State **true/false** : 4

- i) Static method may be declared abstract.
- ii) A class can extend only one class atmost.
- iii) Event listeners are classes.
- iv) Identifiers in java are case sensitive.

2. A) Write short notes on the following : 8

- i) Java Virtual Machine
- ii) Interfaces.

B) Answer the following : 6

- i) What is constructor ? How do we invoke constructor in Java program ?
- ii) Explain the term “Static” in Java.

3. Answer the following : 14

A) Explain the following methods related to thread with example

- i) Wait()
- ii) Notify()

B) Write a program which creates two threads, one of the thread has to print positive numbers (from 1 to 10) and other thread has to print negative numbers(from 1 to 10). e.g. 1, 2, 3,10, -1, -2, -3 ... -10;

4. Answer the following : 14

A) List four differences between a Java applications program and Java applet program, with an example of each type of program.

B) WAP for creating custom ExceptionClassWise.

- i) Invalid SERollNoException
- ii) Invalid TERollNoException
- iii) Invalid BERollNoException

(Use different roll no ranges for diff. classes)



5. Answer the following : **14**
- A) What is JDBC ? Explain how SQL statements are written and executed in Java.
 - B) Write a program in Java which creates a file reference and finds the following :
 - i) Path of the file;
 - ii) Whether file exists or not;
 - iii) Whether the file is writable or not;
 - iv) Size of the file.
6. Answer the following : **14**
- A) Explain StringBuffer class with proper example.
 - B) Explain about abstract classes and abstract methods with example.
7. Answer the following : **14**
- A) Write a program to explain how parameters are passed in an applet program.
 - B) What is inheritance ? Explain two benefits of inheritance, with an example of each.
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