

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER-I

(Problem Solving and Programming)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.
All questions carry equal marks.

1. What is the difference between structures and union in C and why are they used. How are they initialized? Explain the purpose of typedef feature with an example.
2. What are operators? Explain with examples different types of operators used in "C"?
3. Draw a flowchart and write the algorithm for printing the first 10 even numbers.
4. What do you mean by scope of a variable? Differentiate between Global and Local variables giving an example of each. Write a program in C to test whether the given number is prime or not.
5. What is the use of continue, break and goto statement in "C"? Explain each of them with an example.
6. Explain how a pointer is different from array declaration with the help of an example. Write a program in C to find the multiplication of 2 matrices of size (3 x 3).
7. List and explain looping constructs in "C" language with an example for each type.
8. Explain different types of string functions in C with examples for each.
9. What are Library functions in 'C'? Explain 10 library functions with an example of each.
10. Write short notes on :—
 - (a) Pointer variable.
 - (b) Control instructions in C.
 - (c) File handling in C
 - (d) Storage class in C



Examination Programme, 2015
MCA, Part-I

Date	Paper	Time	Examination Centre
12.05.2015	Paper-I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2015	Paper-II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2015	Paper-III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2015	Paper-IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
20.05.2015	Paper-V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2015	Paper-VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
26.05.2015	Paper-VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
28.05.2015	Paper-IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
30.05.2015	Paper-X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
01.06.2015	Paper-VI (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER-II

(Computer Organization & Assembly Language Programming)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.
All questions carry equal marks.

1. Explain the structure of I/O Module with the help of a diagram. Explain the three Input/Output techniques with the help of suitable diagrams or flow charts.
2. (a) Define the term Interrupt. Explain the process of resolving the condition when multiple interrupts occur in a system at the same time.
(b) Simplify the following Boolean function in SOP and POS forms by means of K-Maps. $F(A, B, C, D) = (1, 3, 5, 6, 9, 10, 11, 14, 15)$.
3. (a) Perform the following as stated :—
 - (i) Convert $(F2)_{16}$ into its equivalent binary and decimal number.
 - (ii) Add 75 and 28 in 8-bit registers using signed 2s complement notation.
 - (iii) Subtract 32 from 74 using 2's complement notation.
 - (iv) Convert $(1100101)_2$ into its equivalent octal and hexadecimal notation.
 - (v) Convert $(812.5)_{10}$ into binary.(b) Design OR and NOT operations using the NAND gate.
4. What are the various addressing schemes used for memory references? Give an example of each. Can we store control and status information in the memory? Justify your answer.
5. Write a program in 8086 Assembly language to convert lower case alphabets present in the memory to upper case alphabets.
6. Explain the working of RS flip-flop and JK flip flop with the help of suitable diagrams and characteristic table.. Discuss some of their applications.
7. What is ALU ? Explain the implementation of one stage of ALU with shift capability.
8. What are Magnetic Disks ? Describe their structure, layout and head mechanisms.
9. What is a Hardwired Control Unit ? State the advantages of IC Technology. Discuss the implication of overflow in Arithmetic results.
10. Write short notes on the following :—
 - (a) 8x1 multiplexer
 - (b) Ripple counter
 - (c) Don't Care condition

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER—III

(Discrete Mathematics)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.
All questions carry equal marks.

1. (a) For any two propositions p and q , show that $\approx (p \vee q) \equiv \approx p \wedge \approx q$.
(b) How would you present the following propositions and their negations using logical quantifiers? Also interpret the negations in words.
 - (i) The politician can fool all the people all the time.
 - (ii) Every real number is the square of some real number.
 - (iii) There is lawyer who never tell lies.
2. Show that $\sqrt{5}$ is irrational.
3. Use mathematical induction to prove that $1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6} \forall n \in N$.
4. Define AND-gate, OR-gate and NOT-gate.
5. If $A = \{1, 2, 3\}$, $B = \{2, 4, 5\}$ find
 - (a) $(A \cap B) \times (A - B)$
 - (b) $A \times (A - B)$
 - (c) $(A \Delta B) \times (A \cap B)$
6. Define the following terms :—
 - (a) Reflexive Relations.
 - (b) Symmetric Relations.
 - (c) Transitive Relations.
 - (d) Equivalence Relations.
7. Let $f(x) = \frac{1}{x}$ and $g(x) = x^3 + 2$. Find the following functions where $x \in R$
 - (a) $(f + g)(x)$
 - (b) $(f - g)(x)$
 - (c) $(fg)(x)$
 - (d) $(f/g)(x)$
8. If there are 7 men and 5 women, how many circular arrangements are possible in which women do not sit adjacent to each other?
9. Two dice, one red and one white, are rolled. What is the probability that the white die turns up a smaller number than the red die?
10. If a single card is drawn from a standard deck, what is the probability that it is red or a face card?



NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER-IV
(System Analysis and Design)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.
All questions carry equal marks.

1. What are the objectives of preliminary investigation ? List and explain the methods to gather the data during the preliminary investigation. Explain various types of feasibility studies that the analyst should consider.
2. Give characteristics of a SRS. Develop a SRS for a store management system. Who are the key persons at all the levels of MIS? Explain their responsibilities. List at least six attributes of a good system analyst.
3. Draw 0-level, 1-level and 2-level DFD's depicting the various processes, data flow and data repositories for a Hospital management system. Follow the appropriate conventions/symbols.
4. What is Risk Management? Describe different types of risk associated with software.
5. (a) With reference to Risk Assessment and management, write short notes on the following :—
 - (i) Quantitative Risk analysis
 - (ii) Qualitative Risk analysis(b) Explain various issues involved in software maintenance, with appropriate examples.
6. Explain the Information support and nature of management for the following systems :—
 - (i) Office Automation Systems
 - (ii) Transaction processing systems.
7. Explain the necessary consideration and conditions in selecting the data storage media for a S/W project. List and explain at least seven considerations for the input design.
8. Explain the Indexed - file organization method. List the advantages and disadvantages in comparison with the sequential and random methods. Discuss, under which conditions, the prototypes are considered to be very useful and how ?
9. List at least seven advantages of using the Data - centres instead of an in-house computer facilities. Explain the following categories of project documentation :—
 - (i) Operations Documentation
 - (ii) User Documentation
10. Write short notes on the following with examples of each :—
 - (a) SDLC
 - (b) Coupling and cohesion
 - (c) Fact finding technique
 - (d) Cost-Benefit analysis.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER-V

(Communication Skill)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer all Questions.

1. Read the following passage and answer the questions given after it. 4x5

Nehru felt that as he matured and experienced life, he had grown less confident of the path towards his long cherished ideals. In later phase of his life, he was making a more realistic assessment of human weaknesses and the problems in the way of progress.

Yet he retained his faith in the force or spirit of man, that had somehow guided human beings. In a changing world, Nehru was convinced that human kind was in crucial need of an active and positive philosophy or way of thinking. Neither religious systems nor spiritualism with their unexplained assumptions were acceptable to him. Nor were philosophical speculations with their focus on the abstract. Even Marxism and Leninism were found to be wanting because of their doctrinal rigidity and lack of ethical means.

Nehru did not claim that there was a single philosophy or doctrine for human development. He stated that he appreciated an ethical approach to human life which was also scientific and objective so as to build a human culture that satisfied both spiritual and physical needs. In a fast changing world where there were few certainties, these were to be valuable guidelines.

- (a) What does the narrator feel about Nehru's point of view on life in his later years?
- (b) What issues/ difficulties did Nehru find with Marxism and Leninism?
- (c) Which philosophy of life did Nehru appear to be fond of?
- (d) Pick out synonyms of the following words from the passage: evaluation, vital.
- (e) Pick out antonyms of the following words from the passage: earlier, concrete

2. Fill in the blanks choosing the most suitable word,/s from the choices given. 2x5

- (i) "I am sorry. Mr. Rajnikant is not in at the moment. He.....a message for you though. (had left, has left)
- (ii) Let us.....a consensus on the issue of allotment of computers to various departments. (create, build)
- (iii) You may speak if you have anything significant to report.....you may wait for our next meeting. (Otherwise, Therefore, Unless)
- (iv) You.....carry your company identity Card whenever you are on a field visit.
(can, may, must)
- (v) "Don't worry. The new software.....with a short two-day training.
(can be Mastered, must be mastered.)

3. Write down the text of a group discussion between four participants on the need to make the office a paper- free office, thus largely depending on the computer and Internet/ networking for correspondence, communication and documentation. (250 words) 10

4. It is recession time and your company is having an austerity drive. Write a memo to all the staff of your company, suggesting ways of economizing on the use of paper, electricity, etc. 10

P.T.O.

5. Write a letter of application together with your Curriculum Vitae (CV) for a job in response to the following advertisement:
- Position: Call Centre Executive
- Job description: Fund Raising operations for an established NGO
- Requirement: Graduate in Humanities/Language, good communication skills and fluency in English, Hindi and Telugu **10**
6. Your boss noticed that meetings have been dragging recently and that that have not been especially productive. You have been asked to prepare a brief talk for executives at all levels on the subject of how to run a productive and meaningful meeting. Research this topic and prepare a presentation. **10**
7. Write an essay on different types of communication (250 words) **10**

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER-VII

(Design and Analysis of Algorithm)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.
All questions carry equal marks.

1. What are the building blocks of algorithm? State five important characteristics of an algorithm.
2. Differentiate between "problem" and instance of a problem with an example of each. Write a recursive procedure to find the product of n numbers.
3. Compare and contrast Heap sort and Merge sort. Give examples for each type.
4. Write short notes on the following :—
 - (a) Kruskal's method
 - (b) Depth First Search.
 - (c) Best First Search
5. Explain Four-color problem. Discuss three general plan for Divide and Conquer technique.
6. Briefly discuss Optimality in context of Dynamic programming. Name at least four undecidable problems with the brief description of each.
7. What is regular expression ? Write a regular expression over {a, b} to generate all string that start with 010 and end with 11.
8. If L1 and L2 are Context Free Languages then show that $L1 \cup L2$ and $L1 \cdot L2$ are also Context Free Languages.
9. Explain different types of finite automata with examples of each type.
10. Explain each of the following, with an appropriate example :
 - (a) NP-complete problems.
 - (b) Halting Problem.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER–VIII

(Advanced Discrete Mathematics)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.
All questions carry equal marks.

1. Find the number of bijections on a set of n elements $n \geq 1$.
2. Show that every non negative integer can be written as a unique sum of distinct powers of 2.
3. Find the generating functions for the sequence of the number of partitions of n .
 - (a) Into primes.
 - (b) Into distinct primes.
4. Solve the sixth order linear, homogeneous recurrence relation
$$u_n + u_{n-1} - 11u_{n-2} - 13u_{n-3} + 26u_{n-4} + 20u_{n-5} - 24u_{n-6} = 0$$
5. Solve the recurrence relation given by
$$u_n = 2u_{n-1} + (2)^n - 1, \text{ where } n \geq 1 \text{ and } u_0 = 0.$$
6. Let G be a (p, q) graph each of whose vertices has degree k or $(k + 1)$. If G has m vertices of degree k and r vertices of degree $k + 1$ then show that $m = (k + 1)p - 2q$.
7. Show that for a sub graph H of a graph G , $\Delta(H) \leq \Delta(G)$.
8. Give an example of a graph with,
 - (a) 4 components, each of which is complete.
 - (b) 3 components, where no two components are Isomorphic.
9. What is difference between an Eulerian graph and an Eulerian circuit ?
10. Show that K_5 is not planar.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER–IX

(Data Communication and Computer Networks)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.
All questions carry equal marks.

1. Explain different phases of Connection Oriented Transmission. Define cellular topology. Discuss advantages and disadvantages of cellular topology in wireless data transfer.
2. How OSI model different from TCP/IP model? Explain the role of Data-link layer and Network layer of OSI model in networking.
3. Discuss advantages and disadvantages of flooding routing protocols. A network with bandwidth of 10 Mbps can pass only an average of 12000 frames/min with each frame carrying an average of 10000 bits. What is throughput of this network ?
4. Data link protocol almost always puts CRC in trailer rather than in a header. Why ? Explain token bucket algorithm and compare its performance against the leaky bucket algorithm.
5. Explain and illustrate Sliding Window Protocol ? What is the purpose of PCM ? Explain different components of PCM encoder.
6. Why a fragmentation is needed in IP datagram ? How are fragmentation and reassembly implemented in IP ? What are features of token bucket traffic shaper ?
7. What is piggybacking ? Explain piggybacking process and where it is used, with an example and an appropriate diagram. Compare FDM and TDM.
8. Discuss different transmission modes with examples. Explain the terms bit rate, baud, bandwidth, data rate and multiplexing with suitable examples.
9. With the help of suitable diagram, explain three way handshake mechanism. Discuss different component of Network File System protocol.
10. Write short notes on the following :—
 - (a) DES
 - (b) FDDI
 - (c) IEEE 802.3
 - (d) LAN
 - (e) Digital Signature.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER-X
(Management of Information System)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.
All questions carry equal marks.

1. Why are management systems required ? List any five management systems. What are vertical and horizontal organizations ? Explain their organizational structures and the benefits.
2. What is the importance of requirement analysis? Explain the tools and methods for requirement analysis.
3. What are evolutionary algorithms ? Explain the different branches of evolutionary algorithms.
4. Explain the different information systems required at different levels of management to support an organization.
5. Write short notes on the following :—
 - (a) Knowledge Workers
 - (b) Social impact of Information Systems
 - (c) Ethics and Internet
6. What is Knowledge Capturing ? Explain different stages of knowledge capturing with an example. Explain the knowledge flow using the knowledge model. Also, explain the activities performed in knowledge creation and transfer.
7. Show the various stages in data warehousing and business analytics and also explain it in brief.
8. Identify new technological trends and its impacts. Also discuss the ethical issues related to technologies advancement.
9. Define Total Cost of Ownership (TCO). Explain briefly the cost factors used in finding the TCO.
10. How do conventional application package and ERP differ? Explain the various components of ERP.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER-VI
(C and Assembly Language Programming)
Annual Examination, 2015
SET-I

Time : 3 Hours.

Full Marks : 100 (20+80)

Answer any Four Questions.
All questions carry equal marks.

1. Write C program using an array for generating the multiplication table of given number.
2. Write a C program which find the length of a given string (Do not use library function for finding string length).
3. Write a C program to generate first ten prime numbers.
4. Write a C program generate a Fibonacci series upto the given term.
5. Write a program in 8086 assembly language that will take three decimal input and display largest among them.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER-VI
(C and Assembly Language Programming)
Annual Examination, 2015
SET-II

Time : 3 Hours.

Full Marks : 100 (20+80)

Answer any Four Questions.
All questions carry equal marks.

1. Write C program which finds the largest of the entered three numbers.
2. Write a C program which finds the number of vowels in the given sentence.
3. Write a C program using an array to print the lowest number from the entered 10 numbers.
4. Write a C program to test whether the entered number is even or odd.
5. Write a program in 8086 assembly language that will take two decimal inputs and display smallest among them.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XII

(MCS-032 : Object Oriented Analysis and Design)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.
All questions carry equal marks.

1. Explain important features of object oriented language with an example for each. How are events happening between objects controlled ?
2. An elevator goes up and down on pressing the button. It stops at each floor, pauses for some time and then moves up. Once it is on the way to the top floor, it reaches the top and then come down. For the following :—
 - (i) Draw a class diagram.
 - (ii) Draw an instance diagram.
 - (iii) Draw use case diagram.
 - (iv) Identify the states and transitions.
3. Compare and contrast between the different models of Object Oriented design by giving examples of each type.
4. Differentiate between the followings with appropriate examples :—
 - (i) Event and sequence.
 - (ii) Abstract classes and concrete classes.
 - (iii) Packages and subsystems.
5. Explain different types of inheritance with examples of each type.
6. Briefly explain the concept of collaboration diagram. Draw a DFD for Hotel Management system upto 2 levels. Explain each component used in the diagram and how they are participating in the diagram.
7. Define the following terms. Also give suitable examples.
 - (i) Meta-class and metadata.
 - (ii) Object identity.
 - (iii) Maintainability.
8. What do you mean by association in a UML diagram ? Briefly describe various types of associations available in UML with examples for each.
9. Write short notes on the following :—
 - (i) Meta classes.
 - (ii) Object constraint language.
 - (iii) Derived attributes.
10. Explain with suitable examples the two strategies to implement state chart. What is persistency ? Explain with an example.



Examination Programme, 2015
MCA, Part–II

Date	Paper	Time	Examination Centre
05.06.2015	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
09.06.2015	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
11.06.2015	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
13.06.2015	Paper–XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
15.06.2015	Paper–XVII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
17.06.2015	Paper–XVIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
19.06.2015	Paper–XIX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
22.06.2015	Paper–XI (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
23.06.2015	Paper–XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
24.06.2015	Paper–XX (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XIII
(MCS-034: Software Engineering)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. What is SRS ? Explain the components and use of SRS in software development ? How does SRS support in the development of new version of the software ?
2. "Quality is built into the software during the design phase", explain. Explain the various quality attributes that must be present in the software to makes it standard software.
3. Discuss different process model of Software development with their diagrams and applications.
4. Why Risk needs to be handled in the software development ? What are the various types of risks that may be faced by the analyst during Software development ? How risk can be avoided.
5. What is the first step in software project estimation ? What are the major inputs for software project estimation ?
6. What is a team ? Why team work important in Software development ? Discuss different types of team that may be formed during software engineering.
7. What is the aim of software change management process ? Explain Version Control with an example.
8. What are software metrics? How do metrics help in the estimation of complexity of the software ? Explain with an example.
9. What is a Dataflow Diagram (DFD)? Draw a DFD upto 2-level for Library Information System. Make necessary assumptions if required.
10. Write short notes on the following :—
 - (a) COCOMO Model.
 - (b) Modularity.
 - (c) Domain Engineering.



NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XIV
 (Accounting and Financial Management)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. What is Trial Balance ? Explain the importance of Trial Balance. Give example of a Trial Balance.
2. Prepare a statement of changes in working capital with imaginary figures.
3. Define financial management and describe its features.
4. What is ratio analysis ? Throw light on its utility and limitations.
5. Calculate the following ratios with imaginary figures :—
 (a) Net profit ratio. (b) Operating ratio. (c) Current ratio.
 (d) Stock turnover ratio. (e) Debt equity ratio. (f) Proprietary ratio.
6. Explain various accounting principles and conventions.
7. Write notes on any **Two** of the following :—
 (a) Cash from operations. (b) Need for holding cash.
 (c) Liberal credit policy. (d) Negotiable instruments.
8. You are required to prepare cash flow statement from the following Balance Sheets of a company as on 31st December, 2011 and 2012 :—

Balance Sheet

Capital & Liabilities	2011 (Rs.)	2012 (Rs.)	Assets	2011 (Rs.)	2012 (Rs.)
Share Capital	4,00,000	4,80,000	Cash	1,00,000	1,20,000
Creditors	60,000	80,000	Plant & Machinery	4,00,000	5,00,000
Debentures	3,00,000	1,80,000	Less accumulated depreciation	1,20,000	1,60,000
Retained Earnings	2,50,000	3,20,000	Land	2,00,000	1,60,000
			Inventory	2,80,000	2,40,000
			Debtors	1,50,000	2,00,000
	10,10,000	10,60,000		10,10,000	10,60,000

Additional information : Dividend paid in Cash during the year Rs. 50,000.

9. What is Final Account ? What are its objectives ? Describe the components of Final Account.
10. What are the reasons for holding inventory ? Explain the objectives of inventory management.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER—XVI
(MCS-021: Data and File Structure)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. Write a program to implement a circular queue using pointers with functions for insertion and deletion.
2. Explain doubly linked lists. Write an algorithm for implementing insertion and deletion operations in a singly linked list using arrays.
3. What are the various operations in a stack? Explain each of them with an example.
4. Explain different types of minimum cost spanning tree with a suitable example.
5. Explain the properties and operations of AVL trees. Show step by step construction of an AVL tree resulting from the insertion of the following sequence of keys :—
15, 18, 6, 6, 10, 21, 2, 60, 16, 14, 5, 25, 5
6. Compare and contrast between different sorting techniques and mention their time complexity and space complexity.
7. For a binary tree the following is given :—
Pre-order traversal: **A, D, F, H, G, K, L, P, R, Q, W, Z**
In-order traversal: **G, F, H, K, D, L, A, W, R, Q, P, Z**
Using Pre-order and In-order traversal draw the corresponding binary tree.
8. Write a program to find the frequency of words in a given text. The list of words and their corresponding frequency should be in the alphabetical order of words.
9. Write a program to implement addition of two polynomials using stack. Explain each step along with the variables used.
10. Write short notes on any **Three** of the following :—
 - (a) Binary Search Trees(BST)
 - (b) Heap sort
 - (c) DFS and BFS
 - (d) Sparse matrix

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XVII

(MCS-022 : Operating System Concepts and Networking Management)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. Explain the collision avoidance mechanism of CSMA/CD. Also, differentiate between CSMA/CD and token passing access methods.
2. Discuss the functionality of *User* and *Kernel* modes of Windows 2000 operating system. Explain how NTFS, FAT16 and FAT32 file systems are supported in Windows 2000 operating system.
3. What option in Registry Management will be useful in tracking who accessed the registry, from where, and when ? Also, write the steps for enabling this option. How does Windows 2000 manage the domains ?
4. Explain the file systems supported by LINUX systems. Compare these file systems with NTFS. Compare and contrast the '**Mandatory Access Control**' and '**Discretionary Access Control**' mechanisms in Windows.
5. List the IPv4 class formats and its uses. Explain various User Authentication methods that the computer system uses.
6. What is the use of Transmission media in Networking ? List and explain various guided and unguided transmission media with their advantages and disadvantages.
7. Explain the built-in groups supported by Windows 2000. Write the procedure to use the mapped drive in WINDOWS 2000 OS.
8. Compare and contrast between Network operating systems and Distributed operating systems. Also, list the advantages of Distributed operating systems over Centralized operating systems.
9. Explain the process of encryption and decryption in symmetric key, asymmetric key crypto systems. Write the advantages of Virtual Private Network.
10. Write short notes on the following :—
 - (a) Proxy Server
 - (b) DNS
 - (c) RAID
 - (d) Network Topologies

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER—XVIII

(MCS-023: Database Management Systems)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. Explain the role of the following components of Database Management System.
 - (i) File Manager
 - (ii) Query Processor
 - (iii) Data Dictionary
2. Explain the following operations on set of relations with examples of each :—
 - (i) Union
 - (ii) Intersection
 - (iii) Cartesian cross-section
 - (iv) Difference
 - (v) Division
3. What is SQL ? Explain its important features. Write at least 10 SQL command with complete syntax.
4. What is distributed DBMS ? List the issues involved in the design of a distributed DBMS. Also explain the features of distributed transaction with the help of an example
5. What is a checkpoint ? Briefly explain its importance. Prove the statement, "Any relation which is in BCNF is in 3NF but the converse is not true."
6. Explain Two-phase locking protocol with an example. What is data integrity ? Does data integrity have any relationship with data security ? Justify-your answer with the help of example and diagram.
7. What do you mean by fragmentation of a database ? What is the need of fragmentation in DDBMS environment ? Explain different types of fragmentation with an example of each.
8. Draw an E-R Diagram for the situation given below :—

An organization needs to provide Medical facilities to its employees and their dependents. Organization is having a list of Doctors, Hospitals and Test centres for the employees facility. An employee may get Medical facility from the list of Doctors, Hospitals and Test centres provided by the organization to them. Employee does not need to pay anything for the facilities availed. The Doctors, Hospitals and Test centres directly raise their bill to the organization. Make necessary assumptions wherever required and show clearly weak and strong entities and their relation in the system.
9. What is a transaction? Describe different states of a Transaction with the help of a diagram and discuss the problems associated with concurrent transactions with a suitable example.
10. Explain the following with the help of an example each :—
 - (i) Secondary Index
 - (ii) Normalisation
 - (iii) Client-Server Databases
 - (iv) Log-based recovery

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XIX

(MCS-024 : Object Oriented Technologies and Java Programming)

Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. "Java is architecture neutral, secure and distributed programming language." Justify the statement. What is classpath ? Explain the use of classpath in Java programming.
2. Define the concept of inheritance. Explain different types of inheritance in Java with examples. What is private access specifier ? Explain with an example, how it is different from public and protected access specifiers.
3. What are shift operators ? How many types of shift operators are available in Java ? Briefly explain benefits of stream classes.
4. What is multithreading ? How is thread synchronization implemented in Java ? Explain with an example.
5. What is an event in GUI programming ? Explain different components of an event. What is keyword in Java?
6. What is Explain the different instance variables defined in Stream Tokenizer. Also, explain use of StreamTokenizer with the help of an example.
7. Differentiate the following, with the help of example :—
 - (i) Application and Applet
 - (ii) Structure Approach and Object Oriented Approach
 - (iii) String and String Buffer
 - (iv) Abstract Class and Interface
8. Write a class to represent complex numbers, with suitable constructor and function to find the sum of two complex numbers. What is exception ? Explain difference between checked and unchecked exceptions with an example of each.
9. What is stateless protocol ? Is HTTP a stateless protocol ? What are the various ways through which you can maintain the `State' while using HTTP ?
10. What is RMI ? Explain advantages of using RMI. Briefly explain the life cycle of a servlet. Differentiate between TCP client and TCP server socket with the help of an example.



NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XI [Practical]
(MCSL-016 : Internet Concepts and Web Design)
Annual Examination, 2015

Time : 3 Hours.

SET–I

Full Marks : 100

Answer all the Questions. All questions carry equal marks.

1. Create a form containing the Student details enrolled in a University with following fields and then perform the validation of each field using VB script.
 - Name
 - Date of registration
 - Course
 - Amount
 - Year of registration
 - Address
 - Roll no
 - Subjects
 - Fees
2. Create a log-in page of your university site .It should have validation checks on the fields. After clicking a log-in button, it should switch over to new page.
3. Create a web page, divide the web page into four frames. In one frame create three links that will display different HTML forms in the remaining three frames respectively. Write a program in Java script to create a Fibonacci series.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XI [Practical]
(MCSL-016 : Internet Concepts and Web Design)
Annual Examination, 2015

Time : 3 Hours.

SET–II

Full Marks : 100

Answer all the Questions. All questions carry equal marks.

1. Create a form of a telephone bill containing the following fields and then perform the validation of each field using VB script :—
 - Telephone no.
 - Address
 - Amount payable
 - Email ID
 - Consumer no.
 - Bill date
 - Credit Card No.
2. Design a home page of any organization which must have help menu, menu for different kinds of products being offered and profile of the organization.
3. Design a web page which is like compose page of e-mail. It should have :—
 - (a) Text boxes for To, Copy respectively.
 - (b) Text field for message
 - (c) Send Button
 - (d) Option for selecting a file for attachment
 - (e) After clicking a send button a new page should open with display message "message has been sent".
4. Write a program using Java script to generate a series of prime numbers.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XV [Practical]

[MCSL-036 : Laboratory Course (for Object Oriented Analysis and Design,
Software Engineering and Accountancy And Financial Management)]
Annual Examination, 2015

Time : 3 Hours.

SET–I

Full Marks : 100

Answer all the Questions. All questions carry equal marks.

SECTION-A

(Object Oriented Analysis and Design)

1. Consider a University registration system. Students are registered for admission in different courses. Each student has his/her mail registered with the university. Any information to the student is coordinated through mail by the university.(Make suitable assumption if any).
Perform the following tasks :—
 - (a) Draw the use cases, define all the classes and draw an object diagram.
 - (b) Draw the sequences and collaboration diagram.

SECTION-B

(Software Engineering)

2. Perform the following tasks for the problem defined in Section - A.
 - (a) Develop SRS
 - (b) Draw DFDs of level 0 and level 1
 - (c) Draw an E - R diagram and its related tables with integrity constraints.

SECTION-C

(Accountancy and Financial Management)

3. Post the following transactions of a company to prepare the journal, ledger and trial balance.

April-2015	Transaction	Amount(Rs.)
5	Started the business with cash	5,00,000
8	Deposited in the bank	2,45,000
12	Items purchased for cash	1,00,000
14	Goods sold for cash	1,00,000
19	Good sold on credit	90,000
22	Received cash	3,50,000
28	Paid rent	1,59,000
30	Paid salary	2,00,000

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XV [Practical]

[MCSL-036 : Laboratory Course (for Object Oriented Analysis and Design,
Software Engineering and Accountancy And Financial Management)]
Annual Examination, 2015

Time : 3 Hours.

SET–II

Full Marks : 100

Answer all the Questions. All questions carry equal marks.

SECTION-A

(Object Oriented Analysis and Design)

1. A hospital wants to computerize appointments with doctors. A hospital has a panel of doctors in different specializations (eye, skin, orthopaedics, etc.). An appointment is done through telephone, e-mail, SMS, in person, as well as on-line. There are two shifts (Morning and Evening). Not more than twenty-five patients are given an appointment with one doctor in any shift. If the number exceeds twenty-five, the appointment is fixed for the next day. The system generates daily and weekly reports showing the name of doctors, name of patients and date of appointment.(Make suitable assumptions, if any.) Perform the following task :—
- (a) Draw a use-case diagram.
 - (b) Define all the classes and draw a class diagram.
 - (c) Draw the sequence and collaboration diagram.

SECTION-B

(Software Engineering)

2. Perform the following tasks for the problem defined in Section -. A.
- (a) Develop SRS
 - (b) Draw DFDs of level 0 and level 1
 - (c) Draw an E - R diagram and its related tables with integrity constraints.

SECTION-C

(Accountancy and Financial Management)

3. Post the following transactions of a company to prepare the journal, ledger and trial balance for the Company.

July 2014	Transactions	Amount (Rs.)
1st	Software development company started with cash	60,000
5th	Opening of a new account in a bank with cash	10,000
7th	Purchased computer and licensed Software with cash	20,000
10th	Purchased furniture for office with cash	10,000
20th	Sold Software to a customer on credit	10,000
25th	Sold Software to customers on cash	15,000
26th	Received cash from customer	10,000
30th	Paid salary	15,000
30th	Paid rent	10,000

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER-XXI
(MCS-41 : Operating System)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. For the given five processes arriving in the order of the length of CPU time in millisecond :

Process	CPU time
P1	5
P2	5
P3	6
P4	7
P5	2

Consider SJF, FCFS and RR scheduling algorithms for the above processes. Which algorithm will give minimum Average Turn around time and why ?

2. A system contains 13 units of resource R1. The resource requirement of 3 user processes P1, P2, P3 can be summarized as :

	P1	P2	P3
Max. Requirement	6	8	6
Current Allocation	5	2	6

Is the current allocation state feasible and safe? Apply Banker's Algorithm to check it. If a new request of (1, 3, 0) arises, check whether it will be granted or not using Banker's Algorithm ?

3. Compare and contrast the architecture of WINDOWS OS with UNIX OS. Explain what causes the thrashing ? Suggest the mechanism to avoid the thrashing.
4. Explain UNIX file structure. Write at least 10 commands in UNIX with the syntax.
5. How is booting done in WINDOWS 2000 operating system ? Explain windows process and threads with the help of a suitable diagram.
6. What is deadlock? What are the necessary conditions for deadlock? Explain different methods used for deadlock avoidance.
7. Explain different Disk scheduling algorithms with suitable diagrams for the given example. Starting cylinder is 92. In the direction of increasing cylinder number, cylinder request are : **100, 150, 200, 10, 50, 65, 105, 60, 20**
8. With the help of diagrams, explain the concept of demand paging and demand segmentation. For a page Reference string as : 0, 2, 3, 7, 2, 4, 4, 0, 2, 5, 3, 8 and with three memory frames, calculate the no. of page faults using : **OPT & LRU** Page replacement algorithms.
9. Explain the implementation of RPC in a distributed system. Explain memory organization in UNIX. Draw appropriate diagrams.
10. Explain Paging and Segmentation schemes giving examples for each type.



Examination Programme, 2015
MCA, Part-III

<i>Date</i>	<i>Paper</i>	<i>Time</i>	<i>Examination Centre</i>
06.06.2015	Paper-XXI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
08.06.2015	Paper-XXII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
10.06.2015	Paper-XXIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
12.06.2015	Paper-XXV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
16.06.2015	Paper-XXVII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2015	Paper-XXVIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
20.06.2015	Paper-XXIX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
22.06.2015	Paper-XXIII (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
23.06.2015	Paper-XXVI (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
24.06.2015	Paper-XXX (Tentative)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXII

(MCS-43 : Advanced Database Design)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. An Insurance company offers loan and insurance facility under different headings. It operates a number of branches within the country. A client of the company can have any number of insurance under different headings. Draw an E-R diagram for the insurance company identifying various entities, attributes and cardinality. Show meaningful relationships that exist among the entities. Translate the E-R diagram to schema Relational Model.
2. What are integrity constraints? Discuss different types of integrity constraints which can be imposed on databases.
3. What is the importance of File organization in databases ? What are the different types of file organizations available ? Discuss any one of them in detail.
4. What is a log? What are its contents? How can log be used for database recovery? Explain this with the help of an example. How is a checkpoint useful for log based recovery ? Explain with the help of an example.
5. What is normalization ? Consider a relation R (A, B, C,D, E) with functional dependencies:
(i) $A \rightarrow B$ (ii) $B \rightarrow C$ (iii) $C \rightarrow D$ (iv) $A \rightarrow E$
Name the normal form in which the relation R is in and decompose the relation R in the next normal form.
6. Explain various components of DDBMS architecture? Explain the different ways to implement the object - oriented concepts in DBMS.
7. Explain the basic components of a Data-Warehouse (DW). Consider a Supply Data of an organization having three dimensions as Supplier, Part and Project. Draw a star schema with supply as the fact table. Make suitable assumptions.
8. Explain the following in the context of ORACLE with examples:
Triggers
Security
Data Dictionary
Indexing
9. Write 10 SQL queries using CREATE, SELECT, INSERT, DELETE and ALTER.
10. Write short notes on:
(i) 2 Tier-client server architecture
(ii) Authorization in databases
(iii) Creation of view
(iv) JOIN operation

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXIV

(MCS-51 : Advanced Internet Technologies)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. What are the main functions of HTTP Servlet Response Interface ? Explain the methods which are used to obtain cookies and querying from the request object.
2. Explain the life cycle of Servlet. Write a code for demo Servlet to explain all the three stages of Servlet life cycle.
3. What are HTML Tags and why are they used ? Name two HTML tags that are not well formed. Give an example to show how tags are used.
4. Write a MDB (Message Driven Bean) that calculates the monthly salary of an employee based on the attendance of the employee. Assume that you have EMP_ATT database available that contains the attendance of the employee.
5. What are the advantages of XML over HTML ? Explain the need/use of entities of XML document. Describe all three types of entities with the help of an example.
6. What is web security ? Explain with suitable examples. Explain the different procedure of Recovery after system failure.
7. Explain the steps of handling Database in JSP. What are various implicit objects used with JSP.
8. Draw a diagram to show security objects dependencies and explain each security object with the help of examples. What are the two ways used for Servlet Collaboration ?
9. Explain the various configuration properties of JMS based Message Driven Beans offered by EJB. What are basic characteristics of SGML ?
10. Write short notes on the following :—
 - (a) HTTP Authentication.
 - (b) Validating parser.
 - (c) Types of Beans.



NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER—XXV

(MCS-053 : Computer Graphics and Multimedia)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. How do we simulate deceleration in animation scenes ? Why the animation seems to be decelerating if the spacing between frames keeps on decreasing ? Graphically discuss the mathematical function used to produce deceleration in any animation ?
2. What are the number of memory bits required for 16-bit plane frame buffer for a 512 x 512 raster ? Also calculate the refresh rate for the same raster (512 x 512), if Pixels are accessed at the rate of 200 nano seconds.
3. Compare and contrast the perspective projection with the parallel projection ? Justify your answer that parallel projections preserves lateral measurements ? Explain the terms window and viewport in the context of clipping.
4. Compare and contrast the following :—
 - (i) Cyrus Beck and Cohen Sutherland Line clipping algorithms.
 - (ii) Random and Raster Scan display devices.
5. Differentiate between the following :—
 - (i) Graphics and Animation.
 - (ii) Drawing and painting.
 - (iii) Morphing and panning.
 - (iv) Motion Specific animation and Motion Generalized animation.
6. Write a procedure to implement the Bresenham line generation algorithm. What are the advantages of this algorithm over the DDA line generation algorithm ?
7. Explain all the four cases of Sutherland -Hodgman polygon clipping algorithm. Derive the 2-D transformation matrix for reflection about the line $y = mx + c$, where m and c are constants. Use this transformation matrix to reflect the triangle A (2, 0), B (2, 3) and C (4, 4) about the line $y = 2x + 5$.
8. Differentiate between vector graphics and bitmap graphics. Briefly describe following file formats :—
 - (i) MPEG
 - (ii) MP3
 - (iii) GIF
 - (iv) JPG
 - (v) WAV
9. Discuss different file formats used for multimedia applications. Explain the following with suitable diagram :—
 - (i) Ambient Reflection.
 - (ii) Diffuse Reflection.
 - (iii) Specular Reflection.
10. What do you mean by Specular reflection? Is there any relation of surface texture with the type of reflection produced on the exposure of that surface to some light source? Explain with the help of diagram and suitable mathematical equations?



NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER—XXVII

(MCSE-003 : Artificial Intelligence and Knowledge Management)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. What is Well Formed Formula (WFF) ? What are the rules for writing WFF ? Write WFF for the following statements :—
 - (i) Every person has a father.
 - (ii) There is a man and he is the father of Ram.
 - (iii) Ram is an honest man.
2. What is a semantic network ? discuss the importance of Semantic network. Draw a Semantic Network for "ALBERT STRUCK LUCY IN THE GARDEN WITH A SHARP KNIFE, LAST MONTH".
3. What is Prenex Normal Form ? What are the steps of transforming a formula into Prenex Normal form ? Explain using an example.
4. What is a Fuzzy set ? How it is different from a crisp set ? Explain the following operations on fuzzy sets using an example :—
 - (i) UNION
 - (ii) INTERSECTION
 - (iii) α -cut
 - (iv) support
5. Symbolize and construct a proof for the following valid arguments, using rules of inference :—
 - (i) If you smoke or drink too much, then you do not sleep well, and if you do not sleep well or do not eat well, then you feel down.
 - (ii) If you feel down, you do not exercise well and do not study enough.
6. What is Prolog ? Discuss the rules of writing the statements in Prolog. Write a Prolog Program that adds an element X to a given set L.
7. Discuss S-Expressions in LISP with some examples. Draw tree structure to classify the various categories of S-Expressions.
8. What are Expert Systems ? Briefly discuss the various categories of software tools, used for the development of expert systems. What are Rational Agents ? What are the various factors on which the rationality of an agent depends ?
9. Compare and contrast the following with examples :—
 - (i) Associative Networks and Conceptual Graphs
 - (ii) Frames and Scripts
 - (iii) Resolution and Unification
10. Explain the application and advantages of using Artificial Intelligence with examples ?



NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXVIII
(Numerical and Statistical Computing)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks. Calculator is allowed.

1. (a) Round the number $x = 2.2554$ to three significant figures. Find the absolute error and relative error.
(b) Write the following numbers in floating point form rounded to four significant digits.
(i) 100000 (ii) -0.0022136 (iii) -35.666
2. (a) Find the smallest roots of the equation $4x^2 + 8x - 21 = 0$ by successive iteration method.
(b) Use secant method to find the roots of the equations $f(x) = 0.5e^x - 5x + 2$.

3. Solve the following systems using the Lu decomposition method

$$3x + y + z = 3$$

$$x + 4y + 2z = 0$$

$$2x + y + 5z = 4$$

4. Solve by Jacobi's method the following system of linear equations.

$$2x_1 - x_2 + x_3 = -1$$

$$x_1 + 2x_2 + x_3 = 21$$

$$3x_1 - 7x_2 + 5x_3 = 9$$

5. Estimate the sale of a particular quantity for 1966 using the following table :—

Year	1931	1941	1951	1961	1971	1981
Sale in thousands	12	15	20	27	39	52

6. (a) Evaluate the Integral $\int_0^6 (x^2 + x + 2)dx$ using Trapezoidal rule with $h = 1.0$.

- (b) Evaluate the Integral $\int_0^1 \frac{dx}{1+x}$ using Simpson's $\frac{3}{8}$ th rule with $h = \frac{1}{3}$.

7. Evaluate the Integral $I = \int_0^1 \frac{dx}{1+x}$ using Gauss Legendre three point formula.

8. Using Runge Kutta method of order 4 compute $y(0.2)$ and $y(0.4)$ for the IVP $10y' = x^2 + y^2$ $y(0) = 1$ taking $h = 0.1$.

9. What is the utility of residual plots ? What is the disadvantage of residual plots.

10. Explain the Binomial Distribution and Poisson Distribution.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXIX

(Application Development with .net Framework)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions. All questions carry equal marks.

1. What is .net Framework ? How you build components in the .net Framework. Explain giving suitable examples.
2. What is ASP.net? Explain various features of ASP.net 2.0. with suitable examples.
3. What is ADO.net? Explain various components and statements used in ADO.net.
4. Design a Form and code in VB.net to store details of examination in a database table.
5. Explain following terms :—
 - (a) Data binding controls
 - (b) Personalization
 - (c) Web Services
 - (d) Dialog boxes
6. Explain different types of Server Controls with suitable examples.
7.
 - (a) Give various String-handling functions.
 - (b) What is exception handling? Explain 'Structured Exception Handling' with example.
8.
 - (a) What is the difference between 'Sub Procedures' and 'Functions.
 - (b) What is user control? Explain process of creating user control.
9.
 - (a) Explain the life cycle of an ASP .net page.
 - (b) What is Cookies? How does the cookie work in ASP.net
10. Design a form in ASP.net to Search Details of Students enrolled in Nalanda Open University from database.

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Examination Programme, 2015
MCA, Part–III

<i>Date</i>	<i>Paper</i>	<i>Time</i>	<i>Examination Centre</i>
22.06.2015	Paper–XXIII (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, 12 th Floor, Biscomaun Tower, Patna
23.06.2015	Paper–XXVI (Practical)	12.00 Noon to 3.00 PM	
24.06.2015	Paper–XXX	12.00 Noon to 3.00 PM	

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXIII [Practical]
(MCSL-45 : UNIX AND ORACLE)
Annual Examination, 2015

Time : 3 Hours.

SET–I

Full Marks : 80

Answer all the Questions. All questions carry equal marks.

1. Write and execute the UNIX commands for the following :—
 - (i) To append the content of one file into another.
 - (ii) To print the last ten lines of a text file.
 - (iii) Create a file having name and corresponding roll number of 5 students.
 - (iv) Compare two files and show their differences.
 - (v) To count the number of lines and words of a file.
2. Write a shell script to check whether the given number is even or odd.
3. Write a shell script that prints table of 10.
4. VIDEO_LIB (**V-ID, V_NAME, YEAR_OF_RELEASE, NO_COPIES**)
CUSTOMER (**CUST_ID, NAME, ADDRESS, MEM_DATE**)
ISSUE (**VIDIO_ID, CUST_ID, OPERATION, TR_DATE**)
 - (i) Select appropriate data type for the fields. Insert 10 records with meaningful data.
 - (ii) List all the customers of the library who are its member from 2008
 - (iii) List the name of customers to whom video of specific ID is issued.
 - (iv) Create a procedure to identify where a customer of specific CUST_ID exist or not.
 - (v) Display appropriate message for result.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXIII [Practical]
(MCSL-45 : UNIX AND ORACLE)
Annual Examination, 2015

Time : 3 Hours.

SET–II

Full Marks : 80

Answer all the Questions. All questions carry equal marks.

1. Write and execute the UNIX commands for the following :—
 - (i) To display the content of a given file.
 - (ii) To print the first ten lines of a text file.
 - (iii) Find the terminal numbers of the of the user logged in.
 - (iv) Compare two files and display the matching lines.
 - (v) To kill a process permanently.
2. Write a shell script to print the first 10 terms of a Fibonacci series.
3. Write a shell script to swap two numbers.
4. BOOK (**B-ID, B_NAME, AUTHOR, EDITION**)
MEMBER(**M_ID, NAME, ADDRESS, AGE**)
ISSUE (**B_ID, M_ID, ISSUE_DATE, RETURN_DATE**)
 - (i) Select appropriate data type for the fields. Insert 10 records with meaningful data.
 - (ii) List all the members of the library who are its member from 2014
 - (iii) List the name of members to whom book of specific ID is issued.
 - (iv) Display the list of books issued..
 - (v) List all the books of the given author.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXVI [Practical]

(MCSL-54 : Advanced Internet Technologies and Computer Graphics)
Annual Examination, 2015

Time : 3 Hours.

Full Marks : 80

Answer all the Questions. All questions carry equal marks.

SECTION 'A'

1. Write a Program using Servlet and JDBC for developing online application for displaying results of MCA Program. A student has to score 30 % in theory, practical and assignment to qualify the paper. Create appropriate databases.
2. Write a JSP Program, which displays a web page containing the name of the school, program being offered currently, number of students enrolled in each program, new programs to be offered, eligibility criteria for taking admission in each program.
3. Write a program using JDBC and JSP to display the names and addresses of all those MCA students who are working in Software Development Company.

SECTION 'B'

4. Write a program in C or C++ demonstrate Bresenham's Line generation algorithm?
5. Write a program in C or C++ to produce the sweep representation of a circle and hence produce a cylinder?

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XX [Practical]
[Data Structures, Networking, Dbms and Java Programming]
Annual Examination, 2015

Time : 3 Hours.

SET–I

Full Marks : 100

Answer all the Questions. All questions carry equal marks.

SECTION-A
(Data and File Structures)

1. Write and run a program in C that reverses a string using a stack. Use this program to reverse the phrase "HELLO HOW ARE YOU". You must implement stack operations as functions.
2. Write and run a program in C to implement circular queue.

SECTION-B
(Networking)

3. Write a shell script in LINUX / UNIX that accepts a text file as input and prints the last line as first line and so on to the standard output.

SECTION-C
(DBMS)

4. Consider the following relations for a study centre :—
Student (Enrolment No, st_name, st_telephone, prog_code)
Book-Adopted (course code, Book_ISBN)
Programme (prog_code, course code)

The student enrolls in a programme. A programme has fixed number of courses and each course can adopt a book. Perform the following tasks for the centre :—
Create the tables identifying keys, data types and constraints, if any. Enter about 3-5 sets of data in each table.

Write and the following queries using SQL :—

- (a) List all the courses that a student, whose enrolment number is given, will have to take.
- (b) List those books that have been used for more than one course.
- (c) Find the number of courses a student has to do for each programme.
- (d) Find the student who has the same telephone number as that of student whose enrolment number in "E001".

SECTION-D
(Java Programming)

5. Write a program in Java to create an Applet that accepts diameter of a circle as input and draws the circle in red colour. Write the appropriate main method to demonstrate the use of this class.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XX [Practical]
[Data Structures, Networking, Dbms and Java Programming]
Annual Examination, 2015

Time : 3 Hours.

SET–II

Full Marks : 100

Answer all the Questions. All questions carry equal marks.

SECTION-A
(Data and File Structures)

1. Write a program in C language, having appropriate functions, to implement a doubly linked list.
2. Write a program in C that evaluated the postfix expression $65+8*5-32^{\wedge}$ using a stack.

SECTION-B
(Networking)

3. Perform the following tasks :—
 - (a) What is IP Address.
 - (b) Add two users in a group and set their password.
 - (c) Remove the user from the group.

SECTION-C
(DBMS)

4. Consider the following relations for an Airlines :—
Airplane (AirplaneID, Total_no_seats, Airplane_type)
Seat-Booking (CustomerID, AirplaneID, Date_of_flight)
Customer (CustomerID, cust_name, cust_phone)
Create the tables with keys, data types and constraints, if any. Enter about 3-5 sets of data.
Write and run the following queries using SQL :—
 - (a) List all the customer whose name starts with "S".
 - (b) Find the number of bookings for a plane "A005" for the date 05 March 2015.
 - (c) List the cust_name and cust_phone of the customers who have booked for the date 15.05.2015 on any plane.

SECTION-D
(Java Programming)

5. Write and run a program in JAVA to implement multiple inheritance. Create a constructor for the class. Write appropriate main () method to demonstrate the methods of the class.

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