NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-I

PAPER–I [New]

(Problem Solving Using C)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Discuss the features of an algorithm. When an algorithm is said to be efficient? Write an algorithm for generating the series of even natural numbers.
2. What is a flowchart? Discuss the symbols used in drawing a flowchart. Draw a flowchart to find the largest of three numbers.
3. Describe the basic syntax rules for C Program? What are tokens in C language?
4. Differentiate between constant and variables in C language. Give examples to explain the concept. Give the rules for naming the variables in C.
5. Explain Type conversion in C with an example. Discuss the difference between Type conversion and Type casting in C with an example.
6. Explain types of control statements and looping statements in C language with examples.
7. Explain with examples all the built-in string functions of C language.
8. Define an array. Write a program to sort a set of names stored in an array.
9. Differentiate between iteration and recursion giving an appropriate example for each. Explain call-by-value and call-by-reference concept in C.
10. What are pointers in C? Discuss the concept of Arrays of pointer in C with an example.

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Examination Programme, 2018

MCA, Part-I (New Batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.05.2018	Paper–IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper-VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper-VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna

नोट : जिन पत्रों में प्रायोगिक कार्य (Practical) सन्निहित है, उन पत्रों के प्रायोगिक परीक्षा की तिथि एवं समय की घोषणा दिनांक 22.05.2018 को की जाएगी ।

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER–I [Old]
(Problem Solving and Programming)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. What is an algorithm? Write an algorithm to generate a series of odd numbers. Discuss the efficiency of the algorithm.
2. Explain with examples different types of relational operators used in "C"?
3. List and explain various control constructs in "C" language with an example for each type.
4. What is a storage class in "C"? Explain by giving examples.
5. What is a flowchart? Describe the components of a flowchart. Draw a flowchart and write the program in 'C' to calculate the factorial of a given number inputted through the keyboard.
6. What is an array? How it is different from pointer? Explain both the concepts with an example.
7. How pointer can be used to pass an entire array to a function in C ? Explain with the help of an example.
8. Write a program of your own, using functions and show how call-by-value and call by reference can be implemented.
9. Describe different Format specifiers and Escape sequence along with their usage by giving examples.
10. Write short notes on the following :–
    (a) Continue statement.
    (b) Break statement
    (c) Variables in C.
    (d) UNION in C.

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Examination Programme, 2018
MCA, Part-I (Old batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.05.2018	Paper–IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper–VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–VI (Practical)	10.00 AM to 1.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER–II [New]
(Computer Organization)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. (a) Convert the following :—
   (i) $(11011011)_2 = (\ )_{10}$
   (ii) $(4426)_8 = (\ )_{16}$
   (iii) $(101001011100110)_2 = (\ )_{16}$
   (iv) $(ABC2E)_{16} = (\ )_8$
   (b) Explain the binary addition and subtraction with an example.
2. Draw a combinational circuit using AND, OR and NOT gate such that for every four bit even input the output is zero.
3. Simplify the following using Karnaugh's map in terms of SOP and draw the circuit for the output expression: $F(A, B, C, D) = \sum(1, 4, 6, 8, 10, 12, 15)$
4. Discus NAND, NOR and XOR gates with their truth tables and circuit diagrams. Why NAND and NOR gate called universal gate?
5. Differentiate between sequential circuits and combinational circuits. Give examples of these circuits with their circuit diagram.
6. Design an 8x1 multiplexer. Give its circuit diagram and its truth table. Discuss application of multiplexer.
7. What is memory in computers? Discuss different types of memories used in Computers.
8. Describe the basic structure of a CPU. Explain different types of general registers in a found in processors.
9. Write an assembly language program to add two numbers and display their results.
10. Write short notes on the following :—
    (a) Micro operations
    (b) Control unit
    (c) ALU
    (d) Segment registers

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Examination Programme, 2018
MCA, Part-I (New Batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.05.2018	Paper–IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper-VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper-VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna

नोट : जिन पत्रों में प्रायोगिक कार्य (Practical) सन्निहित है, उन पत्रों के प्रायोगिक परीक्षा की तिथि एवं समय की घोषणा दिनांक 22.05.2018 को की जाएगी ।

NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-I

PAPER–II [Old]

(Computer Organization and Assembly Language Programming)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define Binary Number system. Explain with examples how binary operations are done using one complement and two complement method.
2. Discus NAND, NOR and XOR gates with their truth tables and circuit diagrams. Why NAND and NOR gate called universal gate?
3. Draw a combinational circuit using AND, OR and NOT gate such that for every four bit even input the output is zero.
4. What are flip-flops? Explain the working of master and slave flip flop with circuit diagram.
5. Simplify and draw a circuit diagram for the following Boolean function in SOP form using K-Map, :—
   $F(A, B, C, D) = \Sigma(0, 1, 4, 6, 7,10,12,15)$
6. What is the function of a counters? Explain different types of counters with circuit diagram.
7. What is memory in computers? Discuss different types of memories used in Computers.
8. What is the difference between hardwired control and micro-program control? What are their advantages and disadvantages?
9. Write an Assembly Language program to add three numbers and display its result. Write explanation for each step.
10. Write short notes on the following :—
    (i) T-flip flop
    (ii) D-flip flop
    (iii) Addressing modes
    (iv) Assembler.

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Examination Programme, 2018

MCA, Part-I (Old batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.05.2018	Paper–IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper–VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–VI (Practical)	10.00 AM to 1.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER–III [New]
(Discrete Mathematics)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define the tautology and prove that $\sim p \vee (p \vee q)$ is a tautology.
2. Use mathematical induction to prove that $n^3 + (n+1)^3 + (n+2)^3$ is divisible by 9 for $n \geq 1$.
3. Define the logic circuit and also explain the OR gate and AND gate.
4. Define the following :—
   (a) Infinite Set (b) Set of Sets
   (c) Proper Subsets (d) Universal Set
5. If A = {1, 2, 3, 4} and B = {2, 4, 5, 6} then find
   (a) $(A \cap B) \times (A - B)$
   (b) $A \times (A - B)$
   (c) $(A \Delta B) \times (A \cap B)$
6. If $10P_{n-1} : 11P_{n-2} = 30 : 11$ then find the value of n.
7. In how many ways a committee of 5 persons can be formed out of 7 Indians and 4 Pakistani. When the committee contains
   (a) All Indians (b) At least two Pakistani
   (c) At least two Indians and two Pakistani (d) Not more than two Pakistani
8. If the three consecutive coefficients in the expansion of $(1+x)^n$ are 462, 330 and 165. Find n.
9. What is the probability that a number between 1 and 10000 is divisible by neither 2, 3, 5 nor 7 ?
10. (a) Find the stirling number of S_5^3.
    (b) How many functions are there from an eight element set onto a four elements ?

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Examination Programme, 2018
MCA, Part-I (New Batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
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16.05.2018	Paper–VI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper-VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper-VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna

नोट : जिन पत्रों में प्रायोगिक कार्य (Practical) सन्निहित है, उन पत्रों के प्रायोगिक परीक्षा की तिथि एवं समय की घोषणा दिनांक 22.05.2018 को की जाएगी ।

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER–III [Old]
(Discrete Mathematics)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define the tautology and prove that $\sim p \vee (p \vee q)$ is a tautology.
2. Use mathematical induction to prove that $n^3 + (n+1)^3 + (n+2)^3$ is divisible by 9 for $n \geq 1$.
3. Define the logic circuit and also explain the OR gate and AND gate.
4. Define the following :—
   (a) Infinite Set (b) Set of Sets
   (c) Proper Subsets (d) Universal Set
5. If A = {1, 2, 3, 4} and B = {2, 4, 5, 6} then find
   (a) $(A \cap B) \times (A - B)$
   (b) $A \times (A - B)$
   (c) $(A \Delta B) \times (A \cap B)$
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   (a) All Indians (b) At least two Pakistani
   (c) At least two Indians and two Pakistani (d) Not more than two Pakistani
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10. (a) Find the stirling number of S_5^3.
    (b) How many functions are there from an eight element set onto a four elements ?

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Examination Programme, 2018
MCA, Part-I (Old batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
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14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper–VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–VI (Practical)	10.00 AM to 1.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY

AD-2017

Master of Computer Application (MCA), Part-I

PAPER–IV [New]

(Communication Skills)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer all Questions.

1. Read the following passage and answer the questions given below :—

All conversation consist of speaking and listening. We engage in these activities so often that we do them without giving much conscious thought of how we do them. In its simplest form, speaking is putting ideas into words. It is almost always accompanied by non-verbal behaviour that supplements, contradicts and reinforces the verbal message. Talking effectively in a typical organizational setting requires well developed language skills. People tend to judge one another's abilities by the way they talk. In addition to a well-developed vocabulary and confidence is using standard English, being good at talking, whether in informal hallway conversations or in more formal settings, requires sensitivity to the pace, tone and pitch of oral delivery as well as to the non verbal behaviours of the listener or listeners.

(a) What does conversation comprise ? 5

(b) What are types of conversation ? 5

(c) How do people judge one's abilities ? 5

(d) Say whether the following statements are true or false :– 5

(i) Is conversation comprised of only speaking ?

(ii) Speaking is putting ideas into words.

(iii) Is conversation accompanied by non-verbal behaviour ?

(iv) People evaluate one another's abilities by talk.

(v) Non-verbal behaviour reinforce the verbal message.

2. Define communication and highlights its importance. 10

3. What is horizontal communication ? 10

4. What are advantages and limitations of written communication ? 10

5. What function does Business correspondence serve in legal situations ? 10

6. Write a note on advantage and disadvantages of Multimedia. 10

7. Why is it important to produce effective documents in a business context ? 10

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Examination Programme, 2018

MCA, Part-I (New Batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.05.2018	Paper–IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper-VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper-VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna

नोट : जिन पत्रों में प्रायोगिक कार्य (Practical) सन्निहित है, उन पत्रों के प्रायोगिक परीक्षा की तिथि एवं समय की घोषणा दिनांक 22.05.2018 को की जाएगी ।

NALANDA OPEN UNIVERSITY

AD-2016

Master of Computer Application (MCA), Part-I

PAPER–IV [New]

(Communication Skills)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer all Questions.

1. Read the following passage and answer the questions given below :—

All conversation consist of speaking and listening. We engage in these activities so often that we do them without giving much conscious thought of how we do them. In its simplest form, speaking is putting ideas into words. It is almost always accompanied by non-verbal behaviour that supplements, contradicts and reinforces the verbal message. Talking effectively in a typical organizational setting requires well developed language skills. People tend to judge one another's abilities by the way they talk. In addition to a well-developed vocabulary and confidence is using standard English, being good at talking, whether in informal hallway conversations or in more formal settings, requires sensitivity to the pace, tone and pitch of oral delivery as well as to the non verbal behaviours of the listener or listeners.

(a) What does conversation comprise ? 5

(b) What are types of conversation ? 5

(c) How do people judge one's abilities ? 5

(d) Say whether the following statements are true or false :– 5

(i) Is conversation comprised of only speaking ?

(ii) Speaking is putting ideas into words.

(iii) Is conversation accompanied by non-verbal behaviour ?

(iv) People evaluate one another's abilities by talk.

(v) Non-verbal behaviour reinforce the verbal message.

2. What are communication barriers ? 10

3. How is communication defined ? What are the various dimensions brought out by different definitions ? 10

4. What do you understand by Teleconferencing ? 10

5. What functions and objectives CVS fulfill ? 10

6. Discuss the principles of effective speech. 10

7. Discuss the essentials of good report writing. 10

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Examination Programme, 2018

MCA, Part-I (New Batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.05.2018	Paper–IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper-VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper-VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna

नोट : जिन पत्रों में प्रायोगिक कार्य (Practical) सन्निहित है, उन पत्रों के प्रायोगिक परीक्षा की तिथि एवं समय की घोषणा दिनांक 22.05.2018 को की जाएगी ।

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER–IV [Old]
(System Analysis and Design)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Draw Data Flow Diagram and develop SRS for School management system..
2. What are the objectives of preliminary investigation? List and explain the methods to gather the data during the preliminary investigation.
3. Explain various criteria and specifications to be considered while designing forms and Reports. Give an example of a structure chart and explain it.
4. Explain the necessary consideration and conditions in selecting the data storage media for a S/W project.
5. Explain the Indexed - file organization method. List the advantages and disadvantages in comparison with the sequential and random methods.
6. Explain the following categories of project documentation :—
   (i) Operations Documentation.
   (ii) User Documentation.
7. What are the security issues in a computer system? How does an organization prevent its database from security concerns ? Illustrate with an example.
8. Explain the Information support and nature 8 of management for the following systems :—
   (i) Office Automation Systems
   (ii) Transaction processing systems.
9. Why is maintenance required in software? Explain various issues involved in software maintenance, with appropriate examples.
10. Write short notes on the following :—
    (i) Feasibility Study
    (ii) Testing
    (iii) Fact finding Techniques
    (iv) Decision Trees.

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Examination Programme, 2018
MCA, Part-I (Old batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.05.2018	Paper–IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper–VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
24.05.2018	Paper–X	8.00 AM to 11.00 AM	Nalanda Open University, Patna
25.05.2018	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–V [New]
(Systems Analysis and Design)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. What is a System? Discuss different types of system with examples.
2. Draw Data Flow Diagram and develop SRS for Admission Management System of a college.
3. Define information system. Explain different types of information systems and give examples for each type.
4. Describe the phases of System Development Life Cycle (SDLC) in detail.
5. Who is a System Analyst? Discuss the role and responsibility of a system Analyst.
6. Why documentation is important in Software development? Explain at least two types of documentation reports prepared during software development.
7. When is Fact Finding Technique used during software development? Discuss various types of Fact Finding Techniques with examples.
8. What is Cost-Benefit analysis? Describe various types of costs and benefits involved during software development.
9. What is the role of database in software development? Discuss the advantages and disadvantages of Database design.
10. Write short notes on the following :—
    (i) Design principles
    (ii) Structure charts
    (iii) Data dictionary.
    (iv) Coupling

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Examination Programme, 2018
MCA, Part-I (New Batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.05.2018	Paper–IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper-VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper-VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna

नोट : जिन पत्रों में प्रायोगिक कार्य (Practical) सन्निहित है, उन पत्रों के प्रायोगिक परीक्षा की तिथि एवं समय की घोषणा दिनांक 22.05.2018 को की जाएगी ।

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER–V [Old]
(Communication Skill)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer all Questions.

1. Read the following passage and answer the questions given below :—

It is often said that we live in an age of communication characterized by speed, efficiency, and the ability to transcend physical or geographical limitations. But what does it mean to communicate? The dictionary definition is 'to exchange (thoughts) or make known (information or feelings) by speech, writing or other means, to transmit'. Communication is more than just messaging or swapping information. It involves not just words, but the use of all our senses. With face-to-face dialogue, our facial expression, tone, body language, ability to listen with patience, all contribute to the conveying of messages and information between people.

(a) What are the features of Communication ? 5
(b) What is the dictionary meaning of Communication ? 5
(c) Is Communication mere messing ? 5
(d) Say whether the following sentences are true or false :– 5
  (i) We live in an age of Communication.
  (ii) Communication is more than just messaging.
  (iii) Communication involves just the use of all our senses.
  (iv) Communication Conveys messages and information.
  (v) Communication has not the ability to transcend physical or geographical limitations.

2. Fill in the blanks in the following dialogue using the words in the box below :— 10
(after, moment, confirm, phone, back, dialled, calling, ring up, hold the line, see)

(a) Hello, who's that_____ ? (b) Just a _____, please.
(c) I'll_____if she's here. (d) I'll get the information you want; _____, please.
(e) Sorry, he's not____at the moment. (f) You asked me to_____when I was in town again.
(g) Sorry to have_____you. (h) Well, I can ring_____later if it's convenient.
(i) You can_____him any evening_____six o'clock.

3. Fill in the blanks choosing the most suitable phrasal verb from those given below :— 10
(Make changes in the form of the verbs where necessary)
blow up, ask around, bring up, chip in, get along, fall down.

(i) I _____but nobody had seen my wallet.
(ii) The racing car _____after it crashed into the fence.
(iii) His grandparents _____him_____ after the death of his parents.
(iv) If everyone_____ , we can get the kitchen painted by noon.
(v) I was surprised how well my new girlfriend and my sister_____

4. 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

5. Write a letter of application along with your Curriculum Vitae (CV) for the job of a Tele-caller in response to the following advertisement :— 10

Position : Tele-caller
Job-profile : Graduation Degree, Good Communication Skills, Knowledge of Company's profile and products i.e. HCL

6. Write an essay on different types of communication (250 words) 10

7. Write down the text of a group discussion among participants on the issue of 'Safety of Girls'. 10

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Revised Examination Programme, 2018

MCA, Part-I (Old batch)

Date	Papers	Time	Examination Centre
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper–VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
24.05.2018	**Paper–X**	**8.00 AM to 11.00 AM**	**Nalanda Open University, Patna**
25.05.2018	**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–VI [New]
(Operating System Concepts and Networking Management)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Discuss the features of MS-WINDOWS 10 operating system.
2. Describe Linux Operating System. List the differences between Linux and UNIX operating system.
3. What is Process Control Block (PCB)? What type of information is kept in a PCB? Explain.
4. Define file. Describe the various types of files supported by UNIX operating system.
5. What is data flow? Discuss different types of Data Flow.
6. What are the factors considered while choosing a transmission medium? Explain in detail.
7. What is internetworking? Explain the concept of tunneling and fragmentation in internetworking.
8. Explain the following terms with examples:
   (a) IP address
   (b) Domain Name System
9. Write the use of following LINUX commands and their complete syntax, with an example for each :—
   (a) cat
   (b) who am i
   (c) grep
   (d) pwd
   (e) chmod
10. Write the short notes on the following :—
    (a) Distributed Operating system
    (b) Network Operating System
    (c) Batch operating system
    (d) Real time operating system

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Examination Programme, 2018
MCA, Part-I (New Batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.05.2018	Paper–IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper-VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper-VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna

नोट : जिन पत्रों में प्रायोगिक कार्य (Practical) सन्निहित है, उन पत्रों के प्रायोगिक परीक्षा की तिथि एवं समय की घोषणा दिनांक 22.05.2018 को की जाएगी ।

NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-I

PAPER–VII [Old]

(Design and Analysis of Algorithm)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define algorithm? What are the different methodologies should involve in the design of an algorithm. Give an algorithm to display whether the given number is prime or not.
2. Describe some well-known asymptotic functions and Notations with examples for each type.
3. Sort the given list using merge sort:
   6, 18, 25, 12, 15, 11, 17, 8, 20.
   Also find the number of comparisons and assignment operations required.
4. Define Quick sort? Give an example to illustrate Quick sort algorithm.
5. Write algorithm for Huffman code and Best First Search. What is minimax principle?
6. Explain Principal of Optimality. Give an example of chained matrix multiplication.
7. Describe different types of minimum spanning trees with examples.
8. What is Regular expression? Give rules to define Regular Expressions. Write a regular expression over I= (a, b} to generate all string that end with three a's. Also draw a finite automata for the same.
9. Explain Chomsky classification of grammar. Draw a Push Down Automata (PDA) to accept a string which is a palindrome in {a, b}.
10. Explain the following concepts :—
    (a) NP Hard
    (b) Binary Search
    (c) Undecidable problems.

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Revised Examination Programme, 2018

MCA, Part-I (Old batch)

Date	Papers	Time	Examination Centre
16.05.2018	Paper–VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper–VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
24.05.2018	**Paper–X**	**8.00 AM to 11.00 AM**	**Nalanda Open University, Patna**
25.05.2018	**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–VII [New]
(Object Oriented Analysis and Design)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Describe the characteristics of Object Oriented systems.
2. Explain Object Oriented Analysis process in detail with the help of an example.
3. Discuss different types of inheritance with examples. What is abstraction?
4. What is an activity diagram? Where it is used? Draw an activity diagram for any real life example.
5. Draw a DFD for the Railway Reservation system. Assumptions can be made wherever necessary. Draw the DFD's till level - 2.
6. Describe coupling and cohesion. List some scenarios that illustrate varying degrees of functional cohesion.
7. Explain the terms Aggregation, Composition, Generalization and Specialization. Give examples for each.
8. Describe the relationship between sequence diagram and use case diagram. Give example to illustrate the difference.
9. Discuss different types of testing in OOAD. Also discuss the issues in Object Oriented Testing.
10. Write short notes on any two of the following :–
    (a) Class
    (b) Inheritance
    (c) Object
    (d) Association Links.

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Examination Programme, 2018
MCA, Part-I (New Batch)

Date	Papers	Time	Examination Centre
04.05.2018	Paper–I	8.00 AM to 11.00 AM	Nalanda Open University, Patna
08.05.2018	Paper–II	8.00 AM to 11.00 AM	Nalanda Open University, Patna
10.05.2018	Paper–III	8.00 AM to 11.00 AM	Nalanda Open University, Patna
12.05.2018	Paper–IV	8.00 AM to 11.00 AM	Nalanda Open University, Patna
14.05.2018	Paper–V	8.00 AM to 11.00 AM	Nalanda Open University, Patna
16.05.2018	Paper–VI	8.00 AM to 11.00 AM	Nalanda Open University, Patna
18.05.2018	Paper-VII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper-VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna

नोट : जिन पत्रों में प्रायोगिक कार्य (Practical) सन्निहित है, उन पत्रों के प्रायोगिक परीक्षा की तिथि एवं समय की घोषणा दिनांक 22.05.2018 को की जाएगी ।

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-I
PAPER–VIII [Old]
(Advanced Discrete Mathematics)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define the following with example :–
   (a) Null Graph (b) Pseudo Graph (c) Complete Graph

2. Using induction and either of the two recurrence relation for d_n, show that
   $d_n = n! \sum_{i=0}^{n} \frac{(-1)^i}{i!}$, $n \geq 1$.

3. Find the sum σ'_n of the first n-natural number using generating functions.

4. Prove the Binomial Identify :—
   $c(n, 1) + 3c(n, 3) + 5c(n, 5) + \ldots\ldots = n(2)^{n-1} = 2c(n, 2) + 4c(n, 4) + 6c(n, 6) + \ldots\ldots$

5. Solve the sixth order linear, homogeneous recurrence relation
   $u_n + u_{n-1} - 11u_{n-2} - 13u_{n-3} + 26u_{n-4} + 20u_{n-5} - 24u_{n-6} = 0$

6. Let *G* be a (p, q) graph each of whose vertices had 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. Construct a 5-regular graph on 10 vertices.

8. (a) For which values of m and n is $K_{m, n}$ a tree ?
   (b) For which values of n is k_n Eulerian ?

9. (a) Prove that the sum of the degree of all the vertices of any graph is even.
   (b) Prove that any graph can only have an even number of odd vertices.

10. (a) Find the number of regions in a tree, a cycle and k_4.
    (b) Is a subgraph of a planar graph planar ? Why ?

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Revised Examination Programme, 2018
MCA, Part-I (Old batch)

Date	Papers	Time	Examination Centre
18.05.2018	Paper–VIII	8.00 AM to 11.00 AM	Nalanda Open University, Patna
22.05.2018	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
24.05.2018	**Paper–X**	**8.00 AM to 11.00 AM**	**Nalanda Open University, Patna**
25.05.2018	**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–VIII [New]
(Data and File Structures)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define algorithm. Discuss different types of algorithm complexity.
2. What is an array? Write a program in C to find the sum of two matrices. .
3. Describe different types of linked list with an example of each type.
4. What is a circular queue? Write a C program to implement a circular queue. Discuss applications of a circular queue.
5. Define an AVL tree. What are the properties of an AVL tree? Draw an AVL tree for the following series :–
   2, 10, 6, 8, 16, 18, 20, 12, 15, 30.
6. Discuss bubble sort and quick sort with an example of each.
7. Define Binary Search Tree. Write a program in C to implement Binary Search Tree.
8. What is the concept of recursion? Write a program in C to explain recursion.
9. Explain the following terms with an example :–
   (i) Binary Tree
   (ii) Push() and Pop() operations in Stack.
10. Explain various types of file organization. Also discuss their advantages and disadvantages.

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Practical Examination Programme, 2018
MCA, Part-I

Practical Papers	***Enrollment No.***	***Date***	***Time***
Paper–I	170190001 to 170190100	23.05.2018	11.00 AM to 2.00 PM
	170190101 to 170190190 & All Old Batch Students	23.05.2018	2.30 PM to 5.00 PM
Paper–VI	170190001 to 170190100	24.05.2018	11.00 AM to 2.00 PM
	170190101 to 170190190 & All Old Batch Students	24.05.2018	2.30 PM to 5.00 PM
Paper-VIII	170190001 to 170190100	25.05.2018	11.00 AM to 2.00 PM
	170190101 to 170190190 & All Old Batch Students	25.05.2018	2.30 PM to 5.00 PM
Venue : School of Computer Education & Information Technology, Nalanda Open University, 12th Floor, Biscomaun Tower, Patna-800001			

NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-I

PAPER–IX [Old]

(Data Communication and Computer Networks)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define networking. Explain in detail the OSI model of networking?
2. Explain operation of Bridges in different LAN environment? Define broadcasting.
3. Describe various types of transmission modes with an example of each.
4. What happens in congestion avoidance and congestion detection phases of TCP's congestion control mechanism ? How does the size of congestion window increase in congestion avoidance phase?
5. Describe Interior Gateway Routing Protocol. Explain structure of Optical Fiber and also write its advantages and disadvantages.
6. What is count to infinity problem? Explain through an example.
7. Define Multiplexing. Explain TDM (synchronous and statistical both) in detail with the help of suitable diagram.
8. Explain different types of routing. Differentiate between Adaptive and Non Adaptive Routing.
9. Explain RSA algorithm with the help of an example. Explain encryption and decryption process in Triple DES.
10. Write short notes on the following :–
    (a) CRC
    (b) Guided and unguided media
    (c) ATM networks.

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Revised Examination Programme, 2018

MCA, Part-I (Old batch)

Date	Papers	Time	Examination Centre
22.05.2018	Paper–IX	8.00 AM to 11.00 AM	Nalanda Open University, Patna
24.05.2018	**Paper–X**	**8.00 AM to 11.00 AM**	**Nalanda Open University, Patna**
25.05.2018	**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–X [Old]
(Principles of Management and Information Systems)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Discuss about the emerging 'standards' for DBMS. Discuss in detail the role played by SQL for managing corporate data.
2. Discuss the need and evaluation procedure for MIS in any organization.
3. Explain the relationship among TPS, MIS, DSS and EIS in an organization. Explain the individual significances of DSS, TPS and MIS.
4. Describe the tools used for requirement analysis of software design and its management.
5. What is an organizational structure? Explain the basic principles used for designing an organizational structure.
6. What is Knowledge Capturing? Explain different stages of knowledge capturing with an example.
7. What is Customer Relationship Management (CRM)? How is CRM different from ERP? Explain.
8. What are evolutionary algorithms? Explain the different branches of evolutionary algorithms.
9. Why are management systems required? List any five management systems. Explain their organizational structures and the benefits.
10. Write short notes (in 120 words each) on the following :–
    (i) Knowledge Workers
    (ii) Social impact of Information Systems
    (iii) Wilds
    (iv) Ethics and Internet

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Revised Examination Programme, 2018

MCA, Part-I (Old batch)

Date	Papers	Time	Examination Centre
24.05.2018	**Paper–X**	**8.00 AM to 11.00 AM**	**Nalanda Open University, Patna**
25.05.2018	**Paper–VI (Practical)**	**12.00 Noon to 3.00 PM**	**Nalanda Open University, Patna**

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–IX [New]
(Internet Concepts and Web Design)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. What is IP Addressing? Why it used? Discuss various classes of IP Address with example.
2. Explain the concept of Domain name system. What is Address Resolution mechanism?
3. Differentiate between Static web page and dynamic web page. Give an example of Dynamic website.
4. What is a browser? Explain Web Browser architecture with a diagram.
5. Discuss the architecture of Proxy Server?
6. Describe various attributes of HTML with examples of each.
7. Explain the following terms :—
   (i) GIF images
   (ii) JPEG images
   (iii) PNG images
8. Explain the concept of frames in Web designing. What is Frame targeting and Floating frame? Discuss.
9. Describe the operators of JavaScript with examples of each
10. Write short notes on the following :—
    (i) MODEMS
    (ii) Intranets
    (iii) Extranets
    (iv) Email.

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–IX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–X	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
06.06.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
08.06.2018	Paper-XV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
12.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
13.06.2018	Paper-IX (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
14.06.2018	Paper–XIII (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	Paper–XIV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
19.06.2018	Paper-XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XII [Old]
(Object Oriented Analysis and Design)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Computer Science Department wants to schedule meetings. There may be different kinds of meetings as School Board Meeting, faculty meeting, print committee meeting and budget planning committee meetings. There is a list of members along with their addresses and other details about different meetings schedule of meeting needs booking of a conference room, fixing date and time and informing members through e-mail/ telephone. Members are also paid honorarium and transport allowances for attending meeting.
   Do the following tasks for the above system.
   (i) Draw a class diagram
   (ii) Draw an object diagram
   (iii) Draw a use case diagram
   (iv) Draw a generalization and association diagrams.
2. Differentiate between the following with examples:
   (a) Collaboration diagram and an interaction diagram.
   (b) Generalization and inheritance
3. Explain the concept of Conceptual schema and external schema with a proper example.
4. Define state charts. Explain the two strategies to implement it. Give some examples of state chart.
5. Draw a D.F.D. for "Railway Ticketing system". Assumptions can be made wherever necessary. Draw the DFD's till level -2.
6. What are the steps in constructing a functional model? Explain through an example.
7. What are the advantages of two way association? How do you implement association of objects?
8. With appropriate examples and diagrams for each, explain the following Modeling techniques.
   (i) Object Modeling
   (ii) Dynamic Modeling
9. Define the following terms :—
   (i) Abstract class
   (ii) Data Dictionary
10. With the help of an example, explain the Concurrency Identification concept for the real life objects.

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper-XVII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
06.06.2018	Paper-XVIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
08.06.2018	Paper-XIX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
13.06.2018	Paper-XI (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
14.06.2018	Paper–XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	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–X [New]
(Computer Graphics and Multimedia)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Discuss CAD and CAM processes. What is Photorealism?
2. Describe some input devices used in graphics.
3. Explain Digital Differential Analyzer Algorithm (DDA)? What are the drawbacks of DDA?
4. Describe Polygon filling technique with an example.
5. What is Co-ordinate Transformation? Discuss Affine Transformation in detail.
6. Describe various types of Graphic Standards. Draw the diagram of model for standardization of graphics environment.
7. Explain the following terms in reference to 2D graphics:
   (i) Translation
   (ii) Rotation
   (iii) Shearing
8. Differentiate between Parallel projection and Oblique projection with diagrams.
9. Discuss various types of shading techniques in 3D graphics.
10. Write short notes on the following :–
    (i) Raster scan.
    (ii) Application Programming Interface.
    (iii) Flood Fill.
    (iv) Boundary Fill.

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–IX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–X	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
06.06.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
08.06.2018	Paper-XV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
12.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
13.06.2018	Paper-IX (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
14.06.2018	Paper–XIII (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	Paper–XIV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
19.06.2018	Paper-XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II

PAPER–XIII [Old]

(Software Engineering)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Compare and contrast Waterfall Model with Spiral Model.
2. What is a DFD? Draw DFDs, up to secod level for a University Admission System.
3. What are the different architectural styles applied for software development? Explain with diagrams.
4. How boundary conditions are tested in black box testing? Explain with example.
5. List and explain different categories of tools that can be used for testing.
6. What is software review? Explain in detail with an example.
7. Discuss the objectives of Software Change Management process.
8. Define SRS. Write the structure of SRS.
9. What is scheduling? Explain GANTT and PERT charts.
10. Write short notes on the following :—
    (a) CASE tools
    (b) Software Quality Assurance

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Examination Programme, 2018

MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper-XVII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
06.06.2018	Paper-XVIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
08.06.2018	Paper-XIX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
13.06.2018	Paper-XI (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
14.06.2018	Paper–XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	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–XI [New]
(Software Engineering)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. What is a software process? Describe the umbrella activities of Software engineering process.
2. Explain System Development Life Cycle in detail.
3. Differentiate between RAD model and Spiral model of Software engineering.
4. What is system modeling? Explain UML class diagram with an example.
5. Why estimations of software project required? Discuss the factors included in project estimation.
6. Describe various types of Requirements analyzed during Software Engineering.
7. What is fact finding technique? Explain various types of fact finding techniques with an example.
8. What are the key principles while designing an architecture of a software? Discuss.
9. What are the basic building blocks of coding? Explain with examples.
10. Write short notes on the following :—
    (i) COCOMO model
    (ii) Gantt chart
    (iii) PERT chart
    (iv) Risk Management

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–IX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–X	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
06.06.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
08.06.2018	Paper-XV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
12.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
13.06.2018	Paper-IX (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
14.06.2018	Paper–XIII (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	Paper–XIV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
19.06.2018	Paper-XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XIV [Old]
(Accounting & Financial Management)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define Accounting and throw light on its scope.
2. What is working capital ? Describe its sources.
3. Define financial management and describe its features.
4. What is Final Account ? What are its objectives ? Describe the components of Final Account.
5. What are the reasons for holding inventory ? Explain the objectives of inventory management.
6. What is fund flow statement ? How is it prepared ? Give an example.
7. What is balance sheet ? What are its objectives and importance. Give an example of Balance Sheet.
8. From the following Balance Sheets of Sen & Co. prepare Cash Flow Statement for the year ended 31st December 2017.

Liabilities & Capital	2016 Rs.	2017 Rs.	Assets	2016 Rs.	2017 Rs.
Creditors	40,000	44,000	Cash	16,000	44,000
Outstanding Expenses	10,000	2,000	Debtors	30,000	22,000
Loan	20,000	10,000	Bills Receivable	10,000	—
Capital	2,16,000	3,36,000	Stock	40,000	56,000
			Fixed Assets	1,90,000	2,70,000
	2,86,000	**3,92,000**		**2,86,000**	**3,92,000**

During the year the proprietor introduced Rs. 40,000 as additional capital. The net profit for the year after charging Rs. 10,000 as depreciation on fixed assets, were Rs. 1,00,000.

9. 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.
10. Write notes on any ***Two*** of the following :—
    (a) Cash from operations. (b) Need for holding cash.
    (c) Liberal credit policy.

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper-XVII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
06.06.2018	Paper-XVIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
08.06.2018	Paper-XIX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
13.06.2018	Paper-XI (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
14.06.2018	Paper–XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	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–XII [New]
(Management and Information System)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. What is data and information system? Discuss the attributes of Information system.
2. Explain various types of Information Systems with the help of an example.
3. Explain information system architecture in detail.
4. What are the types of organizations at macro level? Describe the features of each of these.
5. Explain the concept of Vertical and Horizontal Organizations.
6. Define system. Explain different types of systems.
7. Discuss the factors that contribute to the success of MIS.
8. What are the benefits and challenges of Enterprise systems? Discuss.
9. Define DBMS. Discuss different types of DBMS.
10. Write short notes on the following :—
    (i) Data Mining.
    (ii) Artificial Intelligence.

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–IX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–X	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
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18.06.2018	Paper–XIV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
19.06.2018	Paper-XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XVI [Old]
(Data and File Structures)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. What is a data structure? Write an algorithms for the insertion and deletion operations in linked list
2. Explain queue data structure with all its operation. Also, give examples of queue operations.
3. Explain the difference between searching and sorting. Give one algorithm for each.
4. What is merge sort? Give an example of merge sort.
5. What is a binary tree? Write a program in C to implement all the operations on a binary tree.
6. Explain AVL tree. Draw an AVL tree for the following sequence.
   20, 15, 30, 77, 10, 92, 12, 33, 45, 66.
7. What is an array? Why it is used? Write a program to multiply two matrix.
8. What is a polynomial? Write a C program to add two polynomials using a single variable.
9. Explain the following with an example :—
   (a) Hash function.
   (b) Sparse Matrix.
10. Explain garbage collection and compaction methods with an example.

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
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18.06.2018	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 [New]
(Operating System)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define an Operating System. Describe various types of Operating system.
2. What are system calls? Discuss some system call related to process control, File management, Device management and Communication.
3. What are the states in which a process can exist? Explain with help of a diagram.
4. Differentiate between user level threads and Kernel Level thread.
5. Explain various types of schedulers. Also discuss the scheduling criteria.
6. Discuss various schemes of interprocess communication. What is mutual exclusion?
7. What are monitors? Why are they required? Differentiate between monitors and semaphores.
8. What is deadlock? Discuss the conditions due to which deadlock may arise.
9. What is paging? Explain hardware support for paging.
10. Write short notes on the following :–
    (i) Thrashing.
    (ii) Virtual memory.

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–IX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–X	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
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18.06.2018	Paper–XIV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
19.06.2018	Paper-XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XVII [Old]
(Operating System Concepts and Networking Management)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define a Real Time Operating System. Give any two examples of a real time operating system. What are the most important issues in the design of a real time operating system?
2. What is Token Ring? How does it work? Differentiate between token ring and token bus.
3. What is meant by Trust Relationship? Discuss the role of Kerberos and Domain controller in maintaining trust relationships.
4. List and explain the file systems supported by Linux operating system. Also, write the security features provided by Linux in each file system.
5. Differentiate between gateways, routers and switches. Explain the layers of OSI model on which they are used.
6. Write the Linux/Unix commands for the following :
   (i) Show the users logged in on the network.
   (ii) List the files having more than one digit in the name.
   (iii) Tell the system to run the process continuously even if the user logs out.
   (iv) To allow a user to communicate with another user, logged in by splitting the screen and providing two-way communication.
   (v) To kill a process after one hour.
7. Explain the concept of pipes, filters and redirection in Linux operating system. Give an example for each.
8. What is X-Window system? Explain the X-Window library and X-Toolkit.
9. Explain the characteristics of multiprocessor operating system.
10. Write short notes on the following :–
    (i) LAN Topologies.
    (ii) Optical Fibers.
    (iii) Network Monitoring Tools.
    (iv) Active Directory in Windows 2000.

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper-XVII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
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14.06.2018	Paper–XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	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–XIV [New]
(Database Management System)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. What is a data model? Describe different types of data model.
2. Describe the architecture of DBMS with a diagram.
3. Discuss the twelve Codd's rule defined for relational model of database.
4. Write at least ten queries in SQL with their complete syntax and meaning.
5. What is Normalization? Explain second normal form and third normal form with an example.
6. Define cost estimation. What are different components that effect cost optimization of a query?
7. What is a transaction? Discuss the ACID properties of a transaction.
8. Discuss the different granularity levels used for locking.
9. Differentiate between primary and secondary storage. How multilevel indexing improve the efficiency of searching an index file?
10. Write short notes on the following :–
    (i) Specialization.
    (ii) Generalization.

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–IX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–X	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
06.06.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
08.06.2018	Paper-XV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
12.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
13.06.2018	Paper-IX (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
14.06.2018	Paper–XIII (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	Paper–XIV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
19.06.2018	Paper-XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XVIII [Old]
(Introduction to Database Management Systems)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Draw an ER diagram for the situation given below :–
   "In a department many employees are working on many projects, which are under control of the manager of the department. The manager of the department also holds the responsibility of the welfare of the employees."
   Make suitable choices of the attributes for the entities, identified by you for your ER diagram. Transform your ER diagram into a Relational Database.

2. Why do we do normalization of databases? Discuss synthesis and decomposition approaches of normalization. Give one example for each approach.

3. Explain three level architecture of DBMS. What are the different types of data independence involved at different levels?

4. Discuss the following with examples :–
   (i) Lossless Decomposition
   (ii) Dependency Preserving Decomposition

5. What is the need of indices in a database system? Mention the categories of indices available in a DBMS. Which data structure is suitable for creating indices and why?

6. Differentiate between the following :–
   (i) DBMS and File base systems
   (ii) DDBMS and Centralized DBMS

7. Explain Serial schedule and Serializable schedule with a suitable example.

8. Explain the advantages and disadvantages of DBMS. Also discuss some applications of DBMS.

9. Describe the utility of data replication in distributed DBMS. Briefly discuss the concept of complete and selective replication.

10. Write short notes on the following :–
    (i) Write Ahead Log Protocol.
    (ii) Deadlock Prevention Protocols.

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper-XVII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
06.06.2018	Paper-XVIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
08.06.2018	Paper-XIX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
13.06.2018	Paper-XI (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
14.06.2018	Paper–XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	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–XV [New]

(Object Oriented Programming Using Java)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Explain in detail the features of Object Oriented Programming.
2. What are the different Object Oriented paradigms? Explain them in detail.
3. Define inheritance. Explain different types of inheritance with examples.
4. What are variables? Explain primitive data types in Java. Write a simple Java program to print your message.
5. Explain constructors, types of constructors and how constructors are overloaded in java.
6. Compare and contrast overloading and overriding methods in Java with the help of an example.
7. Explain different types of access specifiers in Java.
8. Write a program to implement multiple inheritance in Java through interface concepts.
9. What is Exception? Explain the process of exception handling in Java.
10. Write short notes on the following :–
    (i) Threads in Java
    (ii) Byte Stream Classes

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Examination Programme, 2018

MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–IX	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–X	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
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06.06.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
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12.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
13.06.2018	Paper-IX (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
14.06.2018	Paper–XIII (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	Paper–XIV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
19.06.2018	Paper-XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-II
PAPER–XIX [Old]
(Object Oriented Technologies and Java Programming)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. What is multithreading ? What are the advantages of multithreading ? What is a main thread in the context of Java ?
2. Explain how an event is handled in Java with the help of an example program. Write a Java program that accepts the input from the keyboard and writes it to a text file.
3. What is a Package in Java ? How are they related to CLASSPATH ? Explain with the help of an example program.
4. What is an Interface in Java ? How are they different from ABSTRACT classes ? Write a program in Java to implement Interface.
5. How is Character class in Java different to String class ? Explain how you will compile two objects of String class. Also write a program that converts lowercase characters to uppercase characters of a string.
6. What Is the purpose of the following Stream classes ?
   (i) Print Stream (ii) Random Access File
   (iii) Byte Array lnput Stream (iv) Filter Output Stream
7. Explain the following with the help of a diagram/example/program, if needed :
   (i) Paint( ) Method of Applet (ii) HTML Applet Tag
   (iii) Button (iv) Checkbox Group
8. Explain with the help of an example program, how interthread communication is performed in Java using wait( ) and notify( ) and other methods.
9. t the salient features of object oriented programming approach that distinguishes it from the procedural programming.
10. Explain the following with the help of an example of each :–
    (i) Dynamic Initialization (ii) Operator Precedence
    (iii) Switch Statement (iv) Array Initialization

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Examination Programme, 2018
MCA, Part-II (Old Batch)

Date	Papers	Time	Examination Centre
25.05.2018	Paper–XII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
29.05.2018	Paper–XIII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
31.05.2018	Paper–XIV	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
02.06.2018	Paper-XVI	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
04.06.2018	Paper-XVII	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
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14.06.2018	Paper–XV (Practical)	12.00 Noon to 3.00 PM	Nalanda Open University, Patna
18.06.2018	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–XVI [New]
(Computer Networking)
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. What is networking? Describe OSI model of networking.
2. Explain the difference between Client/server and peer to peer architecture with diagram.
3. What are the components of data communication? Explain various guided and unguided media used for communication.
4. What is analog-to-analog modulation? Explain Amplitude, frequency and phase modulation with diagram.
5. Why do you need encoding of data before sending over a medium? Discuss the four possible encoding techniques with examples.
6. Compare and contrast between packet switching, circuit switching and message switching.
7. Describe the following :—
   (i) Stop-and-wait protocol.
   (ii) Sliding window protocol.
8. Explain various channel allocation methods and their advantages.
9. Discuss different types of internetwork addresses? Differentiate between hierarchical address and flat address.
10. Write short notes on the following :—
    (i) Bluetooth
    (ii) Network topology

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Examination Programme, 2018
MCA, Part-II (New Batch)

Date	Papers	Time	Examination Centre
13.06.2018	Paper-IX (Practical)	12.00 Noon to 3.00 PM	School of Computer Education & Information Technology, Nalanda Open University, 12th Floor, Biscomaun Tower, Patna-800001
14.06.2018	Paper–XIII (Practical)	12.00 Noon to 3.00 PM	
18.06.2018	Paper–XIV (Practical)	12.00 Noon to 3.00 PM	
19.06.2018	Paper-XV (Practical)	12.00 Noon to 3.00 PM	

NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [New]

PAPER–IX [Practical]

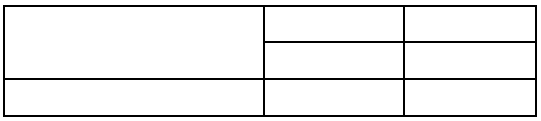
(Internet Concepts and Web Design)

Annual Examination, 2018

Time : 3 Hours. **SET–I** **Full Marks : 100**

Answer all the Questions. All questions carry equal marks.

1. Create an HTML document with the following specification :–
   - Font size 14
   - Font style – Calibri
   - Text color – Blue.
2. Create the page with frames as shown below :–



3. Write a JavaScript program to calculate the factorial of a number.

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [New]

PAPER–IX [Practical]

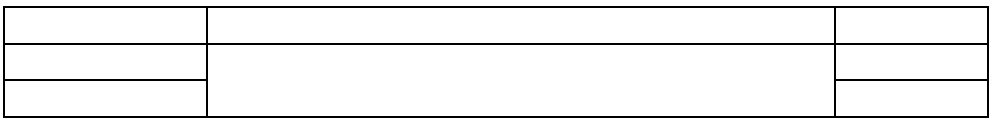
(Internet Concepts and Web Design)

Annual Examination, 2018

Time : 3 Hours. **SET–I** **Full Marks : 100**

Answer all the Questions. All questions carry equal marks.

1. Create an HTML document with the following specification :–
   - Font size 12
   - Font style – Time New Roman
   - Text color – Red.
2. Create the page with frames as shown below:



3. Write a JavaScript function that checks whether a given string is a palindrome or not.

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [Old]

PAPER–XI [Practical]

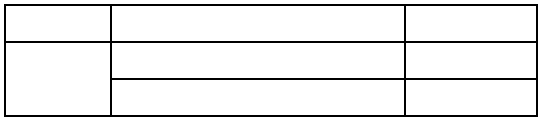
(MCSL-016 : Internet Concepts and Web Design)

Annual Examination, 2018

Time : 3 Hours. **SET–I** **Full Marks : 100**

Answer all the Questions. All questions carry equal marks.

1. Write a program using Java Script to create a web page having three image files inserted on it, which switch between one another as the mouse points over the image.
2. Write a program using Java script to display whether the given string is a palindrome or not.
3. Create the page with frames as shown below :–



4. Write a program using VB script to do the followings :–
   (a) Check the empty text box.
   (b) Generate even numbers from 1 to 100.

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [Old]

PAPER–XI [Practical]

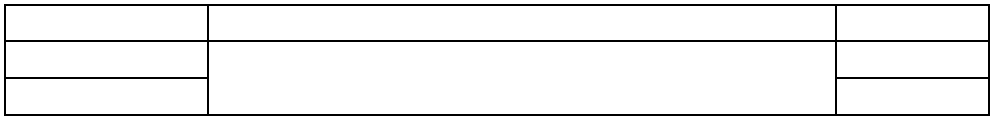
(MCSL-016 : Internet Concepts and Web Design)

Annual Examination, 2018

Time : 3 Hours. **SET–II** **Full Marks : 100**

Answer all the Questions. All questions carry equal marks.

1. 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.
2. Write a program in java script to find the factorial of the number entered from the keyboard.
3. Create the page with frames as shown below:



4. Write programs in VB script to :–
   (a) Create a calculator.
   (b) Generate a series of odd numbers from 1 to 100.

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [New]

PAPER–XIII [Practical]

(Operating System)

Annual Examination, 2018

Time : 2 Hours. **SET–I** **Full Marks : 20**

Answer all the Questions. All questions carry equal marks.

1. Write and execute the following UNIX commands :
   (a) To change to a new directory from the current directory.
   (b) To summarize the free space on disk device.
   (c) To remove the files with file name starting with b or B in the current directory.
   (d) To compare two files and show the differences.
   (e) To show the date and time.

2. Write a shell program, using "grep" to find the number of occurrences of a string "and" in a text file and display its count.

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [New]

PAPER–XIII [Practical]

(Operating System)

Annual Examination, 2018

Time : 2 Hours. **SET–II** **Full Marks : 20**

Answer all the Questions. All questions carry equal marks.

1. Write and execute the following commands in UNIX :
   (a) To create another link to the existing file.
   (b) To find files on the drive that match specified criteria.
   (c) To show online documentation for a UNIX command.
   (d) To create a new directory.
   (e) To show disk space used by files or directories.

2. Write a shell program using "grep" command to do the following activities :
   (a) To select the lines from a file that have exactly three characters.
   (b) To select the lines from a file that end with a period (.).
   (c) To select all the lines that start with a lower case letter.

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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, 2018

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. Do the following for Railway Reservation System. Make necessary assumptions, if any.
   (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 activities for the description given in Section-A (Question 1)
   (a) Draw the DFDs at level – 0, 1 and 2.
   (b) Write Pseudo Code for at least two processes defined in level - 1 DFD.
   (c) Draw an E-R diagram and convert ER diagram into relational tables showing the integrity constraints.

SECTION-C (ACCOUNTANCY AND FINANCIAL MANAGEMENT)

3. Post the following transactions after creating a new company. Also, prepare the journal ledger and trial balance for the company.

January 2018	Transactions	Amount (INR)
01/01/2018	Started business with cash	100000
02/01/2018	Deposit in the Bank	10000
06/01/2018	Purchased goods for Cash	20000
10/01/2018	Purchased goods from M/s Kapoor on Credit	20000
14/01/2018	Sold goods to M/s Bhushan for Cash	50000
16/01/2018	Paid Cash to M/s Kapoor	10000
18/01/2018	Paid Rent	20000
22/01/2018	Paid salary	30000

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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, 2018

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. Do the following for University Admission system. You may make suitable assumptions about the system.
   (a) Draw a use case diagram
   (b) Define all the classes and draw a class diagram.
   (c) Draw the sequence and collaboration diagram. Make suitable assumptions, if any

SECTION-B (SOFTWARE ENGINEERING)

2. Perform the following activities for the description given in "Section-A" (question 1)
   (a) Draw the DFDs at level 0, 1 and 2.
   (b) Write pseudo code for at least two processes defined in Level 1 DFD
   (c) Draw an E-R diagram and convert ER diagram into relational tables showing the integrity constraints

SECTION-C (ACCOUNTANCY AND FINANCIAL MANAGEMENT)

3. Post the following transaction after creating a new company "New Software System". Also prepare the journal ledger and trial balance for the company:

April 2018	Transactions	Amount (INR)
01/04/2018	Started business with cash	200000
02/04/2018	Opened a new account in the Bank using Cash	100000
06/04/2018	Purchased 10 licenses of Operating system for sale on credit	25000
07/04/2018	Purchased office furniture on Cash	50000
10/04/2018	Sold 5 license on Cash	30000
14/04/2018	Paid the company from whom operating systems were purchased by Cash	25000
16/04/2018	Sold 2 more operating system to "A" on credit	10000
18/04/2018	Paid Rent	25000
22/04/2018	Received Cash from "A"	10000
25/04/2018	Paid Salary	50000

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [New]

PAPER–XIV [Practical]

(Database Management System)

Annual Examination, 2018

Time : 2 Hours. **SET–I** **Full Marks : 20**

Answer all the Questions. All questions carry equal marks.

1. Create the following tables with the fields given below :
   STU_DETAILS (ENO, SNAME, DOB, ADDR1, ADDR2, CITY, COUNTRY)
   MARK_DETAILS (ENO, MARKS1, MARKS2, MARKS3, TOTAL)

   Select an appropriate primary key. Input at least 10 meaningful records. Select appropriate data types for all the fields.

2. For the above tables designed in Q.1, answer the following queries using SQL:
   (a) To display the student name of the student who scored the highest TOTAL.
   (b) To display the MARKS1 of all the students.
   (c) To display the ENOs of all the students who scored >50 marks in MARKS2.
   (d) Alter the table MARK_DETAILS to add a column AVG with appropriate data type.
   (e) Using appropriate command drop the column COUNTRY from STU_DETAILS.

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [New]

PAPER–XIV [Practical]

(Database Management System)

Annual Examination, 2018

Time : 2 Hours. **SET–II** **Full Marks : 20**

Answer all the Questions. All questions carry equal marks.

1. Create the following tables with the fields given below :
   EMP (ENO, ENAME, DOB, ADDR1, ADDR2, CITY, DOJ, MOB_NO, DEPT_NO, SALARY)
   DEPT (DEPT_NO, DEPT_NAME, LOCATION)

   Select an appropriate primary key. Input at least 10 meaningful records. Select appropriate data types for all the fields.

2. For the above tables designed in Q.1, answer the following queries using SQL:
   (a) To display all the employees ENO, ENAME working in FINANCE_DEPT.
   (b) To display all the employees ENO whose salary is > 50,000 per month?
   (c) To display the location of HR_DEPT.
   (d) Display the difference of DOJ and till date (in months).
   (e) Alter the table EMP to add a column COUNTRY with an appropriate data type.

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [New]

PAPER–XV [Practical]

(Object Oriented Programming Using Java)

Annual Examination, 2018

Time : 2 Hours. **SET–I** **Full Marks : 20**

Answer all the Questions. All questions carry equal marks.

1. Write a program in Java to create single calculator using classes accepting the two integers value and operator with all methods to input, display, add, subtract, multiplication and division.

2. Write a program to implement multiple inheritance in Java.

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [New]

PAPER–XV [Practical]

(Object Oriented Programming Using Java)

Annual Examination, 2018

Time : 2 Hours. **SET–II** **Full Marks : 20**

Answer all the Questions. All questions carry equal marks.

1. Design a class to denote a Bank account. Include the following members:
   - Depositor's name
   - Account_number
   - Account_type(Savings/current)
   - Balance_amount

   Methods:
   - To read the account_number, Depositers_name, and account type.
   - To deposit an amount
   - To withdraw an amount
   - To show the balance.

   Make assumptions if necessary.

2. Write a program to implement contructors in Java.

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [Old]

PAPER–XX [Practical]

[Lab (for Data and File Structures, Networking and Java Programming)]

Annual Examination, 2018

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 a C program to create a Queue and perform all the operations on it.

SECTION-B (Operating System Concepts and Networking)

(Perform the practical on LINUX/ UNIX/Windows 2000. In case you do not have sufficient rights to perform a task, then write all the steps needed to perform that task.)

2. Write the syntax and the uses of each command:
   (a) cat (b) chmod (c) grep (d) pwd
3. Perform the following tasks:
   (a) Find the number of user currently logged in.
   (b) Compare two files.
   (c) Create a new user in UNIX which does not require password while logging-in.

SECTION-C (Java Programming)

4. Write a Java program to reverse a three digit number.

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-II [Old]

PAPER–XX [Practical]

[Lab (for Data and File Structures, Networking and Java Programming)]

Annual Examination, 2018

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 C program to create a circular queue and perform all the operations on it.

SECTION-B (Operating System Concepts and Networking)

(Perform the practical on LINUX/ UNIX/Windows 2000. In case you do not have sufficient rights to perform a task, then write all the steps needed to perform that task.)

2. Write the syntax and the uses of each command:
   (a) cd (b) head (c) kill (d) who
3. Perform the following tasks:
   (a) Change file or directory access permission.
   (b) Remove repeated lines in in a file.
   (c) Move the text file page wise.

SECTION-C (Java Programming)

4. Write a Java program to display whether the given number is prime or not.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXI
(MCS-041 : Operating Systems)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Why memory is important in computers? Explain the concept of virtual memory system.
2. Explain the booting process of windows 2000 operating system.
3. Explain any two security models for computer system.
4. Explain all types of multiprocessor Operating Systems. How is multiprocessing Operating system different from Batch operating system?
5. What is the difference between a loosely 10 coupled and tightly coupled system? Give suitable examples.
6. Obtain the total page fault using FIFO, LRIJ and OPT page replacement algorithm for the following sequence of pages. Consider total 3 frames in memory.
   1, 2, 3, 1, 4, 2, 5, 1, 3, 4, 5.
7. What is a Remote Procedure Call (RPC). How is it implemented? Explain.
8. Explain Multilevel, Acyclic graph and general graph directory structure.
9. Write at least eight commands in UNIX with their full syntax. What are the different kinds of file permissions in UNIX OS? Explain in brief.
10. Give short notes on the following :–
    (i) Deadlock
    (ii) Segmentation
    (iii) Distributed Operating system

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXII
(MCS-043 : Advanced Database Design)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Discuss classification as a tool in Data Mining. Describe the ID 3 algorithm for classifying data sets with a suitable example.
2. What is Data Dictionary? What is the significance of creating Data Dictionary in DBMS? Explain the statistics stored in the Data D.
3. What are views? What is the significance of views in DBMS? How are views managed in SQL? Explain with an example.
4. Explain any ***Two*** of the following :–
   (i) OLAP and its types
   (ii) Spatial Databases
   (iii) Dynamic SQL.
5. Discuss the following with suitable examples :–
   (i) UML Class Diagram
   (ii) Query Optimization
6. What do you mean by Multi-versioning? What are the various schemes available for multi-versioning? Describe any two schemes in detail.
7. Describe the phases of Query processing by using a block diagram. Discuss the process of Query optimization, by using suitable example.
8. Compare and contrast the following :–
   (i) Inclusion dependencies and Template dependencies
   (ii) Centralized 2PL and Distributed 2PL
   (iii) K-Means clustering and Nearest Neighbours clustering
9. What is multivalued dependency? How is 4 NF related to multivalued dependency? Is 4 NF decomposition dependency preserving? Justify your answer.
10. Write short notes on any ***Two*** of the following :–
    (i) Semantic Databases
    (ii) Temporal Databases
    (iii) Embedded SQL

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXIV
(MCS-51 : Advanced Internet Technologies)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Explain the underlying software architecture of EJB with the help of a diagram.
2. What is meant by XML parsing? Describe the parsers involved with XML.
3. Explain different phases of life cycle of a servlet with the help of a diagram.
4. Explain any two capabilities of including files and applets in JSP documents.
5. How can two servlets share information using the system property list? In an inventory application, one servlet stores the stock of an item in a system property. Another servlet uses this property to find whether an order quantity can be fulfilled or must be declined. Show how this can be done through a Java program.
6. Differentiate between the following :–
   (a) Generic Servlet and HTTP Servlet.
   (b) XML and SGML.
   (c) Covert Storage Channel and Covert Timing Channel.
   (d) Stateful session bean and Entity bean.
7. What are the advantages of using Java's multiple layer security implementation? Explain with the help of an example program.
8. Explain any two basic mechanisms through which a web client can authenticate a user to a web server using http authentication.
9. What is a message driven bean? What are its transactional capabilities? When do we use it?
10. A student academic record database "STUDENT" has roll numbers, subject and marks stored in a table "RESULT". Write a Java Program to connect to this database and point out a merit list of students based on the total marks across all subjects.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXV
(MCS-53 : Computer Graphics and Multimedia)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Write midpoint circle drawing algorithm. Use it to draw a circle C having entre (5, 2) and radius = 10.
2. Define Bezier curves. Also explain zero-order, one-order and two-order continuity (Co, C1 and C2).
3. Explain different Shading Schemes with their advantages and disadvantages.
4. Discuss different types of projection with diagram.
5. What is animation? How many frames does a 30-second animation film sequence with no duplication require?
6. Explain the following terms :–
   (i) Z Buffer
   (ii) Aspect Ratio
   (iii) Video Conferencing
   (iv) Ambient light.
7. Explain Cohen Sutherland line clipping algorithm. State the merits and demerits of Cohen Sutherland algorithm over Cyrus-Beck line clipping algorithm.
8. Define DDA algorithm. Write DDA line drawing algorithm. Use this algorithm to draw a line between (0,0) and (6,6).
9. What is authoring tool? Explain different types of authoring tools.
10. What is compression? Discuss lossy and lossless compression with an example. Explain the need for video compression.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXVII
(MCSE-003: Artificial Intelligence and Knowledge Management)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions.
All questions carry equal marks.

1. Define and describe the properties of LISP. Evaluate and elaborate the following LISP expressions :–
   (i) (lessp 18 151 76)
   (ii) (car (a b c d))
   (iii) (cdr (x y z))
   (iv) (member 'a ' (a b c d))
   (v) (list 'a '(b c))
2. What is the difference between Knowledge and Intelligence? Enumerate the various knowledge representation schemes, giving a brief description for each scheme.
3. Differentiate between the following :–
   (i) Forward chaining and Backward chaining
   (ii) Conceptual graph and Conceptual dependency structure
4. Explain A* and AO* algorithms. Give suitable examples.
5. Write short notes on the following :–
   (i) Scripts.
   (ii) Heuristic Search.
6. Differentiate between Proposition and Predicate logic. Write a LISP program expo to compute i raise to power j where i and j are natural numbers.
7. What is a supervised learning? Flow is it different from unsupervised learning? Discuss briefly the component of the generic Expert System.
8. Explain the all the rules of Inference of propositional logic with examples.
9. What is Turing Test? If the machine passes the Turing Test, does it mean that the system is intelligent? What are the associated problems with Turing Test? What are required improvement / advances to overcome these problems?
10. Write short notes on the following :–
    (i) Mean-End Analysis.
    (ii) Depth First Search.

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

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

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

1. (a) If π = 3.14 instead of $\frac{22}{7}$ find the relative error and percentage error.

   (b) Define (i) Floating Point, (ii) Absolute Error, (iii) Relative Error, (iv) Truncation Error.

2. (a) Show that the equation $x^3 - 6x - 1 = 0$, has a root in the interval (–1, 0). Obtain this root using the successive iteration method.

   (b) Obtain the smallest positive root of $x^3 - 2x - 5 = 0$, correct to 2 decimal places with the help of Bisection formula.

3. Solve the following linear system of equations using the Gauss elimination method

$$\begin{aligned} x_1 + x_2 + x_3 &= 3 \\ 4x_1 + 3x_2 + 4x_3 &= 8 \\ 9x_1 + 3x_2 + 4x_3 &= 7 \end{aligned}$$

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

$$\begin{aligned} 2x_1 - x_2 + x_3 &= -1 \\ x_1 + 2x_2 - x_3 &= 6 \\ x_1 - x_2 + 2x_3 &= -3 \end{aligned}$$

5. Obtain the estimate of the missing figure in the following table :—

x	1	2	3	4	5	6	7	8	9
f(x)	1	4	9	–	25	–	49	64	81

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

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

   (b) Evaluate the Integral $\int_1^4 x^2 dx$ using weddle's rule with h = 0.5.

8. Apply Runge-Kutta fourth order method to find an approximate value of y when x = 0.2 given that y' = x + y with y(0) = 1 and h = 0.2.

9. Explain Bionomial and Poisson distribution.

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

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NALANDA OPEN UNIVERSITY

Master of Computer Application (MCA), Part-III

PAPER–XXIX

(Application Development with .Net Framework)

Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer any Five Questions. All questions carry equal marks.

1. Explain the architecture of .NET FRAMEWORK with a diagram.
2. Explain how data access is done using ADO.NET architecture.
3. List four characteristics of ASP.NET. Discuss the basic platform required to start ASP.NET.
4. Define Common Type System (CTS) and Common Language Runtime (CLR). Discuss the functions of CTS.
5. Describe ASP.NET application life-cycle with a diagram.
6. What is Query String? Explain it using an example. Discuss the limitations of Query String.
7. Explain server-side state management. Give some events with their descriptions.
8. Discuss the Connection CLASS and describe some connection pool settings.
9. Is it possible to send Email and SMS using .NET? Explain with help of an example.
10. Write short notes on the following :–
    (i) Exception handling
    (ii) Controls in VB.NET.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXIII
(Unix and Oracle)
SET-I
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 100 (80+20)**

Answer all the Questions. All questions carry equal marks.

SECTION-A (UNIX)

1. Write and execute the following commands in UNIX
   (a) To rename a file.
   (b) To create a file using "vi" editor.
   (c) To display the inode number of any file.
   (d) To create a subdirectory "xyz" in the current directory.
   (e) To display the long listing of all the files in the current directory.

2. Write a shell program to generate Fibonacci series up to "N" terms.

SECTION-B (DBMS)

3. Create a database with the following schema:
   BOOK_CLUB:
   CATALOG (ID, TITLE, AUTHOR_ID, PUBLISHER_ID, YEAR_OF_PUB, PRICE)
   AUTHOR (AUTHOR_ID, NAME, CITY, COUNTRY)
   PUBLISHER (PUBLISHER_ID, NAME, CITY, COUNTRY)
   CATEGORY (CAT_ID, DESCRIPTION)
   Select appropriate data types for all the fields. Identify appropriate keys. Also input 10 meaningful records.

4. For the above tables in Q(3), answer the following queries using SQL :
   (a) To print all the category details.
   (b) To display the country and city of AUTHOR_ID = 123.
   (c) To display the name of the PUBLISHER whose ID = 444.
   (d) To display all the books whose price is < T 500.
   (e) To display all the AUTHOR_ID's who belong to "CHENNAI".

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Examination Programme, 2018
Master of Computer Application, Part-III

Date	Papers	Time	Examination Centre
02.07.2018	Paper–XXIII (Practical)	**12.00 Noon to 3.00 PM**	School of Computer Education & IT Nalanda Open University, 12th Floor, Biscomaun Tower, Patna-800001
03.07.2018	Paper–XXVI (Practical)	**12.00 Noon to 3.00 PM**	
05.07.2018	Paper–XXX (Project Viva Voce)	**12.00 Noon to 3.00 PM**	

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXIII
(Unix and Oracle)
SET-II
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 100 (80+20)**

Answer all the Questions. All questions carry equal marks.

SECTION-A (UNIX)

1. Write and execute the following commands in UNIX
   (a) To change the ownership of a file.
   (b) To run a program at lower priority.
   (c) To compare two files and show their differences.
   (d) To display the first 10 lines of a text file.
   (e) To kill a process. Write a shell program to generate Fibonacci series up to "N" terms.

2. Write a shell program to write the initials of any given name.
   For example:
   Input: Rahul Mahindra
   Output: RM

SECTION-B (DBMS)

3. Create a database with the following schema:
   COMPANY (Com_ID, Com_Name, Com_Address, Com_City, P_ID)
   PRODUCT (P_ID, P_Name, P_Size, P_Price)
   SALE (P_ID, P-Target, P_Sold, Area_Code)
   Select appropriate data types for all the fields. Identify appropriate keys. Also input 10 meaningful records.

4. For the above tables in Q(3), answer the following queries using SQL :
   (a) To print the names of all the company.
   (b) To display the city and address of the company whose Com_ID= 123.
   (c) To display the name of the Product whose Price> 1000.
   (d) To display all the company name, address and product name whose product_ID=111.
   (e) To display product name, price, target and area_code of the product whose product_ID>111.

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Examination Programme, 2018
Master of Computer Application, Part-III

Date	Papers	Time	Examination Centre
02.07.2018	Paper–XXIII (Practical)	**12.00 Noon to 3.00 PM**	School of Computer Education & IT Nalanda Open University, 12th Floor, Biscomaun Tower, Patna-800001
03.07.2018	Paper–XXVI (Practical)	**12.00 Noon to 3.00 PM**	
05.07.2018	Paper–XXX (Project Viva Voce)	**12.00 Noon to 3.00 PM**	

NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXVI
(Advanced Internet Technologies and Computer Graphics)
SET-I
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer all the Questions. All questions carry equal marks.

SECTION-A
(Advanced Internet Technologies)

1. Write a program using JSP and JDBC which manages a savings bank account and provides the facility to :–
   (a) See Account balance (b) Deposit money in the Account.
   (Make necessary assumptions.)

SECTION-B
(Computer Graphics and Multimedia)

2. Implement the Cohen-Sutherland line clipping algorithm in C/C++ using OpenGL.

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NALANDA OPEN UNIVERSITY
Master of Computer Application (MCA), Part-III
PAPER–XXVI
(Advanced Internet Technologies and Computer Graphics)
SET-II
Annual Examination, 2018

Time : 3 Hours. **Full Marks : 80**

Answer all the Questions. All questions carry equal marks.

SECTION-A
(Advanced Internet Technologies)

1. Write a JSP program using JDBC to develop a web page for an Electronic store. The program should take the product code as input and display product details including Product_Name, Model, Max_Price and Discount_on_offer. Make necessary assumptions.

SECTION-B
(Computer Graphics and Multimedia)

2. Implement Scan-Line Polygon Fill algorithm in C/C++ using OpenGL.

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