

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-I
Paper-I [Communicative English]

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. All questions carry equal marks.

1. Explain the process of communication.
2. Write a face to face conversation between two friends who are talking about their studies.
3. Write a note on advantages and disadvantages of multimedia.
4. Write a prepared speech on 'Youth and Politics'.
5. Write a prepared speech on "Intolerance in Society".
6. Write a short note on misuse of Internet?
7. Write a interview between a candidate and a Principal for getting admission in the M.A. course.
8. Write a prepared speech on 'Work and Love'.



EXAMINATION PROGRAMME-2021
BCA, Part-I

Date	Papers	Time	Examination Centre
24.03.2022	BCA, Paper-I	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
26.03.2022	BCA, Paper-II	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
28.03.2022	BCA, Paper-III	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
31.03.2022	BCA, Paper-IV	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
02.04.2022	BCA, Paper-V	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
04.04.2022	BCA, Paper-VI	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
05.04.2022	BCA, Paper-VII	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
07.04.2022	BCA, Paper-VIII	2.30 PM to 5.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
08.04.2022	BCA, Paper-V (Practical)	12.00 Noon to 3.00 PM	School of Computer Education & IT, 12th Floor, Biscomaun Tower, Patna-800001
09.04.2022	BCA, Paper-VI (Practical)	12.00 Noon to 3.00 PM	

Nalanda Open University

Annual Examination - 2021

Bachelor in Computer Application (BCA), Part-I

Paper-II (Foundation Course in Social and Environmental Science)

Time: 3.00 Hrs.

Full marks: 80

Answer any **Five** questions. Question No. 1 is compulsory.

किन्हीं पाँच प्रश्नों के उत्तर दीजिए । प्रश्न संख्या 1 अनिवार्य है ।

1. (a) Tick (✓) the correct answer or Cross (×) the wrong answer against each of the following sentences. (8x1=8)

अधोलिखित में से प्रत्येक के सामने सही (✓) अथवा गलत (×) जैसी स्थिति हो, का चिह्न लगायें।

(i) The origin and evolution of early man is a non-controversial topic of pre-historic era. (True/False)

मावव की उत्पत्ति और उसका क्रमिक विकास प्रागैतिहासिक युग का एक गैर-विवादास्पद विषय रहा है । (सही/गलत)

(ii) France is regarded as the Birth place of Renaissance. (True/False)

फ्रांस को पुर्नजागरण काल की जन्म स्थली माना जाता है । (सही/गलत)

(iii) The reformation movement in European Countries strengthened the influence of the church over the state. (True/False)

यूरोपीय देशों में आये सुधार आंदोलन के फलस्वरूप चर्च का राज्य पर प्रभाव और अधिक दृढ़ हो गया । (सही/गलत)

(iv) Aristotle who expressed the famous statement "Man is a social animal" was a great German Philosopher. (True/False)

अरस्तु जो प्रसिद्ध कथन 'मनुष्य एक सामाजिक प्राणी है' को व्यक्त किया, एक महान जर्मन दार्शनिक था । (सही/गलत)

(v) Non-Cooperation Movement was launched on the call of Mahatma Gandhi during 1920-1924. (True/False)

महात्मा गाँधी के आह्वान पर 'असहयोग आंदोलन' वर्ष 1920-1924 के बीच चलाया गया । (सही/गलत)

(vi) First Five year plan began in our Country from 1st April 1951. (True/False)

हमारे देश में प्रथम पंचवर्षीय योजना का प्रारंभ 1 अप्रैल 1951 से हुआ । (सही/गलत)

(vii) Deen Dayal Upadhyay Gramin Kaushal Yojana is a skill development programme for rural as well as urban youth. (True/False)

दीन दयाल उपाध्याय ग्रामीण कौशल योजना, ग्रामीण एवं शहरी दोनों के नौजवानों के लिए लाया गया कौशल विकास कार्यक्रम है । (सही/गलत)

(viii) NABARD was established in the year 1982. (True/False)

नबार्ड की स्थापना 1982 में हुई । (सही/गलत)

(b) Fill in the blanks with appropriate word/term.

रिक्त स्थानों की पूर्ति उचित शब्द/पद से करें।

(i) World Environment Day is celebrated all over the world on
विश्व पर्यावरण दिवस विश्व में प्रत्येक वर्ष.....को मनाया जाता है ।

(ii) Expanded form of LPG is
L.P.G. का विस्तारित रूप है ।

(iii) Biosphere indicates the realm of
जीवनमंडल..... क्षेत्र को इंगित करता है ।

P.T.O...

- (iv) Decibel is the unit for measuring
डेसिबल मापने की इकाई है ।
- (v) During photosynthesis green leafy plants consume..... gas.
प्रकाश संश्लेषण के दरम्यान हरी पत्तेदार पौधे गैस ग्रहण करते हैं और
.....गैस मुक्त करते हैं।
- (vi) Biomass energy is an important example of energy.
जैवमात्रा उर्जा उर्जा का एक महत्वपूर्ण उदाहरण है।
- (vii) The tree R terms used in Waste Management are called as..... ,and
.....
कचरा प्रकान में प्रयुक्त होने वाले तीन R पद कहलाते हैं..... ।
- (viii) The ozone layer is situated in..... region of the atmosphere.
ओजोन परत वायुमंडल के क्षेत्र में अवस्थित है ।
2. Define social science and discuss its scope.
समाज विज्ञान को परिभाषित कर इसके विस्तार क्षेत्र की विवेचना कीजिए।
3. Explain the important points of the Preamble to the Constitution of India.
भारत के संविधान की प्रस्तावना में निहित महत्वपूर्ण बिन्दुओं की व्याख्या कीजिए ।
4. Give a descriptive account of 'Make in India' campaign launched by the NDA Government.
एन डी ए सरकार द्वारा प्रारंभ किये गये 'मेक इन इंडिया' अभियान के बारे में वर्णनात्मक लेख प्रस्तुत कीजिए।
5. What do you mean by scientific revolution? How did the scientific exploration change the medieval views of the people.
वैज्ञानिक क्रांति से क्या समझते हैं ? किस प्रकार वैज्ञानिक खोजें मनुष्य के मध्यकालीन विचार में बदलाव ला दिया?
6. What do you mean by biodiversity? Give a descriptive account of the biotic and abiotic components of biodiversity.
जैवविविधता से आप क्या समझते हैं? जैव विविधता के जैविक एवं अजैविक घटकों का एक वर्णनात्मक लेख प्रस्तुत कीजिए ।
7. Define the terms 'Pollutant' and 'Pollution'. What are the main sources of air pollution?
'प्रदूषक एवं प्रदूषण पदों को परिभाषित कीजिए। वायु प्रदूषण के प्रमुख श्रोत क्या हैं?
8. What do you mean by waste? Describe in brief, common sources of municipal waste.
आप कचरा से क्या समझते हैं? संक्षेप में, म्युनिसिपल कचरा के प्रमुख श्रोतों का वर्णन प्रस्तुत कीजिए।
9. How do you define a 'natural resource'? Why are forests important to us?
आप 'प्राकृतिक संसाधन' किस प्रकार परिभाषित करेंगे? वन हमारे लिए क्यों महत्वपूर्ण हैं ?
10. Write short notes on any two of the following:-
निम्नलिखित में से किन्हीं दो पर टिप्पणी लिखिए:-
- Earthquake (भूकम्प)
 - Environmental protection Laws, (पर्यावरण संरक्षण के नियम)
 - Rainwater harvesting (वर्षाजल संग्रहण)
 - Central Pollution Control Board (केन्द्रीय प्रदूषण नियंत्रण बोर्ड)

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-I
Paper-III [Fundamental of IT]

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. All questions carry equal marks.

1. Define Computer. Draw the block diagram of computer system and explain all its components in detail.
2. Describe the various generations of computer? What is the difference between an Analog computer and a Hybrid computer?
3. Describe classification of computers on the basis of their size, processing speed and cost.
4. Explain different storage devices used in computers for storing the data with suitable examples. How is drive performance measured of optical storage measured? Discuss in brief.
5. Define Operating system. Describe different types of Operating systems.
6. Explain OSI reference model of Network. What are the key concepts of OSI model?
7. What is internet? Why is internet surfing done? Explain various hardware and software required for an internet connection.
8. How does a computer system handle interrupts? Also explain how interrupts can be handled quickly?
9. Discuss uses of Computer. Give some advantages and disadvantages of computer system.
10. Write short notes on any **two** of the following:
 - a. WWW
 - b. Transmission media.
 - c. Output devices
 - d. FTP

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NALANDA OPEN UNIVERSITY
Bachelor of Computer Application (BCA), Part-I
PAPER-IV (Mathematics)
Annual Examination, 2021

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.
All questions carry equal marks.

1. (a) If $A = \{0, 1, 2, 3, 4\}$, $B = \{1, 2, 3\}$, $C = \{5, 6, 7\}$, $D = \{5, 7, 8, 9\}$, then find the following
(i) $A \cup B$ (ii) $C \cup D$ (iii) $C \cap D$ (iv) $A - B$
(b) If $f(x) = \frac{b(x-a)}{b-a} - \frac{a(x-b)}{b-a}$, then prove that $f(a+b) = f(a) + f(b)$.
2. (a) Evaluate the determinant $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix}$.
(b) If $A = \begin{bmatrix} 3 & -5 \\ -4 & 2 \end{bmatrix}$, show that $A^2 - 5A - 14I = 0$.
3. (a) Find the first term and common difference of the progression where 8th and 102nd terms are respectively 23 and 305.
(b) The product of three consecutive terms in GP is 216 and their sum is 19 then find the terms.
4. Evaluate :—
(a) $\left\{ i^{17} - \left(\frac{1}{i} \right)^{34} \right\}^2$
(b) If W be an imaginary cube roots of unity then show that $(1-w)(1-w^2)(1-w^4)(1-w^5) = 9$.
5. Solve the equation by Cardano's method $2x^3 + 3x^2 + 4x + 1 = 0$.
6. (a) Find the differential coefficient of $\tan x$ with respect to x with the help of first principle.
(b) Test continuity of $f(x)$ at $x = 2$, where $f(x) = \frac{x^2 - 4}{x - 2}$ when $x \neq 2$
 $= 4$ when $x = 2$.
7. Find the differential coefficient of the following :—
(a) $y = \left(\sqrt{x} - \frac{1}{\sqrt{x}} \right)^2$ (b) $y = \sin(\cos x)$ (c) $y = e^{\tan^{-1}(x^2)}$
8. Integrate the following with respect to x
(a) $\int \frac{(x^3 - 8)(x + 1)}{x^2 + 2x + 4} dx$ (b) $\int \frac{e^{2x} - e^{4x}}{e^x - e^{-x}} dx$ (c) $\int \tan 4x dx$
9. Find the point on the line $y = x$ which is on the origin side of the line $3x + 4y = 5$ and at a distance $\frac{1}{4}$ from it.
10. Find the equation of the circle which passes through the point $(1, 1)$, $(2, 1)$ and $(3, 2)$.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-I
Paper-V [Programming Methodology using C]

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. All questions carry equal marks.

1. What is a difference between an algorithm and a program? Discuss the properties of an algorithm. What are the key features of an algorithm? Explain with the help of an example.
2. Explain various data types used in C programming. Give suitable examples for each.
3. Describe at least 10 keywords in C with their uses. Give examples for each.
4. Define scanf() and printf(). Write a program in C language to print the Fibonacci series of first 10 terms.
5. Explain decision control statements in C with examples.
6. Write a program in C language using Switch statement. Can we use continue statement without using a loop.
7. Define arrays? Write a program in C using arrays. How arrays are different from pointers in C?
8. Define Union. Explain the concept of Union with the help of an example in C.
9. Explain arithmetic operators in C with the help of programs.
10. Write short notes on any two:
 - (a) Flowchart
 - (b) Loops in C
 - (c) Types of Variables
 - (d) Structures

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-I
Paper-VI [PC Software and Office Automation]

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. All questions carry equal marks.

1. What is MS-Paint? Describe the components of MS Paint with their utilities.
2. Define Notepad. What are its basic features? How Notepad is different from WordPad. Explain.
3. Describe the advanced features for editing the text in MS-Word.
4. Explain different types of formatting that can be done in a MS-Word document. Why formatting of document is important?
5. Differentiate between Macros and Mailmerge in MS-Word. Explain different types of macros and how they are created.
6. Define MS-Excel. Discuss the features of MS-Excel. Explain formulas and filters in MS-Excel with examples.
7. What is PowerPoint? Describe the elements of PowerPoint Presentation. What are templates in PowerPoint?
8. Explain formatting in PowerPoint. What is the role played by multimedia in PowerPoint presentation?
9. Explain the following terms with examples:
 - (i) Bullets and Numbering
 - (ii) Headers and footers
 - (iii) Spell check
 - (iv) Cropping a picture
10. Write short notes on any **two**:
 - (a) Icons
 - (b) Desktop
 - (c) Control Panel
 - (d) Internet



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-I
Paper-VII [Computer Organisation]

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. All questions carry equal marks.

1. Convert the following:
 - (i) $(10111001111011)_2$ to its $()_{16}$
 - (ii) $(DE9)_{16}$ to Octal number.
 - (iii) $(4783)_{10}$ to its Binary equivalent.
 - (iv) $(1110101110100110)_2$ to Octal number
2. Simplify the following Boolean function using Sum-of-Product form, by Karnaugh's map:
 $F(A, B, C, D) = \Sigma(0, 1, 2, 3, 5, 6, 9, 12, 13, 15)$. Also draw the circuit diagram for it.
3. Differentiate between Fundamental gates and Universal gates? Draw all fundamental gates using Universal gates?
4. Draw a circuit diagram for the following expressions:
 - (i) $\sim A \sim BC + BC \sim D + \sim B + A \sim CD$
 - (ii) $\sim(\sim B + \sim C) + ABC + \sim(CD)$
 - (iii) $AB \sim C + \sim D + \sim(AC) + \sim C$
 - (iv) $\sim(A+BC \sim D) \cdot BC \cdot (A+C+\sim D)$
5. Differentiate between a multiplexer and decoder. Draw the circuit diagram of **3 x 8** decoder.
6. What is a flip-flop? Explain **RS flip-flop** with its excitation table and circuit diagram. How does **D-flip-flop** help to overcome the problem of **RS flip-flop**?
7. Describe some popular memories used in Computers with reference to their data organization, formatting and physical characteristics. Also discuss their advantages and disadvantages.
8. Explain various I/O techniques for data transfer between CPU and I/O devices.
9. Define Instruction. Explain different types of Instructions with examples.
10. Write short notes on any two of the following:
 - a. Don't Care Condition
 - b. RAID
 - c. Control Unit
 - d. Instruction Pipelining



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-I
Paper-VIII [System Analysis and Design]

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. All questions carry equal marks.

1. What is a System? What are the characteristics of a System? Describe classification of System with examples.
2. What is Data Flow Diagram (DFD)? What are the components of a DFD? Draw a DFD for a “Railway Reservation System”.
3. Define System Development Life Cycle (SDLC)? Differentiate between Analysis and Design phase of SDLC?
4. What is the difference between an Analyst and a programmer? Explain the role of System Analyst in system development.
5. Explain different types of Fact Finding Techniques with their advantages and disadvantages.
6. How Forms are different from Reports? Discuss the importance of Forms and Reports. Discuss the process of designing Forms and Reports.
7. What is testing? Explain different types of testing with examples.
8. Define Formatting. Describe the guidelines for proper formatting of forms and reports.
9. What is the use of documentation? Discuss different types of documentations.
10. Write short notes on any **two** of the following:
 - a. Approaches for Development of Information system
 - b. Maintenance Phase of SDLC
 - c. Prototyping
 - d. Feasibility Study.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-I
Paper-V, Programming Methodology using C (Computer Practical)

Set-I

Time: 2.00 Hrs.

Full Marks: 20

Answer any two questions. All questions carry equal marks.

1. Write a program in C language to print 10 consecutive even numbers.
2. Write a program to generate the following pattern below:

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

3. Write a program in C language to check whether the given number is prime or not.

❧❧❧

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-I
Paper-V, Programming Methodology using C (Computer Practical)

Set-II

Time: 2.00 Hrs.

Full Marks: 20

Answer any two questions. All questions carry equal marks.

1. Write a program in C language to print 10 consecutive odd numbers.
2. Write a program to generate the following pattern below:

```
5 5 5 5 5
4 4 4 4
3 3 3
2 2
1
```

3. Write a program in C language to print the multiplication table of any given number entered from the keyboard.

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Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-I
Paper-VI, PC Software and Office Automation (Computer Practical)

Set-I

Time: 2.00 Hrs.

Full Marks: 20

Answer any two questions. All questions carry equal marks.

1. Perform the following tasks using MS-Word document:
 - (a) Write one paragraph about Nalanda Open University and define proper margin, header and footer. .
 - (b) Insert a table of 3 columns and 4 rows and enter some valid data into it.
 - (c) Insert a clip art in the document.
 - (d) Create a macro using keyboard.
2. Create an Excel sheet for preparing a mark sheet with proper headings and footings. Enter the marks of 10 students for five papers. Calculate the percentage of each student.
3. Create a PowerPoint presentation of 10 slides of your own choice. The presentation should consist of pictures, animation effects and good color combination of the texts.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-I
Paper-VI, PC Software and Office Automation (Computer Practical)

Set-II

Time: 2.00 Hrs.

Full Marks: 20

Answer any two questions. All questions carry equal marks.

1. Perform the following tasks using MS-Word document:
 - (a) Write one paragraph about the advantages of BCA program you are doing and define proper margin, header and footer. .
 - (b) Insert a hyperlink in the document.
 - (c) Divide the document into 3 columns.
 - (d) Create a macro using toolbar option.
2. Create an Excel sheet with proper headings and footings for payroll of employees. Enter at least 10 records in the sheet. Calculate the total salary of each employee which includes Basic, DA, Medical, TA (Travelling Allowances), and perks.
3. Create a PowerPoint presentation of 10 slides of your own choice. The presentation should consist of pictures, animation effects and good color combination of the texts.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II
Paper-IX (OPERATING SYSTEM CONCEPTS)

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

किन्हीं पाँच प्रश्नों के उत्तर दीजिए । सभी प्रश्नों के अंक समान हैं ।

1. Define Operating system. Discuss the functions of an Operating System.
2. Describe various types of mobile Operating systems. What is multitasking?
3. Define Process. Explain the Process Life Cycle with the help of a diagram.
4. What is Process Scheduling? Explain any two types of process scheduling algorithms with examples.
5. What are threads? Why they are used? Discuss different types of threads and give their advantages and disadvantages.
6. Discuss any two classical problems in concurrent programming.
7. What is Process Address Space? Differentiate between overlays and swapping and give their advantages and disadvantages.
8. Define Demand Paging. Discuss at least two page replacement policies with examples.
9. Write at least 10 commands with their complete syntax in UNIX. Also explain the use of each command.
10. Write short notes on any two of the following:
 - a. Windows
 - b. Deadlock
 - c. Process Control Block (PCB)
 - d. Interrupts



EXAMINATION PROGRAMME-2021
BCA, Part-II

Date	Papers	Time	Examination Centre
25.04.2022	BCA, Paper-IX	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
27.04.2022	BCA, Paper-X	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
30.04.2022	BCA, Paper-XI	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
06.05.2022	BCA, Paper-XII	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
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12.05.2022	BCA, Paper-XV	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
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18.05.2022	BCA, Paper-X (Practical)	11.30 AM to 1.30 PM	
19.05.2022	BCA, Paper-XI (Practical)	11.30 AM to 1.30 PM	
20.05.2022	BCA, Paper-XII (Practical)	11.30 AM to 1.30 PM	
21.05.2022	BCA, Paper-XIII (Practical)	11.30 AM to 1.30 PM	
23.05.2022	BCA, Paper-XIV (Practical)	11.30 AM to 1.30 PM	
24.05.2022	BCA, Paper-XVI (Practical)	11.30 AM to 1.30 PM	

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II
Paper-X (Computer Networking)

Time: 3.00 Hrs.

Full Marks: 80

*Answer any **Five** questions. All questions carry **equal marks**.*

किन्हीं पाँच प्रश्नों के उत्तर दीजिए । सभी प्रश्नों के अंक समान हैं ।

1. Explain the OSI reference model of networking in detail.
2. What is networking? Explain LAN MAN and WAN with examples.
3. Differentiate between serial and parallel transmission. Also give their advantages and disadvantages.
4. What is transmission impairment? Discuss various types of transmission impairments.
5. Explain various network topologies with their advantages and disadvantages.
6. What is digital to analog modulation? Explain the three types of digital to analog modulation.
7. Define multiplexing. Explain different types of multiplexing with examples.
8. Describe various congestion control algorithms of Network layer.
9. What is guided and unguided transmission media? Discuss any two guided transmission media.
10. Write Short notes on:
 - (a) Digital transmission
 - (b) Wireless transmission
 - (c) Encoding and decoding of message
 - (d) Transmission mode.

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Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II
Paper-XI (DBMS using ACCESS)

Time: 3.00 Hrs.

Full Marks: 80

*Answer any **five** questions. All questions carry equal marks.*

1. Define DBMS. Discuss elements of DBMS in detail.
2. Define various types of keys used in DBMS to store data with unique identity.
3. Explain Relational model with the help of an example.
4. What is an E-R diagram? Describe different types of attribute with examples.
5. Define Normalisation. Explain Functional dependency and multivalued dependency with examples.
6. Differentiate between third normal form and Boyce Codd normal form with the help of an example.
7. Define Database Security, Integrity and Threat. What are different types security threats? Discuss the requirements of DBMS security.
8. Discuss various types of datatypes used in MS-Access.
9. Explain the concept and use of Indexing and Grouping of data in MS-Access with examples..
10. Write short notes on any two:
 - (a) Types of Database users.
 - (b) Auditing and control.
 - (c) Objects of MS-Access
 - (d) SQL

END

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II
Paper-XII (MULTIMEDIA AND ANIMATION)

Time: 3.00 Hrs.

Full Marks: 80

*Answer any **five** questions. All questions carry equal marks.*

1. Define multimedia. Discuss the applications of Multimedia.
2. Describe multimedia authoring tools with examples. What are the features of multimedia authoring tools?
3. What is the role of sounds in multimedia? Explain the concept of MIDI audio and digital audio.
4. What are the things that you should think about when you are shooting and editing your project? Explain.
5. Discuss how computers can be integrated with TVs. What are different recording formats?
6. What is software testing? Explain different types of software testing.
7. Discuss at least 10 HTML tags with their descriptions.
8. Describe various features of Photoshop.
9. Explain the features and use of Adobe Flash CS3 Professional.
10. Write short notes on any **two**:
 - (a) Multimedia software tools
 - (b) OCR software
 - (c) Hypermedia and hypertext
 - (d) Image file formats

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Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II
Paper-XIII (Data Structure Using C)

Time: 3.00 Hrs.

Full Marks: 80

*Answer any **five** questions. All questions carry equal marks.*

1. Define algorithm. Explain its features with the help of suitable examples. Write an algorithm to generate a series of 10 natural numbers.
2. What are polynomials? Explain with the help of an example.
3. Explain different types of non-linear data structures with examples.
4. Define queue. Describe different types of queues with examples. How insertion is done in queues?
5. Differentiate between Single linked list and double linked list. Give examples for each.
6. Explain insertion and deletion operation on a stack with the help of an example.
7. Discuss different operations that can be performed on one dimensional array. Write a program to compute the sum of 10 even numbers using an array.
8. Explain at least two searching techniques with examples.
9. Describe B-tree with the help of an example. Discuss applications of B-tree.
10. Write short notes on any two:
 - (a) Heap sort
 - (b) Binary Search Tree
 - (c) Sorting
 - (d) Graph.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II
Paper- XIV: Objected Oriented Programming Using C++

Time: 3.00 Hrs.

Full Marks: 80

*Answer any **five** questions. All questions carry equal marks.*

1. Explain the features of Object Oriented Programming.
2. Write a program in C++ using switch statement and explain each of its syntax line by line.
3. Differentiate between relational operators and logical operators. Give examples for each relational and logical operators.
4. Describe storage class in C++. Explain inline function with the help of an example.
5. Define Class. How objects are created for a class? Also explain the method of accessing the members of a class with the help of example.
6. What is a Constructor? Write down the characteristics of a Constructor. Discuss various types of Constructors that can be defined in C++.
7. What is array of objects? Write C++ programs to find out Prime Number using class.
8. What is data conversion? What are the shortcomings of data conversions? Write a program to find the largest element in an array of 10 numbers.
9. What is the concept of inheritance in C++? Explain various types of inheritance in C++ with the help of examples.
10. Write short notes on any **two**:
 - (a) C++ Arithmetic operators
 - (b) C++ Library functions
 - (c) Structure in C++
 - (d) Exception handling.

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II
Paper- XV: (Statistical Methods and Linear Programming)

Time: 3.00 Hrs.

Full Marks: 80

Standard Calculator is Allow

*Answer any **five** questions. All questions carry equal marks.*

1. What is statistics? Discuss its scope and Limitations.
2. What do you mean by cumulative frequency distribution? Give an Example of continuous series.
3. Draw Histogram and frequency polygon from the following data. (Not on graph paper)

<i>Marks</i>	10-20	20-30	30-40	40-50	50-60	60-70	70-80
<i>No. of Students</i>	10	25	35	45	30	10	15

4. Find the Arithmetic mean and median from the following data.

<i>class Interval</i>	10-14	15-19	20-24	25-29	30-34	35-39	40-44
<i>f</i>	2	1	7	10	5	3	2

5. Find the mode from the following data.

Marks (Less than)	80	70	60	50	40	30	20	10
No. of students	100	90	80	60	32	20	13	5

6. Define the mean Deviation and find the mean Deviation from median from the following data.

Size	5	6	7	8	9	10	11	12	13
Freq	4	5	6	7	8	9	10	11	12

7. Explain Rang and Quartile Deviation with Example.

8. Find the Karl Pearson's coefficient of skewness.

<i>x</i>	4	6	8	10	12	14	16	18	20
<i>f</i>	5	3	2	7	9	11	4	3	2

9. Explain classical Definition of Probability and its Limitations.
10. A bag contain 3 red, 6 white and 7 blue balls. What is the probability that two balls drawn are white and blue?

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II
Paper- XVI: (Internet and Web Technology)

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. All questions are compulsory.

1. Explain the concept of IP Addressing and IP address class with examples.
2. What are various ways in which one can communicate over internet? Explain.
3. Explain TCP/IP model with the help of a diagram. What are the advantages of using TCP/IP?
4. Discuss at least 10 HTML tags with examples.
5. What is Text Style in HTML? Explain with help of an example.
6. Explain various types of Type casting in JavaScript with the help of an example.
7. Describe different types of operators used in JavaScript with examples.
8. What are functions in JavaScript? Write a program in Java which uses nested function.
9. Define and describe XML with example. What are attributes in XML?
10. Write short notes on any **two**:
 - (a) HTML
 - (b) Hyperlink
 - (c) Web server
 - (d) Evolution of Internet.



Nalanda Open University

Annual Examination - 2021

Bachelor in Computer Application (BCA), Part-II (NEW)

Paper- IX: OPERATING SYSTEM CONCEPTS (Practical)

Time: 2.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Write at least 10 commands in UNIX with their complete syntax.
2. Write a shell script to print whether a given number is odd or even.
3. Discuss the UNIX file system .

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Nalanda Open University

Annual Examination - 2021

Bachelor in Computer Application (BCA), Part-II (NEW)

Paper- IX: OPERATING SYSTEM CONCEPTS (Practical)

Time: 2.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Write at least 10 commands in UNIX with their complete syntax.
2. Write a shell script to print a series of first 10 consecutive natural numbers.
3. Discuss briefly the components of UNIX Operating system.

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SET-I

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- X: Computer Networking (Practical)

Time: 3.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Write at least 10 IP Address of class A, B and C. Also write the subnet mask for each.
2. Discuss various transmission modes with diagram and examples.
3. Explain the functions of physical layer and network layer of OSI model.



SET-II

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- X: Computer Networking (Practical)

Time: 3.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Write at least 10 IP Address of class A, B and C. Also write the subnet mask for each.
2. Define topology. Discuss at least three topologies with their diagram.
3. Explain the functions of Data Link layer and Transport layer of OSI model.



SET-I

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XI: DBMS using Access (Practical)

Time: 3.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Create Student Table with required attributes and enter at least 10 records in it.
2. Write five queries for Inserting, deleting and modifying the records.
3. Describe 5 application areas of DBMS.



SET-II

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XI: DBMS using Access (Practical)

Time: 3.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Create Teacher Table with required attributes and enter at least 10 records in it.
2. Write five queries for Inserting, deleting and modifying the records.
3. Describe 5 application areas of DBMS.



SET-I

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XII: Multimedia and Animation (Practical)

Time: 2.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Perform the following tasks using MS-Word document:
 - (a) Write one paragraph and define proper margin, header and footer.
 - (b) Insert a hyperlink into it.
 - (c) Change the color of the fonts and make them bold.
 - (d) Create a mail merge document.
2. Create an HTML document of your own choice.
3. Create a PowerPoint presentation of 10 slides of your own choice. The presentation should consist of pictures, animation effects and good color combination of the texts.



SET-II

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XII: Multimedia and Animation (Practical)

Time: 2.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Perform the following tasks using MS-Word document:
 - (a) Write one paragraph define proper margin, header and footer. .
 - (b) Increase the size of the font and underline the statements.
 - (c) Insert a picture in the document.
 - (d) Create a macro using keyboard option.
2. Create an HTML document of your own choice.
3. Create a PowerPoint presentation of 10 slides of your own choice. The presentation should consist of pictures, animation effects and good color combination of the texts.



SET-I

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XIII: Data Structure Using C (Practical)

Time: 3.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Write a program in C to implement queue operations.
2. Write a program in C to implement matrix multiplication using arrays.
3. Write a program in C to implement linked list.

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SET-II

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XIII: Data Structure Using C (Practical)

Time: 3.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Write a program to implement insertion and deletion on linked list
2. Write a program in C to implement push and pop operation on a stack.
3. Write a program in C to implement bubblesort.

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SET-I

Nalanda Open University

Annual Examination - 2021

Bachelor in Computer Application (BCA), Part-II (NEW)

Paper- XIV: Object Oriented Programming using C++ (Practical)

Time: 3.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Write a program in C++ that prints series of 10 even numbers.
2. Write a program in C++ to implement multiple inheritance.
3. Write a program in C++ by using constructors.



SET-II

Nalanda Open University

Annual Examination - 2021

Bachelor in Computer Application (BCA), Part-II (NEW)

Paper- XIV: Object Oriented Programming using C++ (Practical)

Time: 3.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Write a program in C++ that displays the series of 10 odd numbers.
2. Write a program in C++ to implement Polymorphism.
3. Write a program in C++ to implement multilevel inheritance.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XVI: Internet and Web Technology (Practical)

Time: 3.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Write the code in HTML to display:

“WELCOME TO NALANDA OPEN UNIVERSITY”

&&&&&&&&&&&&&&&&

2. Write HTML code to create a table for Student of 3 columns and 3 rows and enter data into it.
3. Write a JavaScript function to calculate the sum of the first 10 even numbers.?



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XVI: Internet and Web Technology (Practical)

Time: 3.00 Hrs.

Full Marks: 20

Answer any two questions. Write all the steps in your copy.

1. Write the code in HTML to display:

“HELLO FRIENDS. HOW ARE YOU ?”

2. Write HTML code to insert a hyperlink.
3. Write a JavaScript program to check whether the number entered from the keyboard is greatest of three numbers.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper-XVII [Advanced Computer Networking]

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. Discuss various peripheral devices and give their advantages and disadvantages.
2. What are the safety precautions that should be followed while working inside the computer case to prevent from any damage?
3. What is the need of an operating system? Describe various types of Operating system.
4. What are patches? When and why should the patches should be updated? Explain.
5. Define Networking. What are the benefits of networking? Discuss basic components of networking.
6. Explain the concept of source, channel and destination in communication. Discuss the rules and protocols of communication.
7. Explain Internet cloud. What devices are used in Internet cloud?
8. What is Internet Service Provider (ISP)? Explain various options for connecting to ISP.
9. Compare and contrast between twisted pair and co-axial cable used for data transmission.
10. Write short notes on any **two**:
 - (i) Server
 - (ii) Portable devices
 - (iii) RAM
 - (iv) Adapter Card



EXAMINATION PROGRAMME-2021
BCA, Part-III

Date	Papers	Time	Examination Centre
31.05.2022	BCA, Paper-XVII	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
02.06.2022	BCA, Paper-XVIII	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
04.06.2022	BCA, Paper-XIX	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
07.06.2022	BCA, Paper-XX	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
09.06.2022	BCA, Paper-XXI	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
11.06.2022	BCA, Paper-XXII	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
15.06.2022	BCA, Paper-XXIII	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
17.06.2022	BCA, Paper-XXIV (Project-Viva)	11.00 AM onwards	School of Computer Education & IT, 12th Floor, Biscomaun Tower, Patna-800001

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
[Paper-XVIII: Software Engineering]

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. Differentiate between hardware and software. Discuss different types of software.
2. Why software engineering called a layered approach? Define and describe process in software engineering.
3. What are the different roles of people in software engineering? Explain.
4. Explain different types of System Development Life Cycle (SDLC) models with diagrams. Also give advantages and disadvantages of each model.
5. What is Project management? Describe the factors involved in project management.
6. Discuss various types of business risk with examples. Explain principles of risk management.
7. Why team is required for software development? Describe different types of teams with examples.
8. Define and describe Software Requirement Specification (SRS). What are the characteristics of SRS?
9. Draw a DFD for “Library Information System”.
10. Write short notes on any **two**:
 - (a) Project estimation techniques.
 - (b) SDLC
 - (c) Benefits of function point analysis
 - (d) Gantt chart.



EXAMINATION PROGRAMME-2021
BCA, Part-III

Date	Papers	Time	Examination Centre
31.05.2022	BCA, Paper-XVII	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
02.06.2022	BCA, Paper-XVIII	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
04.06.2022	BCA, Paper-XIX	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
07.06.2022	BCA, Paper-XX	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
09.06.2022	BCA, Paper-XXI	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
11.06.2022	BCA, Paper-XXII	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
15.06.2022	BCA, Paper-XXIII	10.30 AM to 1.30 PM	Nalanda Open University, 2 nd Floor, Biscomaun Bhawan, Patna
17.06.2022	BCA, Paper-XXIV (Project-Viva)	11.00 AM onwards	School of Computer Education & IT, 12th Floor, Biscomaun Tower, Patna-800001

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper-[XIX: Java Programming]

Time: 3.00 Hrs.

Full Marks: 80

*Answer any **Five** questions. All questions carry equal marks.*

1. Differentiate between Java, C and C++. Give examples of each.
2. Describe at least 10 keywords used in Java with their functions.
3. Explain various types of constants and variable in java with examples.
4. Discuss logical operators and Bitwise operator with examples.
5. Define and discuss arithmetic operators and relational operators used in Java.
6. What are decision making statements in Java? Explain with the help of examples.
7. What are various looping statements in Java? Explain with examples.
8. Write a program to compute the sum of the digits of a given integer number of five digits.
9. Compare and contrast between hierarchical inheritance and multilevel inheritance with examples.
10. Write short notes on any **two**:
 - (a) Basic elements of Java
 - (b) Operators precedence and Associability
 - (c) Switch statement
 - (d) Visibility control in Java.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper- XX: RDBMS

Time: 3.00 Hrs.

Full Marks: 80

*Answer any **Five** questions. All questions carry equal marks.*

1. Define DBMS. Discuss the characteristics and advantages of Database Management System.
2. Describe various data models with examples.
3. What are the responsibilities of database manager? Explain each of them.
4. Draw an E-R Diagram for 'Library Information System'. Explain each component used in the diagram.
5. What are the features of SQL? Describe at least 10 SQL commands with their syntax and use.
6. Define Relational Algebra. Discuss the operations of relational algebra with examples.
7. Explain View updating rule and Integrity rule of Relational Database Management System.
8. Discuss the properties of Normalized relation. Give examples of First normal form and normalize it to Second normal form.
9. Explain Query optimization with examples. Give an example of Join operation.
10. Write short notes on any **two**:
 - (a) Database languages.
 - (b) ACID properties of Transaction
 - (c) Client-Server architecture
 - (d) Types of attributes.



Programme of B.C.A. Part-III
Annual Practical Examination - 2021

Venue : 12th Floor, Biscomaun Tower School of Computer Science

<i>Date</i>	<i>Time</i>	<i>Paper</i>	<i>Venue</i>
18.06.2022	02.00 PM to 04.00 PM	XVII	12th Floor, Biscomaun Tower School of Computer Science
20.06.2022	02.00 PM to 04.00 PM	XIX	
21.06.2022	02.00 PM to 04.00 PM	XX	
22.06.2022	02.00 PM to 04.00 PM	XXI	

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper- XXI: Programming in VB.Net

Time: 3.00 Hrs.

Full Marks: 80

*Answer any **Five** questions. All questions carry equal marks.*

1. Explain the implementation of class library in vb.net?
2. What is Polymorphism? Explain with the help of an example.
3. Describe important form events with their functions related to a form.
4. Explain the window graphical interface elements?
5. Define Delegates. Explain Multicast Delegates with an example.
6. What is component? Create your own component in vb.net? Write the steps to simple binding the data through form wizard?
7. Write a program in vb.net to insert, update and delete record into a table?
8. Discuss the various file modes used to open a file with appropriate example.
9. Explain File and Directory classes with examples.
10. Write short notes on any **two**:
 - (a) Inheritance in VB.net
 - (b) Namespace
 - (c) MDI
 - (d) BinaryReader and BinaryWriter classes.



Programme of B.C.A. Part-III
Annual Practical Examination - 2021

Venue : 12th Floor, Biscomaun Tower School of Computer Science

<i>Date</i>	<i>Time</i>	<i>Paper</i>	<i>Venue</i>
18.06.2022	02.00 PM to 04.00 PM	XVII	12th Floor, Biscomaun Tower School of Computer Science
20.06.2022	02.00 PM to 04.00 PM	XIX	
21.06.2022	02.00 PM to 04.00 PM	XX	
22.06.2022	02.00 PM to 04.00 PM	XXI	

NALANDA OPEN UNIVERSITY
Bachelor of Computer Application (BCA), Part-III
PAPER–XXII

(Computer Oriented Numerical Technique)

Annual Examination, 2021

Time : 3 Hours.

Full Marks : 80

Answer any Five Questions.

All questions carry equal marks. Calculator is allowed.

1. (a) Using the Newton-Raphson method find the square root of 12 with initial approximation $x_0 = 3.5$.
- (b) Find the least positive root of Equation with the $f(x) = x^3 + 4x^2 - 10 = 0$ help of Bisection method.

2. Solve the system of equations by Gauss Elimination Method.

$$\begin{aligned} x_1 + x_2 + x_3 + x_4 &= 7 \\ x_1 + x_2 + 0x_3 + 2x_4 &= 8 \\ 2x_1 + 2x_2 + 3x_3 + 0x_4 &= 10 \\ -x_1 - x_2 - 2x_3 + 2x_4 &= 0 \end{aligned}$$

3. Solve the following system of equations by Gauss Seidal iteration method.

$$\begin{aligned} 2x_1 + x_2 - 3x_3 + 9x_4 &= 31 \\ 3x_1 - 4x_2 + 10x_3 + x_4 &= 29 \\ 2x_1 + 12x_2 + x_3 - 4x_4 &= 13 \\ 13x_1 + 5x_2 - 3x_3 + x_4 &= 18 \end{aligned}$$

4. (a) Using the Lagrange's Interpolation Formula find the value of y when x = 10.

x	5	6	9	11
$y = f(x)$	12	13	14	16

- (b) Using the Inverse Interpolation Formula find the value of y when x = 13.

x	36	54	72	144
y	-2	1	2	4

5. (a) Construct Newton's forward difference table for data.

x	3	5	7	9	11
$f(x)$	6	24	38	108	132

Hence approximate $f(4)$ from Newton's Forward difference interpolating polynomial.

- (b) Find the relationship among E, Δ and D.

6. (a) Find Newton's Backward difference form of Interpolating Polynomial for the data :—

x	4	6	8	10	12	14
$f(x)$	19	40	79	142	167	201

- (b) Given that

x	1.0	1.1	1.2	1.3	1.4	1.5	1.6
y	7.989	8.403	8.781	9.129	9.451	9.750	10.031

7. (a) State and prove Simpson's $\frac{3}{8}$ th rule.

- (b) Find the approximate value of $I = \int_0^1 \frac{dx}{1+x}$ using Trapezoidal rule n = 8.

8. Using Runge Kutta fourth order method $y' = \frac{y-t}{y+t}$, $y(0) = 1$, find $y(0.5)$ taken $h = 0.5$.

9. Using Euler's method to find the solution of $y' = x + y$ given $y(0) = 1$. Find the solution on $[0, 0.8]$ with $h = 0.2$.

10. Using the third Taylor's series method, find the solution of the differential equation $xy' = x - y$, $y = 2$ at $x = 2$ taking $h = 0.1$.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper- XXIII: Theory of Computation

Time: 3.00 Hrs.

Full Marks: 80

*Answer any **Five** questions. All questions carry equal marks.*

1. Write at least eight Regular expressions and draw their automata.
2. Define Finite Automata. Explain different types of finite automata. Give examples for each.
3. What is Null-NFA? How Null-NFA can be converted to DFA? Explain.
4. Discuss the closure properties of Regular languages with examples.
5. Explain ambiguity in Context Free Grammars. Give examples.
6. Define and discuss Griebach Normal Form (GNF). Give some examples.
7. Explain pumping lemma for Context Free Languages. Give examples to explain the concept.
8. Define Turing Machine. Construct a Turing Machine for the following functions: $f(m, n) : m + n$ (Addition). Write all the steps in detail.
9. Explain Linear bounded Automata with the help of an example. What is language decidability?
10. Write short notes on any **two** of the following:
 - (i) Mealy and Moore machine.
 - (ii) Parsing
 - (iii) Regular Language.
 - (iv) Rice theorem.



-:Revised:-

Programme of B.C.A. Part-III
Annual Practical Examination - 2021

Venue : 12th Floor, Biscomaun Tower School of Computer Science

<i>Date</i>	<i>Time</i>	<i>Paper</i>	<i>Venue</i>
18.06.2022	02.00 PM to 04.00 PM	XVII	12th Floor, Biscomaun Tower School of Computer Science
21.06.2022	02.00 PM to 04.00 PM	XX	
22.06.2022	02.00 PM to 04.00 PM	XXI	
23.06.2022	02.00 PM to 04.00 PM	XIX	

Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper-XVII [ADVANCED COMPUTER NETWORKING]

Set - I

Time: 3.00 Hrs.

Full Marks: 100 (80 + 20)

(Answer all the questions)

1. Draw and explain various topologies of LAN.
2. Discuss Class A IP Address and its subnet mask with examples.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper-XVII [ADVANCED COMPUTER NETWORKING]

Set - II

Time: 3.00 Hrs.

Full Marks: 100 (80 + 20)

(Answer all the questions)

1. Explain various transmission media with examples.
3. Discuss Class C IP Address and its subnet mask with examples.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper- XIX: Java Programming (Practical)

Set - I

Time: 3.00 Hrs.

Full Marks: 100 (80 + 20)

(Answer all the questions)

1. Write a program in Java to display first 10 natural numbers.
2. Write a program in Java to implement inheritance.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
XIX: Java Programming (Practical)

Set - II

Time: 3.00 Hrs.

Full Marks: 100 (80 + 20)

(Answer all the questions)

1. Write a program in Java to find whether the entered number is odd or even number.
2. Write a program in Java to implement overloading.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper- XX: RDBMS (Practical)

Set - I

Time: 2.00 Hrs.

Maximum Marks: 20

(Answer all the questions)

1. Write at least 10 SQL commands and explain their meanings.
2. Draw an E-R diagram for Hotel Management System.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper- XX: RDBMS (Practical)

Set - II

Time: 2.00 Hrs.

Maximum Marks: 20

(Answer all the questions)

1. Write at least 10 SQL commands and explain their meanings.
2. Draw an E-R diagram for Railway Reservation System.



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper- XXI: Programming in VB.Net (Practical)

Set - I

Time: 2.00 Hrs.

Maximum Marks: 20

(Answer all the questions)

1. Write the step to create a Window Forms Applications. Discuss its properties.
2. How menu and sub menu items are created in vb.net?



Nalanda Open University
Annual Examination - 2021
Bachelor in Computer Application (BCA), Part-III
Paper- XXI: Programming in VB.Net (Practical)

Set - II

Time: 2.00 Hrs.

Maximum Marks: 20

(Answer all the questions)

1. Define Class Library. Explain the implementation of class library in vb.net?
2. Explain the window graphical interface elements.

