Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-I
Paper-I [Communicative English]

Time: 3.00 Hrs.   Full Marks: 80

<u>**NEW Course**</u>

Answer any five questions. All questions carry equal marks.

1.   What is horizontal communication?

2.   What are advantages and limitations of written communication?

3.   What are the seven 'C', s of practical communication? Discuss

4.   Write a interview between a candidate and a Principal for getting admission in the M.A. course.

5.   Write a prepared speech on 'Work and Love'.

6.   What do you understand by reading techniques?

7.   What are the different types of Register?

8.   Discuss the different formals of a report.

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Examination Programme-2019
Bachelor of Computer Application
(BCA Part – I) (New Batch)

Date	Papers	Time	Examination Centre
29/5/2019	BCA Paper–I	12 to 03 pm	Nalanda Open University, Patna
31/5/2019	BCA Paper–II	12 to 03 pm	Nalanda Open University, Patna
03/6/2019	BCA Paper–III	12 to 03 pm	Nalanda Open University, Patna
05/6/2019	BCA Paper–IV	12 to 03 pm	Nalanda Open University, Patna
07/6/2019	BCA Paper–VII	12 to 03 pm	Nalanda Open University, Patna
08/6/2019	BCA Paper–VIII	12 to 03 pm	Nalanda Open University, Patna
10/6/2019	BCA Paper–V(P)	12 to 03 pm	Nalanda Open University, Patna
11/6/2019	BCA Paper–VI(p)	12 to 03 pm	Nalanda Open University, Patna

Nalanda Open University
Annual Examination - 2018
Bachelor in Computer Application (BCA), Part-I
Paper-II (Foundation Course in Social and Environmental Science)

New Course

Time: 3.00 Hrs.   Full marks: 80

Answer five questions. Question No.1 is compulsory.

पाँच प्रश्नों के उत्तर दीजिए । प्रश्न संख्या एक अनिवार्य है ।

1. (a) Tick (√) the correct answer or cross (x) the wrong answer against each of the following sentences.

    8 x 1 = 8

    अ|‌ ‌‌निम्‍नलिखित में से प्रत्‍येक का सामने सही (√) अथवा गलत (x) जैसी स्थिति हो, का चिह्न लगावें ।

    (i) Pre-historians suspect that homo habilis was killed by Zinzanthropous who used toots. (true/false)

    प्रागैतिहासकारों को आशंका है कि होमो-हैबिलिस जिनजन्थ्रोपस द्वारा, जो औजारों का इस्तेमाल करते थे, मार दिए गए।

    (सही/गलत)

    (ii) France is regarded as the Birth Place of Renaissance. (true/false)
    फ्रांस को पुनर्जागरण काल की जन्म स्थली माना जाता है । (सही/गलत)

    (iii) Adam Smith (1722 – 1790) is called the father of modern economics. (true/false)
    आदम स्मिथ (1722-1790) को आधुनिक अर्थशास्त्र का जनक कहा जाता है । (सही/गलत)

    (iv) The Reformation Movement in European Countries weakened the influence of the church over the state (true/false)

    यूरोपीय देशों में आया सुधार आंदोलन का परिणामस्वरूप चर्च का राज्य पर प्रभाव कमजोर पड़ गया । (सही/गलत)

    (v) Permanent Settlement in Bengal, 1793 which was a permanent contract of settlement, between Brithish East India Company and Bengal land holders was introduced by Lord Dalhousie (true/false)

    1793 में बंगाल में स्थायी समझौता, जो ब्रिटिश ईस्ट इंडिया कम्पनी और बंगाल का जमीन मालिकों का बीच एक स्थायी समझौता था, इसको लार्ड लहौजी द्वारा लागु किया गया । (सही/गलत)

    (vi) The foundation of the Indian National Congress (INC) in the year 1885 was an historic event in the history of India (true/false)

    सन् 1885 इ० में इन्डियन नेशनल कांग्रेस की स्थापना भारत का इतिहास में एक एतिहासिक घटना थी । (सही/गलत)

    (vii) Eleventh Five year plan in India covered the period April 1, 2007 to March 31, 2012) (true/false)

    भारत का ग्यारहवाँ पंचवर्षीय योजना का कार्यकाल 1 अप्रैल, 2007 से 31 मार्च, 2012 रहा है । (सही/गलत)

    (viii) Deen Dayal Upadhyay Gramin Kaushal Yojana is a skill development programme for the rural as well as urban youth. (true/false)

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

    (b) Fill in the blanks with appropriate word/term. 8 x 1 = 8
    रिक्त स्थानों की पूर्ति उचित शब्द / पद से करें ।

    (i) The ozone layer is situated in ……………….. region of the atmosphere.
    ओजोन परत वायुमंडल का........................... क्षेत्र में अवस्थित है ।

(ii)   MAN AND BIOSPHERE PROGRAMME (MAB) was launched by ……………. in 1971.

मैन एण्ड वयोस्फियर प्रोग्राम (MAB) .... द्वारा सन्~ 1971 में प्रारम्भ किया गया I

(iii) The Government sponsored programme for forest conservation named as JFM stands for
………..

सरकार द्वारा वन सरक्षण हेतु प्रायोजित कार्यक्रम JFM प्रतीक का विस्तारित नाम .... है I

(iv)   During photosynthesis green leafy plants consume ………………. and release ……………
gases

प्रकाश संश्लेषण के दरम्यान हरी पत्तेदार पौधें .... ग्रहण करते हैं .... गैसें मुक्त करते हैं I

(v)   …………………, ……………… and ……………. are the three important Green House
Gases.

........................, ..., और .... तीन प्रमुख ग्रीन हाउस गैसें हैं I

(vi)   World Environment Day is celebrated all over the world on ……………… every year.

विश्व पर्यावरण दिवस विश्व में प्रत्येक वर्ष .... को मनाया जाता है I

(vii) The recent cyclone which created havoc on eastern coast particularly in the coastal region of
Odisha has been given the name ………………..

हाल में आया साइक्लोन जिसने पूर्वी समुद्री तट, विशेषकर ओड़िसा के तटीय क्षेत्र को बुरी तरह से प्रभावित
किया का नाम .... दिया गया है I

(viii) Central Pollution Control Board has its official headquarters in ………………… city of
India.

केन्द्रीय प्रदूषण नियन्त्रण पर्षद का मुख्यालय भारत के.................... नगर में अवस्थित है I

2.   What do you mean by "Man is a social animal"?

"मनुष्य एक सामाजिक जीव है" इससे क्या समझते हैं ?

3.   What do you mean by Scientific Revolution? How the Scientific exploration did change the
medieval views of the people?

वैज्ञानिक क्रांति से क्या समझते हैं ? वैज्ञानिक अन्वेषण ने किस प्रकार लोगों के मध्ययुगीन सोच में बदलाव लाया I

4.   Write the salient features of the Government of India Act, 1935.

गवर्नमेंट ऑफ इण्डिया एक्ट, 1935 की प्रमुख विशेषताओं को लिखिए I

5.   Give a descriptive account of "Make in India" campaign launched by the NDA
Government.

एनडीए सरकार द्वारा प्रारम्भ किये गए "मेक इन इण्डिया" अभियान के बारे में वर्णनात्मक लेख प्रस्तुत कीजिए I

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 I

7.   Enumerate the causes responsible for stress on freshwater resources.

स्वच्छ जल संसाधनों पर बढ़ते दवाव के लिए जिम्मेदार कारणों की विवेचना कीजिए I

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 स्रोतों का वर्णन प्रस्तुत कीजिए I

9.   Highlight the role of Central Pollution Control Board in prevention and control of different
types of pollution in the country.

विभिन्न प्रकार के प्रदूषण के रोकथाम में केन्द्रीय प्रदूषण नियन्त्रण पर्षद की भूमिका का विस्तार से उल्लेख कीजिए I

10. Write short notes any two of the following:

निम्नलिखित में से किन्हीं दो पर संक्षिप्त टिप्पणी लिखिए I

(a)   Social science as a subject of study (अध्ययन के एक विषय के रूप में समाज विज्ञान)

(b)   Noise pollution and its effect on man and animals

(ध्वनि प्रदूषण एवं इसका मनुष्य एवं जीवों पर प्रभाव)

(c)   Earthquake as a natural disaster (प्राकृतिक आपदा के रूप में भूकम्प)

(d)   Rainwater harvesting (वर्षाजल संग्रहण)

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Nalanda Open University
Annual Examination - 2019
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 Computers. Describe the characteristics of Computer system in detail.

2.   Describe classification of computers on the basis of their size, processing speed and cost.

3.   Discuss some output devices used in computers with their functions.

4.   Distinguish between RAM and ROM. Discuss the functioning of cache memory with the help of an example.

5.   Define Operating system. Describe some of the popular Operating systems used.

6.   Describe the features of a good programming language. How programming languages are selected.

7.   What is project management software? Explain.

8.   Explain OSI reference model of Network. What are the key concepts of OSI model?

9.   Differentiate between guided and unguided transmission media. Describe twisted pair and coaxial cables.

10.   Write short notes on any two of the following:
      a.   Structured Programming
      b.   Objected programming
      c.   Multitasking
      d.   Dual-mode operation.

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Examination Programme-2019
Bachelor of Computer Application
(BCA Part – I) (New Batch)

Date	Papers	Time	Examination Centre
29/5/2019	BCA Paper–I	12 to 03 pm	Nalanda Open University, Patna
31/5/2019	BCA Paper–II	12 to 03 pm	Nalanda Open University, Patna
03/6/2019	BCA Paper–III	12 to 03 pm	Nalanda Open University, Patna
05/6/2019	BCA Paper–IV	12 to 03 pm	Nalanda Open University, Patna
07/6/2019	BCA Paper–VII	12 to 03 pm	Nalanda Open University, Patna
08/6/2019	BCA Paper–VIII	12 to 03 pm	Nalanda Open University, Patna
10/6/2019	BCA Paper–V(P)	12 to 03 pm	Nalanda Open University, Patna
11/6/2019	BCA Paper–VI(p)	12 to 03 pm	Nalanda Open University, Patna

Time: 3.00 Hrs.   **Full Marks: 80**

Answer any five questions. All questions carry equal marks.

1.   (a)   If $f(x) = \log\left(\dfrac{1+x}{1-x}\right)$ where $-1 < x < 1$

         Show that $f\left(\dfrac{2x}{1+x^2}\right) = 2f(x)$

  (b)   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) $D \cap C$ (iv) $A - B$

2.   (a)   Evaluate the Determinant $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix}$.

  (b)   If $A = \begin{bmatrix} 2 & -4 & 1 \\ 3 & 5 & 2 \end{bmatrix} = \begin{bmatrix} 3 & 4 & 2 \\ -1 & 2 & 3 \end{bmatrix}$ then find $A + B$ and $A - B$.

3.   (a)   Divide 20 into 4 parts. Which are in A.P. and such that the product of first and fourth is
         to the product of the second and third in the ratio 2 : 3.
  (b)   The sum of three consecutive numbers in H.P. is 37 and the sum of their reciprocal is
         $\dfrac{1}{4}$. find the numbers.

4.   Evaluate :

  (a) $\left\{ i^{17} - \left(\dfrac{1}{i}\right)^{34} \right\}^2$

  (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 cubic equation $x^3 + 6x^2 + 6x + 8 = 0$

6.   (a)   Find the differential coefficient of $\sin x$ with respect to x with the help of first
         principle.
  (b)   Find a and b so that function $f(x)$ is continuous, where
         $f(x)$ $= x + 2$, where $x \leq 2$
                $= ax + b$, where $2 < x < 5$
                $= 3x - 2$, where $x \geq 5$

7.   Find the differential coefficient of the following:

  (a) $y = \left(\sqrt{x} - \dfrac{1}{\sqrt{x}}\right)^2$ (b) $x^2y^2 = \cos(x^2 + y^2)$

  (c)   If $x = a \sec^3 t$, $y = b \tan^3 t$ then find $\dfrac{dy}{dx}$

8.   (a)   Find the equation of tangent and normal to the curve $y^2 = 4ax$ at the point $(at^2, 2at)$
  (b)   Find the equation of tangent the curve $x = a \sin^3 t$, $y = a \cos^3 t$ at any point t and also at
         $t = \pi/4$

9.   Integrate the following with respect to x.

  (a) $\int \sin 2x \sin 4x \, dx$ (b) $\int \dfrac{(x^3 - 8)(x+1)}{x^2 + 2x + 4} dx$ (c) $\int \dfrac{\cos x + \sin x}{\sqrt{1 + \sin 2x}} dx$

10.   Find the ratio in which the straight line segment joining $(3, -1)$ and $(8, 9)$ is cut by the line
       $y - x + 2 = 0$.

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Nalanda Open University
Annual Examination - 2019

New Course

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. Define an algorithm. Discuss the properties of an algorithm. What are the key features of an algorithm? Explain with the help of an example.

2. Why C is called a High Level Language? Give a structure of a C program. Why header files important in C.

3. Describe at least 10 keywords in C with their uses. Give examples for each.

4. Explain the primary data types used in C with examples.

5. Explain the terms constants and variables with the help of an example. Write a program to calculate the simple interest.

6. What are decision control statements? Explain in detail. Write a program to enter a number of three digits and then calculate the sum of the digits.

7. What are arrays in C.? How arrays are initialized? Write a program to read and display 3*3 matrix using arrays.

8. Define functions. Explain the various types of storage class used in C with the help of an example.

9. Define Structure. Differentiate between Structure and Union with help of an example.

10. Write short notes on any two:
    (a) Pointers
    (b) Types of errors in C
    (c) Flowchart
    (d) Files in C.

: महत्वपूर्ण सूचना :

Examination Programme-2019
Bachelor of Computer Application
(BCA Part – I) (New Batch)

Date	Papers	Time	Examination Centre
29/5/2019	BCA Paper–I	12 to 03 pm	Nalanda Open University, Patna
31/5/2019	BCA Paper–II	12 to 03 pm	Nalanda Open University, Patna
03/6/2019	BCA Paper–III	12 to 03 pm	Nalanda Open University, Patna
05/6/2019	BCA Paper–IV	12 to 03 pm	Nalanda Open University, Patna
07/6/2019	BCA Paper–V	12 to 03 pm	Nalanda Open University, Patna
08/6/2019	BCA Paper–VI	12 to 03 pm	Nalanda Open University, Patna
10/6/2019	BCA Paper–VII	12 to 03 pm	Nalanda Open University, Patna
12/6/2019	BCA Paper–VIII	12 to 03 pm	Nalanda Open University, Patna

BCA, Part-I (New batch) के **Paper-V & VI** (Practical) परीक्षा नीचे दिये जा रहे कार्यक्रम के अनुसार आयोजित होंगी ।

Date	Paper	Time	Venue
13/06/2019	Paper-V (Practical)	12 Noon to 03.00 PM	School of Computer Science, 12th Floor, Biscomaun Tower
14/06/2019	Paper-VI (Practical)	12 Noon to 03.00 PM	

Nalanda Open University

New Course

Annual Examination - 2019
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 My Computer? Describe the components of My Computer with their utilities.

2. Define Notepad. What are its basic features? How Notepad is different from WordPad. Explain.

3. Explain different view that are present in MS-Word. What is text editing?

4. Explain Spell Check in MS-Word with the help of an example. What are the tools used for eliminating spelling and grammar errors.

5. Define Macros in MS-Word. Explain different types of macros and how they are created.

6. How MS-Word is different from MS-Excel. Describe the components of MS-Excel sheet.

7. What is the role played by multimedia in presentation? Give the steps involved in adding animation.

8. Discuss applications of PowerPoint presentation.

9. Explain the benefits of using Pack and Go feature. Give the steps involved in it.

10. Write short notes on any two:

    (a) Filters

    (b) Pivot Table

    (c) Types of graphs

    (d) Mail merge

Nalanda Open University
Annual Examination - 2019
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) $(110110111)_2$ to its $()_8$

(ii) $(427)_8$ to Decimal number.

(iii) $(1243)_{10}$ to its Binary equivalent.

(iv) $(10010011100110)_2$ to Hexadecimal number

2. Simplify the following Boolean function using Sum-of-Product form, by Karnaugh's map:
   $F (A, B, C, D) = \Sigma (2, 4, 6, 8, 10, 12, 14)$. Also draw the circuit diagram for it.

3. What are Universal gates? Draw the fundamental gates using Universal gates?

4. Draw a circuit of 8 x 1 multiplexer and give their characteristics table. Discuss the application of multiplexers.

5. Differentiate between Combinational circuits and sequential circuits? Give examples to explain your answer.

6. What is Programmable Logic Array (PLA)? Explain its working with proper diagram.

7. Define Counters. Describe Asynchronous and Synchronous Counters with the help of a diagram.

8. What is an Interrupt? Discuss various types of Interrupts with examples.

9. Define ALU. Why it is used? Describe ALU organization with diagram.

10. Write short notes on any four of the following:

a.   Wilkes Control unit
b.   Registers
c.   Cache memory
d.   Flip-flops
e.   CPU

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Nalanda Open University

New Course

Annual Examination - 2019
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.   Define a system. Describe different types of systems with examples.

2.   What is Data Flow Diagram (DFD)? What are the components of a DFD? Draw a DFD for a "University Admission System".

3.   What is structured analysis? How it helps in design? Discuss the principles of structured design in detail.

4.   Who is a System Analyst? Explain the role of System Analyst in system development.

5.   What is the need of Fact Finding Technique in System development? Explain few Fact Finding Techniques with their advantages and disadvantages. Which Fact Finding Technique would you use for Software development and Why?

6.   Define Cost-Benefit Analysis in context of Software development. Why it is required? Explain.

7.   Explain the goals of Process modelling with the help of an example.

8.   What is a Report? Why we prepare reports? Describe the process of designing a Report in detail?

9.   Define SRS and explain the structure of a typical SRS document.

10. Write short notes on any two of the following:

     a.   CASE tools

     b.   Prototyping

     c.   E-R Diagram

     d.   Database.

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Nalanda Open University
Annual Examination - 2019
Set-I

Bachelor in Computer Application (BCA), Part-I
Paper-V, Programming Methodology using C (Computer Practical)

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.

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Nalanda Open University
Annual Examination - 2019
Set-II

Bachelor in Computer Application (BCA), Part-I
Paper-V, Programming Methodology using C (Computer Practical)

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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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.

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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.

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Nalanda Open University
Annual Examination - 2019
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 ।

NEW

1. What is an Operating System? Discuss the functions which should be accomplished by an effective Operating system.

2. Explain the difference between a process and a thread with some examples. What is process cooperation? Why it is necessary?

3. What is scheduling? What are different types of scheduling? Discuss any two scheduling algorithms with examples.

4. What is critical section problem? Discuss Mutual Exclusion with an example.

5. What is Banker's algorithm? Explain in detail. Discuss the Banker's algorithm for deadlock avoidance.

6. Why Memory management is important? Differentiate between internal fragmentation and external fragmentation.

7. How can you implement virtual memory? Discuss at least two page replacement policies.

8. What is Disk Management? Explain disk formatting and Boot block in context of disk management.

9. Write at least 10 commands with their complete syntax in UNIX. Also explain the use of each command.

10. Write short notes on:
    (a) Spooling   (b) Batch processing
    (c) Time sharing   (d) Real Time.

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Examination Programme-2019
BCA (Part–II) (New Batch)

Date	Paper	Time	Examination Centre
28/5/2019	Paper IX	8 to 11A.M.	Nalanda Open University, Patna
30/5/2019	Paper -X	8 to 11A.M.	Nalanda Open University, Patna
01/6/2019	Paper -XI	8 to 11A.M.	Nalanda Open University, Patna
03/6/2019	Paper -XII	8 to 11A.M.	Nalanda Open University, Patna
05/6/2019	Paper -XIII	8 to 11A.M.	Nalanda Open University, Patna
07/6/2019	Paper-XIV	8 to 11A.M.	Nalanda Open University, Patna
08/6/2019	Paper-XV	8 to 11A.M.	Nalanda Open University, Patna
10/6/2019	Paper-XVI	8 to 11A.M.	Nalanda Open University, Patna

Practical Examination Programme-2019, BCA (Part–II), New Course

Date	Paper	Time	Examination Centre
11/06/2019	Paper IX	11:00 Am to 01:00 Pm	
12/06/2019	Paper -X	11:00 Am to 01:00 Pm	
13/06/2019	Paper -XI	11:00 Am to 01:00 Pm	12th floor, School of computer Science, Biscoman Tower, Patna
14/06/2019	Paper -XII	11:00 Am to 01:00 Pm	
15/06/2019	Paper -XIII	11:00 Am to 01:00 Pm	
17/06/2019	Paper-XIV	11:00 Am to 01:00 Pm	
18/06/2019	Paper-XVI	11:00 Am to 01:00 Pm	

Nalanda Open University
Annual Examination - 2019
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 ।

New Course

1. Explain the OSI reference model in detail.

2. What is a topology? Discuss various types of topologies with their advantages and disadvantages.

3. What is transmission impairment? Discuss various types of transmission impairments

4. What role does transmission media play in data communication and networking? Explain the types of guided and unguided media used for data communication.

5. Explain Frequency Division Multiplexing and Time division multiplexing with the help of an example. Discuss the problems that occur in Frequency Division Multiplexing.

6. Define flow control. Describe stop-and wait and sliding window protocol with the help of an example.

7. Define error control. Explain the difference between parity bit and CRC with the help of an example.

8. Explain CSMA protocol in detail.

9. Discuss various switching techniques with the help of an example.

10. Write short notes on:
    (a) Pipelining
    (b) Piggybacking
    (c) ALOHA
    (d) Framing

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Practical Examination Programme-2019,
BCA (Part–II), New Course

Date	Paper	Time	Examination Centre
11/06/2019	Paper IX	11:00 Am to 01:00 Pm	
12/06/2019	Paper -X	11:00 Am to 01:00 Pm	
13/06/2019	Paper -XI	11:00 Am to 01:00 Pm	
14/06/2019	Paper -XII	11:00 Am to 01:00 Pm	12th floor, School of computer Science, Biscoman Tower, Patna
15/06/2019	Paper -XIII	11:00 Am to 01:00 Pm	
17/06/2019	Paper-XIV	11:00 Am to 01:00 Pm	
18/06/2019	Paper-XVI	11:00 Am to 01:00 Pm	

Nalanda Open University
Annual Examination - 2019
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.
किन्हीं पाँच प्रश्नों के उत्तर दीजिए । सभी प्रश्नों के अंक समान हैं ।

New Course

1. Define DBMS. Discuss the elements of DBMS in detail.

2. What is the importance of keys in DBMS? Explain various types of keys used in DBMS to store data with the help of an example.

3. Explain different types of relational algebra used in DBMS with help of examples.

4. Define and discuss various types of attributes used in E-R diagram.

5. What is Normalization? Differentiate between different normal forms with the help of an example.

6. Define Database security, Integrity and threats. Why DBMS security required? Explain.

7. Explain some of the objects of MS-Access. What is data control?

8. Describe the datatypes used in MS-Access with examples of each type.

9. Draw an E-R diagram for "Hospital Management system" and explain how entities are related to each other.

10. Write short notes on any two:
    (e) Functional dependency
    (f) Multivalued dependency
    (g) Role of database administrator.
    (h) Advantages of DBMS.

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Practical Examination Programme-2019,
BCA (Part–II), New Course

Date	Paper	Time	Examination Centre
11/06/2019	Paper IX	11:00 Am to 01:00 Pm	
12/06/2019	Paper -X	11:00 Am to 01:00 Pm	
13/06/2019	Paper -XI	11:00 Am to 01:00 Pm	
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15/06/2019	Paper -XIII	11:00 Am to 01:00 Pm	
17/06/2019	Paper-XIV	11:00 Am to 01:00 Pm	
18/06/2019	Paper-XVI	11:00 Am to 01:00 Pm	

Nalanda Open University
Annual Examination - 2019
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.
किन्हीं पाँच प्रश्नों के उत्तर दीजिए । सभी प्रश्नों के अंक समान हैं ।

<u>New Course</u>

11.   What is multimedia? Discuss the applications of multimedia.

12.   Describe some of the multimedia software tools.

13.   What is Authoring tool in multimedia? Explain the features of Authoring tools. Give some examples.

14.   Differentiate between Hyper media and Hyper Text.

15.   What is MIDI? Explain sounds in multimedia.

16.   Discuss the difference between MIDI video and digital video.

17.   Describe the various types of image file formats available in multimedia.

18.   Explain various types of software testing. Why testing is important?

19.   Discuss CD-ROM technology and standards used today.

20.   Write short notes on any two:
       (i)   World Wide Web
       (j)   HTML
       (k)   JPEG
       (l)   Photoshop

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Practical Examination Programme-2019,
BCA (Part–II), New Course

Date	Paper	Time	Examination Centre
11/06/2019	Paper IX	11:00 Am to 01:00 Pm	
12/06/2019	Paper -X	11:00 Am to 01:00 Pm	
13/06/2019	Paper -XI	11:00 Am to 01:00 Pm	
14/06/2019	Paper -XII	11:00 Am to 01:00 Pm	12th floor, School of computer Science, Biscoman Tower, Patna
15/06/2019	Paper -XIII	11:00 Am to 01:00 Pm	
17/06/2019	Paper-XIV	11:00 Am to 01:00 Pm	
18/06/2019	Paper-XVI	11:00 Am to 01:00 Pm	

Nalanda Open University
Annual Examination - 2019
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.
किन्हीं पाँच प्रश्नों के उत्तर दीजिए । सभी प्रश्नों के अंक समान हैं ।

<u>**New Course**</u>

1. Define algorithm. Explain it features with the help of suitable examples. Write an algorithm to generate a Fibonacci series up to 10 terms.

2. Why space complexity is more critical than time complexity? Discuss the best case, worst case and average case of algorithms with the help of an example.

3. Explain linear and non-linear data structures. Why are they needed?

4. Explain different operations that can be performed on one dimensional array. Write a program to compute the sum and mean of the elements of a two dimensional array.

5. Write the difference between doubly linked list and circular linked list. Write a program to multiply every element of the linked list with 20.

6. What is a stack? Explain the terms infix, prefix and postfix expressions with the help of an example. How these expressions are solved using stack?

7. Explain circular queue and operation on circular queue. Write a program to implement dequeue.

8. Define Binary Search Tree (BST). Explain the major features of a BST.

9. Explain various types of searching techniques used in Data Structure with examples of each type.

10. Define heap sort. Sort the following sequence of numbers in descending order using heap sort:
44, 34, 80, 23, 21, 18, 90, 55, 67, 12, 78, 72.

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Practical Examination Programme-2019,
BCA (Part–II), New Course

Date	Paper	Time	Examination Centre
11/06/2019	Paper IX	11:00 Am to 01:00 Pm	
12/06/2019	Paper -X	11:00 Am to 01:00 Pm	
13/06/2019	Paper -XI	11:00 Am to 01:00 Pm	
14/06/2019	Paper -XII	11:00 Am to 01:00 Pm	12th floor,
15/06/2019	Paper -XIII	11:00 Am to 01:00 Pm	School of computer Science,
17/06/2019	Paper-XIV	11:00 Am to 01:00 Pm	Biscoman Tower, Patna
18/06/2019	Paper-XVI	11:00 Am to 01:00 Pm	

Nalanda Open University
Annual Examination - 2019
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.
किन्हीं पाँच प्रश्नों के उत्तर दीजिए । सभी प्रश्नों के अंक समान हैं ।

<u>New Course</u>

1. Define OOPs. Describe the characteristics of OOPs. Write down some advantages of OOPs.

2. Briefly explain the Primary data types used in C++. Give examples.

3. Describe different types of arithmetic operators in C++ with examples of each type.

4. Define Structure. Declare a structure for a student having rollno, name, address and marks in five subjects. Differentiate between class and structure.

5. Describe storage class in C++. Explain inline function with the help of an 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 are arrays? How the elements of an array accessed? Explain array of objects in C++ with the help of an example.

8. What is the concept of inheritance in C++? Explain various types of inheritance in C++ with the help of examples.

9. Define object slicing. Explain with the help of an example the concept of virtual destructor.

10. Write short notes on any two:

    a. Polymorphism
    b. Exception handling
    c. Templates
    d. Class

Practical Examination Programme-2019,
BCA (Part–II), New Course

Date	Paper	Time	Examination Centre
11/06/2019	Paper IX	11:00 Am to 01:00 Pm	12th floor, School of computer Science, Biscoman Tower, Patna
12/06/2019	Paper -X	11:00 Am to 01:00 Pm	
13/06/2019	Paper -XI	11:00 Am to 01:00 Pm	
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17/06/2019	Paper-XIV	11:00 Am to 01:00 Pm	
18/06/2019	Paper-XVI	11:00 Am to 01:00 Pm	

Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
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.*
किन्हीं पाँच प्रश्नों के उत्तर दीजिए । सभी प्रश्नों के अंक समान हैं ।

New Course

1. Explain the Definition of Statistics and their characteristics.

2. What is frequency distribution of continuous series?

3. Draw cumulative frequency curve from the following data.

CI	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Freq	4	6	10	14	25	22	18	5

4. Find the arithmetic mean from the following data.

CI	10	20	30	40	50	60	70	80	90	100
f	4	5	3	2	5	4	3	7	6	2

5. Find the Mode from the following data

CI	11-15	16-20	21-25	26-30	31-35	36-40	41-45
f	5	10	22	26	20	11	6

6. What do you understand by dispersion? Discuss the relative merits and demerits of various measure of dispersion.

7. Calculate the standard deviation from the following data.

CI	0-10	10-20	20-30	30-40	40-50	50-60
f	5	3	7	5	10	3

8. Compute first four moment about mean from the following data.

X	1	3	4	7	9
f	4	8	12	10	6

9. State and prove the addition theorem of probability for two mutually exclusive events.

10. Let X be random variables with following distribution.

X	−3	6	9
P (X)	1\6	1\2	1\3

Find E(X) and E(X^2) using above data.

Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XVI: (Internet and Web Technology)

Time: 3.00 Hrs.   **Full Marks: 80**

Answer any five questions. All questions are compulsory.

1. What is Internet? Explain the concept of IP addressing in detail.

2. Describe different ways in which we can communicate over Internet.

3. Discuss TCP/IP model with a diagram. Also explain the functions of each layer of the model.

4. Define HTML. Describe the HTML Tags and list a few basic tags used.

5. How do we create frames? What are its disadvantages? Show with an example the use of different heading types.

6. Explain the structure of java script program. Write a program in java to display 10 consecutive numbers.

7. Define XML. Explain XML Usage and XML syntax in detail.

8. Discuss the benefits of XHTML. How it is different from XHTML?

9. Explain any 5 syntax for JSP (Java Server Pages) action. Illustrate with example.

10. Write short notes on any two:

(a) World Wide Web (WWW)
(b) Domain Name System (DNS)
(c) File Transfer Protocol (FTP)
(d) Type Casting.

Nalanda Open University
Annual Examination - 2019
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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Nalanda Open University
Annual Examination - 2019
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 sytem.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- X: Computer Networking (Practical)

Time: 2.00 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. Draw various topologies used in networking and explain their advantages and disadvantages.

3. Discuss the difference between a hub and a layer 2 switch.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- X: Computer Networking (Practical)

Time: 2.00 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. Draw the TCP/IP reference model and discuss the functions of each layer.

3. Discuss the difference between a switch and router.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XI: DBMS using Access (Practical)

Time: 2.00 Hrs.   Full Marks: 20

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

1. Create a database in MS-Access. Now create a table name student with five attributes and enter at least 10 records in it.

2. Write five queries of your own choice.

3. Discuss the elements of DBMS.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XI: DBMS using Access (Practical)

Time: 2.00 Hrs.   Full Marks: 20

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

1. Create a database in MS-Access. Now create a table name Teacher with five attributes and enter at least 10 records in it.

2. Write five queries of your own choice.

3. Describe different types of database.

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Nalanda Open University
Annual Examination - 2019
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 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 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.

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Nalanda Open University
Annual Examination - 2019
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 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 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.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XIII: Data Structure Using C (Practical)

Time: 2.00 Hrs.   Full Marks: 20

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

1. Write a program in C that calculates sum of squares first 10 natural numbers.

2. Write a program in C to insert and delete in a linked list.

3. Write a program in C to implement a binary tree.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XIII: Data Structure Using C (Practical)

Time: 2.00 Hrs.   Full Marks: 20

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

1. Write a program that calculate the sum of cubes of first 10 even numbers.

2. Write a program in C to insert and delete in a stack.

3. Write a program in C to implement quicksort.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XIV: Object Oriented Programming using C++ (Practical)

Time: 2.00 Hrs.   Full Marks: 20

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

1. Write a program in C++ that prints Fibonacci series upto given term entered from the keyboard.

2. Write a program in C++ to implement multiple inheritance.

3. What is a constructor? Write a program in C++ using constructors.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XIV: Object Oriented Programming using C++ (Practical)

Time: 2.00 Hrs.   Full Marks: 20

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

1. Write a program in C++ that prints the sum of first 10 odd numbers.

2. Write a program in C++ to implement multilevel inheritance.

3. What is a operator overloading? Write a program in C++ to implement operator overloading.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XVI: Internet and Web Technology (Practical)

Time: 2.00 Hrs.   **Full Marks: 20**

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

1. Write the code in HTML to display:

   a. RAM
   b. SHYAM
   c. MAHESH

2. Show with an example how hyperlink is created using HTML code.

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

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-II (NEW)
Paper- XVI: Internet and Web Technology (Practical)

Time: 2.00 Hrs.   **Full Marks: 20**

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

1. Write the code in HTML to display:

   The background color of the paragraph is Green

2. Write HTML code to create a table and insert data into it.

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

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-III
Paper-XV [Computer Networks (CS-68)]

Time: 3.00 Hrs.   Full Marks: 80

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

1. Explain the factors that cause congestion in the subnet. How congestion can be controlled? Discuss.

2. Discuss how the message is transmitted. Draw and explain the structure of ATM adaptation layer.

3. Differentiate between simplex, half-duplex and full-duplex. Explain the concept of piggybacking and pipelining with the help of an example for each.

4. Explain different types of transmission media with example.

5. Differentiate between virtual circuit subnet and datagram subnet. Which switching method is used in telephone networks?

6. Explain the functions of Data Link Layer and Transport Layer.

7. Why is multiplexing needed in data communication system? Explain different types of multiplexing with examples.

8. What is a Gateway? How do X.25 gateways link hosts and LANs? Explain.

9. Draw and explain different types of topologies used in networking. List advantages and disadvantages of each network topology.

10. Write short notes on any two of the following:
    (a) IEEE 802.5
    (b) CSMA/CD
    (c) DNS
    (d) Firewall

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Revised Examination Programme-2019
BCA (Part–III)

Date	Papers	Time	Examination Centre
09/4/2019	BCA Paper-XV	8 to 11 AM	Nalanda Open University, Patna
12/4/2019	BCA Paper-XVI	8 to 11 AM	Nalanda Open University, Patna
13/4/2019	BCA Paper-XVII	8 to 11 AM	Nalanda Open University, Patna
15/4/2019	BCA Paper-XVIII	8 to 11 AM	Nalanda Open University, Patna
24/4/2019	**BCA Paper-XIX (Practical)**	**10 to 1 PM**	**School of computer Science, 12th Floor, Biscouman Tower, Patna**
17/4/2019	BCA Paper-XX	8 to 11 AM	Nalanda Open University, Patna
19/4/2019	BCA Paper-XXI	8 to 11 AM	Nalanda Open University, Patna
22/4/2019	BCA Paper-XXII	8 to 11 AM	Nalanda Open University, Patna
25/4/2019	**BCA Paper-XXIII (Project Viva)**	**10 AM onwards**	**School of computer Science, 12th Floor, Biscouman Tower, Patna**

Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-III
Paper-XVI [TCP/IP PROGRAMMING (CS-69)]

Time: 3.00 Hrs.   Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. (a)   Find the error, if any, in the following IPv4 addresses :
        (i) 115.60.040.75   (ii) 220.40.8.8.25   (iii) 70.30.300.35   (iv) 32.11100001.45.62

    (b) Find the class of each address:
        (i) 10101000.00111010.001011.11100000
        (ii) 00111001.00110101.0001000.11000010
        (iii) 25.25.20.15
        (iv) 250.15.25.100

2. Explain the concepts of IP subnet addressing and subnet masking with the help of an example. Specify the number of byte required for net-id for the following classes:
    (i)   Class A   (ii)   Class B   (iii)   Class C

3. How is the flow control managed by transport layer? Explain the working of Sliding Window protocol with the help of 5 bit frame size.

4. Explain the purpose and importance of the following IP and TCP header fields:
    (i)   Header checksum   (ii)   Type of service (iii)   Time to live   (iv)   Urgent Pointer
    (v)   Window

5. Explain TCP/IP models with diagram and explain the functions of each layer.

6. Write short notes on:
    (i)   Congestion control   (ii)   RARP

7. Compare and contrast between:
    (a) TCP/IP Internet layer and Network layer and OSI Network layer and Data link layer.
    (b) Connection-oriented and connectionless services in context of TCP and UDP.

8. Why is multiplexing needed at transport layer? Explain how the multiplexing is handled by TCP.

9. Why do we need a DNS system, when we can directly use an IP address? List the important characteristics of DNS and explain them.

10. Write the syntax and purpose of the following system calls and UNIX commands:
    (i)   socket ( )   (ii)   bind ( )   (iii)   chmod   (iv)   du
    (v)   sleep

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-III
Paper-XVII [INTRODUCTION TO SOFTWARE ENGINEERING (CS-70)]

Time: 3.00 Hrs.   **Full Marks: 80**

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

1. Design the following for Railway reservation system:
    (a) Design the DFD's (level - 0, 1 and 2)
    (b) Prepare SRS document. List assumptions, if any.
    (c) Design an ER-diagram. List all the entities, attributes, key constraints and cardinality

2. Explain the roles and responsibilities of the following personals in the s/w development process: (i) Project Manager   (ii) Project Leader   (iii) System Analyst   (iv) Programmer

3. What is system analysis? Describe the importance of system analysis in software system development. List any five responsibilities of a System Analyst.

4. What are CASE tools? Explain different categories of CASE tools.

5. Explain any two recent developments that has influenced the s/w development methodology.

6. Explain the process of software upgradation, once the product is sold out to a customer or company.

7. Explain various s/w crisis from the users and programmer point of view.

8. Write short notes on the following:
    (a) Project scheduling
    (b) Project standards
    (c) Benchmark testing

9. What are various management risks in Software Development? Discuss the areas of risk that software project management team should handle.

10. Explain the following terms in context of Software Engineering.
    (i)   4GLs
    (ii) Software Evaluation
    (iii) Validation and verification
    (iv) Coupling and cohesion

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-III
Paper-XVIII [Computer Oriented Numerical Techniques (CS-71)]

Time: 3.00 Hrs.   **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 15 with initial approximation $x_o = 3.8$
   (b) It is known that the Equation $x^3 + 7x^2 + 9 = 0$ has a root between -8 and -7. Use the Regula-falsi method to obtain the root rounded off to 3 decimal places.

2. Solve the system of equations:
   $16x_1 + 22x_2 + 4x_3 = -2;$ $4x_1 - 3x_2 + 2x_3 = 9;$ $12x_1 + 25x_2 + 2x_3 = -11$
   using Gauss Elimination method.

3. Solve the following system of Equations by Gauss Seidel iteration method :
   $2x_1 + x_2 - 3x_3 + 9x_4 = 31;$ $3x_1 - 4x_2 + 10x_3 + x_4 = 29;$ $2x_1 + 12x_2 + x_3 - 4x_4 = 13$
   $13x_1 + 5x_2 - 3x_3 + x_4 = 18$

4. (a) Using the Lagrange's Interpolation formula, find the value of y when $x = 18$

x	5	6	9	11	14	16	19	20
$f(x)$	12	13	14	16	20	26	30	34

   (b) Using the inverse interpolation formula. Find the value of x when $y = 3$ from the following table.

x	36	54	72	144	157
y	-2	1	2	4	6

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

x	3	5	7	9	11	13
$f(x)$	6	24	38	108	118	127

   (b) Find Newton's Backward difference form of Interpolating Polynomial for the data

x	4	6	8	10
$f(x)$	19	40	79	142

6. (a) Find the relationship among E, Δ and D.
   (b) Find $f'(x)$ at $x = 0.4$ from the following table of values.

x	0.1	0.2	0.3	0.4
$f(x)$	1.10517	1.22140	1.34986	1.49182

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

   (b) Find the approximate value of $I = \int_{1.1}^{1.5} e^x dx$ using Trapezoidal rule with $h = 0.2$.

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

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

10. Solve the following IVPS using Euler's method.
    $y' = 1 - 2xy$, $y(0.2) = 0.1948$. Find $y(0.4)$ taking $h = 0.2$

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(Answer any four questions. All questions carry equal marks.)

1.   Explain the properties of OOPs with examples.

2.   Write a C++ program to implement multiple inheritance.

3.   Write a program in C++ to print a Fibonacci series upto the terms entered from the keyboard.

4.   Write a program in C++ to overload the + operator.

5.   Write a program in C++ to implement friend function.

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(Answer any four questions. All questions carry equal marks.)

1.   Explain objects, classes, inheritance and polymorphism.

2.   Write a program in C++ to implement multilevel inheritance.

3.   Write a program in C++ to print a series of prime numbers upto the terms entered from the keyboard.

4.   Write a program in C++ to overload the ++ operator.

5.   How abstract class is implemented in C++. Explain with an example.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-III
Paper-XX [Theory of Computer Science (CS-73)]

Time: 3.00 Hrs.   Full Marks: 80

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

1. Define the following concepts with the help of an example:

   (i)   Ambiguity   (ii) Regular grammar

   (ii) Chomsky Normal Form.   (iv) Mealy Finite automata.

2. Draw finite automata corresponding to the following regular expression:

   (i)   (ab + cd)   (ii) (b + c) a*

   (iii) ab*(bb+cd)a*   (iv) a*b*c*+abc

   (v)   (ab)* + (ba)*

3. Explain pumping lemma for regular expression. Prove that $L=\{a^p|\ p$ **is a prime number$\}$** is not regular.

4. Construct context-free grammar for each of following languages:

   (i) L: $\{x\ \varepsilon\ \{a, b\}^*$: number of a's in x equals number of b's in x$\}$

   (ii) L: $\{x\ \varepsilon\ \{a, b\}^*$: number of a's in x is NOT equal to number of b's$\}$

5. Differentiate between DFA and NFA with an example. How a NFA can be converted to DFA? Explain.

6. Define Push Down Automata. Give a push down automaton to read a the word **"aabbabbaa"**

7. Describe Chomsky's classification of grammars with examples.

8. Construct a Turing Machine for each of the following functions:

   f(m,n) : m-n . Write all the steps in detail.

9. Discuss halting problem and the concept of Universal Turing machine. Describe three initial functions used to define the primitive recursive functions.

10. Describe how finite automata can be used to search information on World Wide Web. Briefly   describe NP-hard problem.

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-III
Paper-XXI [Introduction to Internet Programming (JAVA)]

Time: 3.00 Hrs.   Full Marks: 80

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

1. Explain the following keywords with examples:

   (i)   abstract   (ii)   final   (iii)   throws   (iv)   instance of

2. Write a method in Java that accepts a string from console and prints it in reverse order. (Do not use any built-in methods for doing the traversal).

3. Discuss the life cycle of an applet. Create a program to explain the same. Explain at least three differences between Java Applet and Application.

4. What is call-by-value and call-by-reference in Java? Explain with example. Explain the need of various access specifiers 6 with the help of suitable examples.

5. What is an exception? Create a user defined exception that is thrown when a string is entered in lower case. Write a program in Java to use that exception.

6. Explain the use of super keyword in java with the help of suitable example. Write a recursive function in java to find sum of first 100 natural numbers.

7. Discuss the properties of Java. What is Java Virtual Machine (JVM)? Explain with example.

8. What are predefined streams in java? Describe the various mouse events in MouseEvent class in brief.

9. What do you mean by static data in a class? Differentiate between:

   (i)   Thread and process   (ii)   Final and finalize

10. When do we use parselnt ( ) function? Explain. What is synchronized block in java? Why do we use it?

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Nalanda Open University
Annual Examination - 2019
Bachelor in Computer Application (BCA), Part-III
Paper-XXII [Intranet Administration (CS-75)]

Time: 3.00 Hrs.   **Full Marks: 80**

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

1. Intranet is more than a LAN but less than Internet. "Justify the statement with the help of a diagram. List and explain any five advantages of Intranet for an organization.

2. Explain the three security tools available in the market for securing the Intranet. Describe encryption/decryption as a method of ensuring security. Discuss any three methods of implementation.

3. Explain the use of databases in intranets. Explain the basic, ODBC, Distributed and Object Oriented Models of databases.

4. What are IP Addresses? Explain the various components and classes of an IP Address.

5. Explain how are PPP and SLIP used in Intranet? Explain in detail, the protocols used for E - Commerce.

6. Explain the GIF and JPEG graphic formats supported by Web browsers today. When is each preferred?

7. What is Groupware? Explain its applications with the help of a diagram, depict the contents of the groupware.

8. Write short notes on the following:
   (a) Hacking   **(b) VPN**   **(c) Bulletin Boards**   **(d) TELNET and FTP (e)**   **UDP**

9. Explain Common Gateway Interface (CGI)? How does it work? Discuss the disadvantages of CGI based application.

10. Mention any eight features an Editor tool should provide to qualify as an Intranet authority tool. Explain them.

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