

Nalanda Open University

Annual Examination - 2017

Bachelor in Computer Application (BCA), Part-I

Paper-I [Foundation Course in English for Computing (CS-610)]

Time: 3.00 Hrs.

Full Marks: 80

Answer all questions.

1. Read the following passage carefully and answer the questions that follow:

The new dangers resulting from our more organic society call for certain changes in the kind of character that is admired. The bold buccaneer, or the great conqueror such as Alexander or Napoleon, has been admired and is still admired although the world can no longer afford this type of character. We come here upon a diffidently. It is a good thing that people should be adventurous and that there should be scope for individual enterprise, but the adventure and enterprise, if they are not to bring total disaster, must steer clear of certain fields in which they was formally possible. You can still, without harm to your fellowmen wish to be the first man to reach the moon. You may wish to be a great poet or a great composer or a man who advances the boundaries of scientific knowledge. Such adventure injures no one. But if Napoleon is you ideal you must be restrained. Certain kind of anarchic self-assertion which are splendid to the Literature or tragedy, have come to involve too much risk. A motorist alone on an empty road, may derive as he pleases, but in crowded traffic he must obey the rules More and more the lives of the individuals come to resemble the motorist in traffic rather than the lonely driver in an empty desert. (Bertrand Russel) **5 x 3 = 15**

- (a) Choose a suitable title to the passage.
- (b) Why can't the modern world afford to have adventurous characters like Alexander and Napoleon?
- (c) What is splendid in the Literature of tragedy?
- (d) What idea does the writer want to convey by giving the analogy of a motrist?
- (e) What kind of adventures injures no one?

2. Write an essay of about 400 words on any one of the following:

20

- (a) Future of English in India.
- (b) Present System of Examination.
- (c) Punctuality
- (d) Computer Revolution

3. Turn the following into Passive Voice:

05

- (a) She may harm you.
- (b) Bring a chair
- (c) They are repairing the bridge.
- (d) My father planted this tree
- (e) He will call you.

P.T.O

4. Change into Indirect Speech: 05

- (a) She said, "My brother takes exercise daily."
- (b) I said to have "U were not working attentively."
- (c) The teacher said, "The lunar eclipse occurs only in the full moon night."
- (d) The saint said "Happiness lies in content."
- (e) The Bible says "The wages of sin is death."

5. Fill in the blanks with appropriate preposition: 05

- (a) He complained.....Vice Chancellor.
- (b) I complained.....the principal.....Raju.
- (c) I must complain.....your father.....your character

6. Make the following words negative by adding the appropriate prefix : 05

- (a) Animate (b) Own (c) Climax (d) fortune (e) Deed

7. Write a Paragraph in about 200 words on any one of the following: 10

- (a) Rome was not built in a day.
- (b) Health is wealth.
- (c) All that glitters is not gold.

8. Read the following passage and summarise it to one-third of its length.

Give a suitable title. **15**

We all start life as weak, helpless creatures, totally dependent for both our physical and mental well-being upon those who care for us. It has been demonstrated that, from the very beginning of its separate existence, the baby requires more than simple attention to its physical needs. If a baby is to develop satisfactorily, it is not enough merely to feed it and keep it warm; it needs a mother as a person who will play with it, caress it, and show it affection in all the hundred ways in which mothers do show love towards a child which has been desired and and which is welcomed. Babies who are cared for physically, but whose emotional needs are neglected, develop more slowly and may, in some instances, suffer permanent damage in that, in adult life, they may never be able to form close emotional ties with any other human being. Every psychiatrist has seen examples of people who were brought up in institutions and who, perhaps, were excellently fed and clothed, but whose emotional needs were left quite unsatisfied. As a result, they grew up into a kind of person who can never keep a friend because the demands which they make upon others are not those of friendship, but rather those of a lost child looking for a parent who can never be found. (224 words)



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Bachelor of Computer Application (BCA Part – I)**

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23/3/2017	BCA Paper-II	8 to 11 am	Nalanda Open University, Patna
25/3/2017	BCA Paper-III(p)	12 Noon to 3 pm	12 th Floor Biscomaun Tower, Patna
27/3/2017	BCA Paper-IV	8 to 11 am	Nalanda Open University, Patna
29/3/2017	BCA Paper-V	8 to 11 am	Nalanda Open University, Patna
31/3/2017	BCA Paper-VI(p)	12 Noon to 3 pm	12 th Floor Biscomaun Tower, Patna

Nalanda Open University
Annual Examination - 2017
Bachelor in Computer Application (BCA) Part-I

Paper-II (Foundation Course in Humanities and Social Sciences) BHSF –101

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) Mark correct \checkmark or Wrong X. as the case may against each of the following sentence 8×1=8
अधोलिखित में से प्रत्येक, के सामने सही (\checkmark), अथवा गलत (x), जैसी स्थिति हो, का चिह्न लगावें।
- (i) The Neolithic human being seems to have been a peace loving person. (true/false)
□□□ □□□□ □□ □□ नव □□□□□ □□□□□ □□□□ एक
□□□□□□□□□□ □□□□□□□ □□। (सही/गलत)
- (ii) In the Old Stone Age, human beings lived entirely on hunting and fishing. (true/false)
पुरापाषाणकाल में मानव पूर्णतः शिकार एवं मछली पकड़ने पर आश्रित था। (सही/गलत)
- (iii) The Bronze tools were made of a mixture of copper and tin. (true/false)
कांसे के औजार तँबे और रंगे को मिलाकर बनाए जाते थे। (सही/गलत)
- (iv) British colonial policies made an impact on every aspect of the Indian society. (true/false)
ब्रिटिश औपनिवेशिक नीतियों ने भारतीय समाज के प्रत्येक पहलू को प्रभावित किया। (सही/गलत)
- (v) Education is seen as an important tools of economic and social development. (true/false)
शिक्षा को आर्थिक एवं सामाजिक विकास का महत्वपूर्ण साधन के रूप में देखा गया है। (सही/गलत)
- (vi) Social structures are permanent and they never change. (true/false)
सामाजिक संस्थाएँ स्थाई हैं वे कभी नहीं बदलती हैं। (सही/गलत)
- (vii) Renaissance contributed to the development of secular ideas. (true/false)
पुनर्जागरण ने धर्मनिरपेक्ष विचारों के विकास में योगदान दिया। (सही/गलत)
- (viii) Evolutionary theories view social change as progress. (true/false)
विकासात्मक सिद्धान्त सामाजिक परिवर्तन को प्रगति के रूप में देखता है। (सही/गलत)
- (ix) The Right to Property is a fundamental Right. (true/false)
सम्पत्ति का अधिकार एक मौलिक अधिकार है। (सही/गलत)
- (x) Diffusion is one of the causes of social change. (true/false)
क्या प्रसार सामाजिक परिवर्तन के कारणों में से एक है। (सही/गलत)
- (xi) In India President is the Constitutional Chief Executive. (true/false)
भारत में राष्ट्रपति संवैधानिक रूप से मुख्य कार्यकारी अधिकारी होता है। (सही/गलत)
- (xii) Unorganised sector is also called registered sector. (true/false)
असंगठित क्षेत्र को पंजीकृत क्षेत्र भी कहा जाता है। (सही/गलत)
- (xiii) The First Five Year Plan on development of irrigation capacity. (true/false)
प्रथम पंचवर्षीय योजना ने सिंचाई क्षमता के विकास पर बल दिया। (सही/गलत)
- (xiv) Bharatnatyam is the oldest among the contemporary classical dance forms of India. (true/false)
भरतनाट्यम भारत के समकालीन शास्त्रीय नृत्य रूपों में सबसे पुराना है। (सही/गलत)
- (xv) Awareness is generated by Education. (true/false)
जागरूकता शिक्षा द्वारा उत्पन्न की जाती है। (सही/गलत)
- (xvi) The population in the Neolithic Age was on the decrease. (true/false)
नव पाषाण काल में जनसंख्या घट रही थी। (सही/गलत)
2. Explain the nature of the post-industrial society. How is it a different social stage?
उत्तर औद्योगिक समाज के स्वरूप की व्याख्या कीजिए। यह भिन्न सामाजिक व्यवस्था कैसे है?
3. What do you understand by the term Social Structure ?
सामाजिक संरचना शब्द से आप क्या समझते हैं ?
4. Discuss the role of Mahatma Gandhi in the National Movement.
राष्ट्रीय आन्दोलन में महात्मा गाँधी की भूमिका का विवेचन कीजिए।
5. Discuss the term Human Security and explain its changing dimensions.
मानव सुरक्षा शब्द की विवेचना कीजिए तथा इसके बदलते आयामों की व्याख्या कीजिए।

6. What do you understand by the term Renaissance ? Did the Renaissance in Europe lead to flourishing of Humanism and Individualism ?
 पुर्नजागरण शब्द से आप क्या समझते हैं ? क्या यूरोप में पुर्नजागरण से आगे मानवतावाद और व्यक्तिवाद फला-फूला ?
7. Discuss the importance of Fundamental Rights in the Indian Constitution.
 भारतीय संविधान में मौलिक अधिकारों के महत्व की विवेचना कीजिए ।
8. Critically examine the role of the institution of family.
 परिवार नामक संस्था की भूमिका का आलोचनात्मक परीक्षण कीजिए ।
9. Why is communication within an organisation important?
 किसी भी संगठन के भीतर संप्रेषण क्यों महत्वपूर्ण है ?
10. Write short notes on any two of the following :-
 निम्नांकित में से किन्हीं दो पर संक्षिप्त टिप्पणी लिखिए :-
- (a) Rio Summit (रियो शिखर सम्मेलन)
 (b) Institution of Family (परिवार की संस्था)
 (c) Studying Society (समाज का अध्ययन)
 (d) Fundamental Duties (मूल कर्तव्य)



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(Answer one question from section A and all the questions from section B.)

Section -A

1. What is a LAN in the context of Computer Networks? What are the characteristics of LAN? Explain the star topology of LAN with the help of a diagram.
2. What is RAM? Why do you need RAM in a computer system? How is RAM different from ROM? Why do you need external memory even though a computer system has RAM?

Section-B

(Write all the steps in your copy.)

3. Perform the following tasks using MS-Word document:
 - (a) Write one paragraph about Nalanda Open University and define proper margin, header and footer. Also insert page number on each page.
 - (b) Save the above paragraph in a file and rename it.
 - (c) Insert a clip art in the document.
 - (d) Insert a picture of your choice in the document.
4. Perform the following tasks using MS-Windows:
 - (a) Arrange the icons on the desktop according to their size.
 - (b) Change the mouse pointer.
 - (c) Interchange the functions of left and right buttons of the mouse.
 - (d)
5. Write the advantages of Mail Merge feature of MS-Word. Write a letter to you are your friends using Mail-merge option. Create at least 10 addresses of your friends.
6. Write short notes on:
 - (a) Cryptography
 - (b) Macros in MS-word
 - (c) Search engines.



(Answer one question from section A and all the questions from section B.)

Section -A

1. What is a Compiler? Why is it needed? How is it different from an Interpreter?
2. Explain the simplex, half-duplex and full duplex modes of communication with the help of diagrams.

Section-B

(Write all the steps in your copy.)

3. 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. Also insert page number on each page.
 - (b) Change the font color of the heading to blue.
 - (c) Insert a book mark.
 - (d) Create a hyperlink in the document.
4. Perform the following tasks using MS-Windows:
 - (a) Change the background of your desktop.
 - (b) Change the system date and time.
 - (c) Change the mouse button.
 - (d) Hide the icons on the desktop.
5. Create a macro using keyboard and toolbar option.
6. Write short notes on:
 - (a) Network devices
 - (b) Internet
 - (c) Browsers.



NALANDA OPEN UNIVERSITY
Annual Examination 2017
Bachelor of Computer Application (BCA), Part – I
Paper – IV (PC SOFTWARE SKILLS, CS - 612)

Time: 3 hours

Maximum Marks: (80)

Answer any five questions. Answer all the questions.

1. Three married couples are to cross a river in a boat which can hold only two persons. One of the persons must row the boat. Each of the three husbands is a jealous man who will not allow his wife to be left in the company of other men, unless he is also present. Show how the jealous husbands and their wives can accomplish the trip by representing all the states on the left and the right banks of the river.
2. What is a Pivot table? What are the uses of Pivot tables? Discuss with the help of an example.
3. Explain the following terms :
 - (i) Auto-format
 - (ii) Autofill
 - (iii) WYSIWYG
 - (iv) Format Painter
 - (v) Workbook
4. Define a browser. Explain any two differences between the two basic categories of browsers.
5. Explain the following:
 - (i) TELNET
 - (ii) ISP
 - (iii) FTP
6. What are Macros in Excel? Write the steps to create and run a Macro.
7. Explain the use of the following functions with an example for each:
 - (i) RAND()
 - (ii) SUMIF()
8. What is Chart Wizard in MS-Excel and what are its advantages? List the steps involved in creating a chart through Chart Wizard.
9. Write short notes on the following :
 - (a) SMTP
 - (b) POP
 - (c) E-mail
 - (d) Scenario Manager
 - (e) Auto-filters
10. Describe scenario in MS-Excel? Write the advantages of using MS-Excel.



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Nalanda Open University
Annual Examination - 2017
Bachelor in Computer Application (BCA), Part-I
Paper-V [Foundation Course in Mathematics in Computing (CS-60)]

Time: 3.00 Hrs.

Full Marks: 80

Answer any five questions. All questions carry equal marks.

1. Find the limits:

(a) $\lim_{x \rightarrow 0} \frac{\sqrt{1+x^2} - \sqrt{1+x}}{x}$ (b) $\lim_{x \rightarrow a} \frac{x^{5/2} - a^{5/2}}{\sqrt{x} - \sqrt{a}}$ (c) $\lim_{x \rightarrow 0} \frac{e^x - 1 - x}{x^2}$

2. (a) To find differential coefficient of $\log x$ with respect to x with the help of first principle.

(b) Evaluate $\left[(i)^{17} - \left(\frac{1}{i}\right)^{34} \right]^2$

3. (a) If w be the complex cube root of unity. Then prove that $(1-w)(1-w^2)(1-w^4)(1-w^5)=9$

(b) If $U = \{3, 4, 5, 6, 7, 8, 9, 10, 11\}$

$A = \{3, 4, 5, 6\}, C = \{7, 8, 9\}$

$B = \{4, 6, 7, 8\}, D = \{6, 9, 10, 11\}$

Then find the following (i) $A \cup B$ (ii) A' (iii) $A - B$ (iv) $A - D$

4. Find $\frac{dy}{dx}$:

(a) $y = x^4 + 4x^2 - 5\log x + 6e^{5x}$ (b) $y = \frac{x \tan x}{\sec x + \tan x}$ (c) $y = \sqrt{\sin \sqrt{x}}$

5. (a) Find the Maximum and Minimum values of $y = 2x^3 - 15x^2 + 36x + 10$

(b) Solve the following simultaneous equations by Cramer's Rule.

$x + y + z = 7$

$5x + 4y - 3z = 1$

$6x - 3y + 2z = 8$

6. Integrate the following with respect to x

(a) $\int \frac{(1+x)^3}{\sqrt{x}} dx$ (b) $\int \frac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha} dx$ (c) $\int \cos^3 x dx$ (d) $\int \frac{\sin \sqrt{x}}{\sqrt{x}} dx$

7. Solve the following equations by Cardano's method.

(a) $2x^3 + 3x^2 + 4x + 1 = 0$ (b) $x^3 - 3x + 1 = 0$

8. (a) Find the equation of a sphere with center as $A(3, 4, 6)$ and radius as 7 units.

(b) Find the arithmetic mean and geometric mean of the following sequence of six numbers 4, 6, 4, 9, 2.

9. Find the equation of a plane passing through the three points $P(-3, 1, -4)$, $Q(2, 1, -3)$ and $R(1, 2, 8)$.

10. Find the vertex, axis, focus, directrix, tangent at the vertex and length of the latus rectum of the parabola $4y^2 + 6y - 2x - 3 = 0$



Nalanda Open University

Annual Examination - 2017

Bachelor in Computer Application (BCA), Part-II

Paper-VII (Fundamental Course in Science and Technology), FST-01

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. What feature in Indian society led to the decline of science in post Gupta period?
उत्तर वैदिक काल में विज्ञान की अवनति में भारतीय समाज की कौन-कौन सी विशेषताएँ उत्तरदायी थी ?
2. Match each of the entities listed in column - 1 with their features given in column - 2. Draw an arrow between the items that match:

Coloumn-1

- (a) Earth
- (b) Sun
- (c) Constellation
- (d) Milky way galaxy
- (e) Clusters
- (f) Super clusters

Coloumn-2

- (i) A Group of galaxies, containing a few to a few thousands galaxies.
- (ii) A Group of stars arranged in a pattern, defining a region of the sky.
- (iii) A tiny planet moving around sun
- (iv) A collection of clusters extending upto several hundred million light years.
- (v) A star situated at large distance from center of the milky way galaxy.
- (vi) A galaxy containing billion of stars, dust and gas.

3. a) Compare the life styles and the level of scientific and technical knowhow of sixteenth century Europe and sixteenth century India. What are the reasons that keep India lagging behind the western countries in almost all areas related to development?

भारतीय राज्य तथा सामाजिक सगठनों की उन महत्वपूर्ण की व्याख्या कीजिए जिनके फलस्वरूप मौर्य और गुप्त काल में विज्ञान और प्रौद्योगिकी की प्रगति में सहायता मिली

(b) Describe the features of the Indian state and the social organization that helped the growth of science and technology in the Maurya and Gupta period.

सोलहवीं शताब्दी के यूरोपीय तथा सोलहवीं शताब्दी के भारतीय समाज की जीवन शैली तथा वैज्ञानिक और तकनीकी जानकारी के स्तर की तुलना कीजिए। वे कौन से कारण थे जिनकी वजह से भारत पश्चिमी देशों से विकास से संबंधित लगभग सभी क्षेत्रों में पिछड़ा रहा।

4. Discuss modes of HIV transmission. What are its initial symptoms failure?
एच०आइ०वी० के संक्रमण के तरिकों का विवेचन कीजिए। इनके प्रारम्भिक लक्षण क्या है ?
5. Explain ecological crisis in ocean, coasts and atmosphere.
समुन्द्रिय, समुन्द्रियतट तथा वायुमण्डल में होनेवाले पारिस्थिकी संकट को समझायें।
6. (a) In what way the concept of spontaneous generation of life was discarded by the works of Louis Pasteur?
लुई पास्चर के अनुसंधानों ने जीवन स्वतः जनन सिद्धांत को किस प्रकार गलत सिद्ध किया?
(b) Explain briefly the impacts of Miller's experiment on the classical theories of origin of life.
जीवन की उत्पत्ति के पुराने सिद्धांतों पर मिलर के प्रयोग से हुए प्रभावों की संक्षेप में व्याख्या कीजिए।
7. Match the vitamins and minerals given in column I with their functions listed in column II of the following :

निम्नलिखित स्तंभ I में वर्णित विटामिन एवं खनिज (मिनरल) को स्तंभ II में दिए गए कार्यों से मिलान कराइये।

Column I (स्तंभ I)

- (a) Vitamin B
विटामिन बी
- (b) Vitamin A
विटामिन ए
- (c) Vitamin D

Column II (स्तंभ II)

- (i) Builds resistance to infection
संक्रमण से प्रतिरोध निर्माण
- (ii) Necessary for the formation of hemoglobin of the blood
रक्त में हेमोग्लोबिन के निर्माण के लिए आवश्यक
- (iii) Its absence may cause bow legs

- विटामिन डी इसके अभाव में पैरों का टेढ़ापन होना
- (d) Vitamin K (iv) For building strong bones and teeth
विटामिन के हड्डी एवं दाँत को मजबूत बनाना
- (e) Vitamin C (v) Help us to have healthy eyes, smooth skin and shiny hair
विटामिन सी स्वस्थ नेत्र, कोमल त्वाचा एवं चमकदार बाल के लिए सहायक
- (f) Calcium (vi) It prevents bleeding
कैल्सियम रक्त प्रवाह को रोकना
- (g) Iron (vii) Important for proper functioning of nerves and brain
लौह नस एवं मस्तिष्क के महत्वपूर्ण कार्य
- (h) Iodine (viii) Prevents swelling of thyroid gland
आइयोडिन थायराइड ग्रंथि के सूजन की रोक
8. Define and distinguish with example any **Three** of the following pairs:
अधोलिखित युग्मों से किन्हीं **तीन** व 1 ाषित कीजिए एवं सोदाहरण विभिन्नता बताइये:-
- (a) Black dwarf and White dwarf
(ब्लैक ड्वार्फ एवं व्हाइट ड्वार्फ)
- (b) Intergalactic and Interstellar
(इन्टरगैलैक्टिक एवं इन्टरस्टिलर)
- (c) Abiotic factors and Biotic factors
(एबोटिक फैक्टर्स एवं बायोटिक फैक्टर्स)
- (d) Mass communication and Interpersonal communication
(मास कम्यूनिकेशन एवं इन्टरपर्सनल कम्यूनिकेशन)
9. Discuss the causes and remedies of Water Pollution.
जल प्रदूषण के कारणों एवं निदान का विवेचन कीजिए ।
10. Examine the concept of import-export of technology with a few examples of export of technology from India.
भारत से प्रौद्योगिकी के निर्यात के कतिपय उदाहरणों सहित प्रौद्योगिकी के आयात-निर्यात की अवधारणा का परीक्षण कीजिए ।

:Revised:

BCA, Part-II के Practical पत्रों की परीक्षा नीचे दिये जा रहे कार्यक्रम के अनुसार आयोजित होंगी ।

06/3/2017	Paper-VIII Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science
07/3/2017	Paper-XII Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science
08/3/2017	Paper-XIV Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science

Examination Programme-2017 BCA (Part-II)

Date	Paper	Time	Examination Centre
23/2/2017	Paper VII	8 to 11A.M.	Nalanda Open University, Patna
25/2/2017	Paper -IX	8 to 11A.M.	Nalanda Open University, Patna
27/2/2017	Paper -X	8 to 11A.M.	Nalanda Open University, Patna
01/3/2017	Paper -XI	8 to 11A.M.	Nalanda Open University, Patna
03/3/2017	Paper -XIII	8 to 11A.M.	Nalanda Open University, Patna
06/3/2017	Paper-VIII Practical	12 to 3 PM.	Nalanda Open University, Patna
07/3/2017	Paper-XII Practical	12 to 3 PM.	Nalanda Open University, Patna
08/3/2017	Paper-XIV Practical	12 to 3 PM.	Nalanda Open University, Patna

Nalanda Open University
Annual Examination - 2017
Bachelor in Computer Application (BCA), Part-II
Paper-IX (Element of System Analysis and Design)

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. What is System Development Life Cycle? Explain with an example.
2. Draw a Data Flow Diagram (DFD) upto level-2 depicting various processes, data flow and data repositories for a "School Examination system".
3. Explain different Fact Finding Techniques with examples? Which type of fact finding technique would you use for collecting data about literacy rate in Bihar?
4. Differentiate between analysis and design phase of System Development Life Cycle. Discuss some design tools.
5. Why documentation important in system development? Discuss different types of documents and their utilities.
6. Write short notes on the following:
 - (a) Role of System analyst
 - (b) Quality of a software
 - (c) System Outputs
7. What are the characteristics of Inputs? What are the methods used for input verification? Explain with examples.
8. Describe different types of testing processes and their utility in System Development.
9. Explain the entire process of implementation of a software?
10. Explain Corrective, Adaptive and Perfective maintenance with an example. Why maintenance of a software important?

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:Revised:

BCA, Part-II के Practical पत्रों की परीक्षा नीचे दिये जा रहे कार्यक्रम के अनुसार आयोजित होंगी।

06/3/2017	Paper-VIII Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science
07/3/2017	Paper-XII Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science
08/3/2017	Paper-XIV Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science

Nalanda Open University
Annual Examination – 2017
Bachelor in Computer Application (BCA), Part-II
Paper-X (Database Management System)

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. An online book database maintains the details such as ISBN, title, price, and year of publishing, number of pages, author, and publisher of various textbooks, language books and novels. The user can view the details of various authors and publishers. The database also maintains the details of the ratings and feedbacks of other authors about a particular book. The ratings of the book are displayed along with other details of the book.
Design an ERD for the Online Book Database. Assume suitable attributes for the entities and mark the key attribute in the ERD.
2. What are distributed databases? Describe the structure of distributed databases. Describe the issues related to storing a relation in the distributed database.
3. Write short notes on the following :
 - (i) Functional Dependency (FD)
 - (ii) Multivalued Dependency (MVD)
 - (iii) Remote Procedure Call (RPC)
 - (iv) Object Oriented System (OOS)
4. What is a Knowledge Base System? Describe the four types of Knowledge Representation Schemes.
5. What are the five main differences between a file processing system and a DBMS? Discuss different types of file organization and give examples for each type.
6. Consider the two sets of FDs for the relation R (A, B, C, D, E).
 - (i) $A \twoheadrightarrow B, AB \twoheadrightarrow C, D \twoheadrightarrow AC, DE$
 - (ii) $A \twoheadrightarrow BC, D \twoheadrightarrow AE$Discuss how the table can be normalized. What are the keys in the table?
7. Design Semantic Net Representation for the following facts: "Elephants are mammals. They are large in size and have a long trunk. Their ears are large. Elephants like bananas. Appu is an elephant but Appu likes apples."
8. Explain any three aggregate functions of SQL with an example for each. What is ISAM ? How is overflow of records handled in ISAM ?
9. Describe Client-Server Architecture and its advantages. What are Keys ? Differentiate between Candidate, Primary and Foreign keys with the help of suitable examples.
10. Define 3NF and BCNF with examples. Consider the following relational schema :

Courses (Cno, Cname)
Students (Rollno, Sname, Age, Year)
Registered_for (Cno, Rollno)

Write the SQL Queries for
 - (i) Find the age and year of the youngest student in each year.
 - (ii) Display the list of students course-wise.
 - (iii) Display the list of students not registered for any course.



Annual Examination - 2017
Bachelor in Computer Application (BCA), Part-II
Paper-XI (Introduction to Computer Organization)

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. Convert the following:
 - (i) $(1110011)_2$ to its $()_8$
 - (ii) $(764)_8$ to Decimal number.
 - (iii) 553 to its Binary equivalent.
 - (iv) $(1100110)_2$ to Hexadecimal number
2. Simplify the following Boolean function using Sum-of-Product form, by Karnaugh's map: $F(A, B, C, D) = \Sigma (2, 3, 4, 5, 7, 8, 11, 12, 15)$. Also draw the circuit diagram for it.
3. Define and draw the fundamental gates with their truth tables. What are universal gates? Explain giving an example.
4. Write a program in 8086 assembly language to generate the first 10 terms of the primary number. Also draw an appropriate flow chart for your program.
5. What is the difference between combinational circuit and sequential circuit? Give example for each type of circuit.
6. Draw a circuit of half adder and full adder and give their truth tables. Define don't care condition.
7. What are Interrupts? Discuss their various types. Describe the execution of Instruction Cycle with Interrupt Cycle with the help of a diagram..
8. What is a Control Unit? Depict the structure of a Microprogrammed Control Unit with the help of a diagram and explain its working.
9. Explain the following addressing modes in the context of 8086 microprocessor with the help of examples: (i) Register Addressing (ii) immediate addressing (iii) Indexed Indirect Addressing
10. Explain any three of the following with the help of suitable diagrams:
 - (a) DMA
 - (b) R-S flip-flop
 - (c) RAID
 - (d) DRAM

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:Revised:

BCA, Part-II के Practical पत्रों की परीक्षा नीचे दिये जा रहे कार्यक्रम के अनुसार आयोजित होंगी।

06/3/2017	Paper-VIII Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science
07/3/2017	Paper-XII Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science
08/3/2017	Paper-XIV Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science

Nalanda Open University
Annual Examination - 2017
Bachelor in Computer Application (BCA), Part-II
Paper-XIII (Multimedia) CS-66

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 multimedia. Discuss all the hardware required for running multimedia software efficiently.
2. What are the components of multimedia. Explain each component in detail.
3. How multimedia plays an important role in business. Explain with an example.
4. What is hypertext? Discuss the application of hypertext in multimedia.
5. How planning of multimedia done? Also discuss the design and production of multimedia. Explain the need for development of multimedia applications
6. Describe various elements of hypertext using an appropriate example
7. Discuss at least 10 application areas of multimedia with example of each type.
8. What is authorware? Discuss the future of authorware in brief. List any five services that are available to people due to advancement of computing and communication technologies. Also, describe "Everest Authoring System".
9. What is Morphing ? How and where can it be used ? Also, explain the relationship between hypermedia and hypertext.
10. Explain the basic utility of the following multimedia softwares :
 - (i) Photoshop
 - (ii) DesignerHow can you achieve cross platform capability for a multimedia application?.

:Revised:

BCA, Part-II के Practical पत्रों की परीक्षा नीचे दिये जा रहे कार्यक्रम के अनुसार आयोजित होंगी।

06/3/2017	Paper-VIII Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science
07/3/2017	Paper-XII Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science
08/3/2017	Paper-XIV Practical	12.00 Noon to 3.00 PM	12th Floor, Biscomaun Tower School of Computer Science

Nalanda Open University
Annual Examination - 2017
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. What is networking? Why it is important? Discuss different types of networking..
2. What are the devices used at network layer? Describe the functions and congestion control algorithms of network layer.
3. Discuss the topologies of network layer with diagram. Give examples for each topologies.
4. Explain the different types of transmission modes with examples.
5. What is multiplexing? Explain different types of multiplexing with examples of each type.
6. Differentiate between presentation layer and application layer.
7. Why security important in networking? Discuss various network securities.
8. What is ATM? Discuss various layers of ATM? Also discuss the advantages of using ATM.
9. Explain different protocols of Data Link Layer. How Data Link Layer different from Transport Layer?
10. Write short notes on:
 - (i) Hub and Switch
 - (ii) Bandwidth
 - (iii) Error detection
 - (iv) Connection-less service



Examination Programme-2017
BCA (Part-III)

Date	Papers	Time	Examination Centre
14/2/2017	BCA Paper-XV	8 to 11 AM	Nalanda Open University, Patna
16/2/2017	BCA Paper-XVI	8 to 11 AM	Nalanda Open University, Patna
18/2/2017	BCA Paper-XVII	8 to 11 AM	Nalanda Open University, Patna
20/2/2017	BCA Paper-XVIII	8 to 11 AM	Nalanda Open University, Patna
22/2/2017	BCA Paper-XIX (Practical)	8 to 11 AM	Nalanda Open University, Patna
24/2/2017	BCA Paper-XX	8 to 11 AM	Nalanda Open University, Patna
25/2/2017	BCA Paper-XXI	8 to 11 AM	Nalanda Open University, Patna
27/2/2017	BCA Paper-XXII	8 to 11 AM	Nalanda Open University, Patna
Date of Paper-XXIII- will be declared later on			Nalanda Open University, Patna

Nalanda Open University
Annual Examination - 2017
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. How many networks can each IP address class A, B, C and D have ? Also, find the number of hosts per network in each given address class. Given the following IP addresses, find the network address (beginning addresses) : (i) 25.27.10.90 (ii) 140.15.25.80.
2. Give any two examples of how computers can be connected together. Write a UDP client and a server algorithm where the client should prompt a user to type a line of a text and send it to the server.
3. Explain how OSI model different from TCP/IP model. How does TCP manage out-of-order and corrupted segments ? Explain with the help of an illustration/diagram.
4. What is the purpose of designing ICMP? What are the different query messages in ICMP for network monitoring and management ?
5. What is the value of HLEN (IP Header field) when the header size is 20 bytes? What is the value of HLEN when the maximum size of a header is 60 bytes ? How does the link state routing protocol work ?
6. Explain the sequence of system calls in UDP and TCP client-server architecture. Describe the two flags in IP header which deals with datagram fragmentation. How does TELNET work ? Explain.
7. (a) Explain the following TCP header fields with the help of examples :
(i) Sequence number
(ii) Acknowledgement number.
(b) Differentiate between POP and IMAP.
8. What are the differences between TCP and UDP ? Explain the meaning of the following system calls : (i) read() (ii) recv() (iii) inet() (iv) close().
9. Discuss any two types of sockets. How does the sliding protocol control the flow of packets in the network ? Explain with the help of a diagram.
10. Explain the concept of byte-ordering used in network programming with an example. Write the purpose of the following Unix commands : (i) Ping (ii) Hostname (iii) Who (iv) IPconfig



Revised Practical Examination Programme-2017
BCA (Part-III)

Date	Papers	Time	Examination Centre
22/2/2017	BCA Paper-XIX (Practical)	12 Noon to 03 PM	12th Floor, Biscomaun Tower, Patna

: नये सत्र एवं पुराने सत्र के सभी विद्यार्थियों के लिए महत्वपूर्ण सूचना :

BCA, Part-III के Paper-XXIII, Project Viva-Voce की परीक्षा नीचे दिये जा रहे कार्यक्रम के अनुसार आयोजित होगी:

Date	Time	Paper	Venue
01.03.2017	12.00 Noon to 3.00 PM	XXIII	12th Floor, Biscomaun Tower School of Computer Science

Nalanda Open University
Annual Examination - 2017
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. Define the term 'software engineering'. Explain all the phases of Waterfall Model briefly.
2. What is the need of testing? Explain benchmark testing in detail. What is Object Oriented Design? Explain the advantages of using Object Oriented Design.
3. Explain the role of a System Analyst in software development. Also, explain the key attributes of a System Analyst. Define the term 'Software Quality'. Explain any two software quality attributes briefly.
4. What are CASE tools? Explain different categories of CASE tools. What is meant by Risk Management? Explain any two risks related to software development.
5. What is the need for project scheduling? Explain any one Project Scheduling technique. Differentiate between Coupling and Cohesion. Explain two types of coupling.
6. Explain the following with respect to Software Engineering:
(a) GUI (b) Prototyping (c) Project Standards
(d) Software Development Team (e) Software Verification.
7. What do you mean by Function Point Analysis? Mention its features. Describe COMOMO model briefly.
8. Write short notes on:
(a) Software crisis
(b) Software maintenance
(c) Software quality.
9. Define DFD? What are the rules for drawing the DFD? Draw a DFD for Railway Reservation System.
10. Explain various software metrics and give example for each type.



Revised Practical Examination Programme-2017
BCA (Part-III)

Date	Papers	Time	Examination Centre
22/2/2017	BCA Paper-XIX (Practical)	12 Noon to 03 PM	12th Floor, Biscomaun Tower, Patna

: नये सत्र एवं पुराने सत्र के सभी विद्यार्थियों के लिए महत्वपूर्ण सूचना :

BCA, Part-III के Paper-XXIII, Project Viva-Voce की परीक्षा नीचे दिये जा रहे कार्यक्रम के अनुसार आयोजित होगी:

Date	Time	Paper	Venue
01.03.2017	12.00 Noon to 3.00 PM	XXIII	12th Floor, Biscomaun Tower School of Computer Science

Nalanda Open University

Annual Examination - 2017

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.

- (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.

- Solve the system of Equations by Gauss elimination method:

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

- Perform four iteration of the Gauss Seidel method for solving the following system equations

$$\begin{aligned}2x_1 - x_2 + 0x_3 + 0x_4 &= -1 \\-x_1 + 2x_2 - x_3 + 0x_4 &= 0 \\0x_1 - x_2 + 2x_3 - x_4 &= 0 \\0x_1 + 0x_2 - x_3 + 2x_4 &= 1\end{aligned}$$

- (a) Using the Lagrange's Interpolation formula find the value of y when $x=13$

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

- (b) Using the Inverse Interpolation formula. Find the value of x when $y=3$ from the following table

x	36	54	72	144
y	-2	1	2	4

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

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

Hence approximate $f(4)$ from Newton's forward difference Interpolating Polynomial.

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

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

Hence Interpolate $f(9)$

- (a) Find the relationship among E , Δ and D .
(b) Find the first and second derivatives of $f(x)$ at $x=1.1$ from the following tabulated value.

x	1.0	1.2	1.4	1.6	1.8	2.0
$f(x)$	0.000	0.1280	0.5440	1.2960	2.4320	4.000

- (a) State and Prove Trapezoidal Rule.

- (b) Find the approximate value of $I = \int_{1.1}^{1.5} e^x dx$ using Simpson's $\frac{1}{3}$ rd rule with $h=0.2$

- Using the third order Taylor's series method find the solution of the differential equation :

$$xy' = x - y, y = 2 \text{ at } x = 2 \text{ taking } h = 1$$

9. Solve the following IVP's using Euler's method $y' = \frac{y-x}{y+x}$, $y(0) = 1$.

Find $y(0.1)$ with $h = 0.1$.

10. $y' = \frac{y-t}{y+t}$, $y(0) = 1$. Find $y(0.5)$ taking $h = 0.1$.



1. Explain the following concepts with the help of an example:
 - (a) Overloaded Constructors
 - (b) Encapsulation

2. What are the advantages of using UML? Create the class diagram for a University having classes – Student, Teacher, Subject and Programme. Make suitable assumptions, if any.

3. Write program in C++ to implement a linked list.

4. Write a program in C++ to display the **bio-data** of 10 students using inheritance.

5. Differentiate between call by value and call by reference with the help of an example in the content of function call. Explain the advantages of call by value?

6. Write a template class “binaryTree” in C++. The class should have functions for search and insert and element into a binaryTree. Use this template to create a binary tree of integer keys. Make suitable assumptions, if any.

1. Explain the following concepts with the help of an example:
 - a) Inheritance
 - b) Polymorphism

2. Create a class AString that stores only alphabets in a string of arbitrary length. The string has a constructor that makes sure that String has only Alphabets. The class also has an overloaded + operator. The overloaded + operator should perform the concatenation of two strings. Does the class need an explicit destructor? Justify your answer.

3. Write program in C++ to implement a queue.

4. Write a program in C++ to implement operator overloading.

5. Design and represent a queue of integers as a class. Also, illustrate the use of insert and delete operations for the queue. Make any assumptions that are required.

6. Write a C++ template function that accepts two arguments of any numeric type and finds the larger of them.



Nalanda Open University
Annual Examination - 2017
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. What is context free grammar? Explain pumping lemma of context free grammar with an example.
2. Describe the steps of converting the Deterministic Finite Automata to Non-Deterministic Finite Automata with an example.
3. What is ambiguity? Explain using at least two different examples.
4. Define and explain Push Down Automata (PDA) with an example. Show that palindrome in $\{1,0\}$ can be accepted by the PDA.
5. Define Grammar. Write down the grammar for the following language and draw the required automata:
 - (i) $L1 = \{a^n \mid n \geq 0\}$
 - (ii) $L2 = \{a^n b^m c^n \mid n \geq 0\}$
6. Determine the Closure property of Regular Languages under the following set operations:
 - (i) Union
 - (ii) Kleene star
 - (iii) Complementation
 - (iv) Concatenation
7. Build a Push Down Automata (PDA) that accepts the language of odd palindrome over the alphabet $\{0, 1\}$. Give the computation sequence for the input 0110110 accepted by a PDA.
8. Find the equivalent finite automata for the following regular expressions:
 - (i) $(0 + 1)^* 101$.
 - (ii) $(01^*01 + 10^*11)$
 - (iii) 010^*10^*1
 - (iv) $(0+1)(01)^*11$
9. Construct a Turing machine to accept the Sum function given by:
 $F(m,n) = \{0, \text{ if } m=0 \text{ or } n=0, \quad \text{Else } m+n\}$
10. Prove that following languages are not Regular Languages:
 - (a) $L = \{a^n b^n \mid n \geq 1\}$
 - (b) $L = \{a^p \mid p \text{ is a prime number.}\}$



Revised Practical Examination Programme-2017
BCA (Part-III)

Date	Papers	Time	Examination Centre
22/2/2017	BCA Paper-XIX (Practical)	12 Noon to 03 PM	12th Floor, Biscomaun Tower, Patna

: नये सत्र एवं पुराने सत्र के सभी विद्यार्थियों के लिए महत्वपूर्ण सूचना :

BCA, Part-III के Paper-XXIII, Project Viva-Voce की परीक्षा नीचे दिये जा रहे कार्यक्रम के अनुसार आयोजित होगी:

Date	Time	Paper	Venue
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01.03.2017	12.00 Noon to 3.00 PM	XXIII	12th Floor, Biscomaun Tower School of Computer Science
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Nalanda Open University
Annual Examination - 2017
Bachelor in Computer Application (BCA), Part-III
Paper-XXI [Introduction to Internet Programming (CS-74)]

Time: 3.00 Hrs.

Full Marks: 80

Answer any Five questions. All questions carry equal marks.

1. What is the relationship between Java and HTML? Why do we use interfaces in java? Explain with example.
2. Comment on “Java is a robust programming language? What is the Java virtual machine?
3. Differentiate between:
(i) Thread and process
(ii) Window and Panel.
(iii) This and Super.
(iv) Private and Protected
4. What is meant by Serialization? Also differentiate between Transient and Volatile keywords.
5. Write a Java program to display a button labeled “Nalanda Open University”.
6. Why Java is called platform independent? Is C++ also Platform independent? Justify your answer??
7. When do we declare a member of class static? Explain with the help of a suitable example.
8. Write a program in java to copy a file to another file. Name of the files are entered at command line? For example Copy File1, File 2.
9. Write a recursive function in Java to find GCD of two integers entered at command line.
10. Write a program in java to print the following pattern
1
2 2
3 3 3
4 4 4
5 5 5 5



Nalanda Open University
Annual Examination - 2017
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. Define WAP (Wireless Application Protocol). Explain the layered architecture of WAP.
2. What is meant by Distributed Database? Explain its main features. What are the parameters for selecting a server computer(s) in a large scale organisation ?
3. Write any five applications of Groupware. What is SSL (Secure Socket Layer)? How does it provide data security? Explain with an example.
4. Explain the features and importance of Windows NT LAN Manager (NTLM). Differentiate between Private key and Public key Infrastructure.
5. Write the steps for creating a Domain in Windows Server. Discuss the features of Intranet Authoring Tools.
6. Write the range of IP address classes. Also, mention the total possible networks in each class. Write the advantages and disadvantages of using VPN (Virtual Private Network).
7. Explain ARP and UDP. "One solution for the protection of the computing infrastructure is to use digital certificate based solutions". Give Pros and Cons of implementing the statement.
8. How do organizations ensure security in an Intranet? Explain the five security models used for chalking out the security plan and policy.
9. Explain the need of Application Service Protocols in an Intranet. Describe any two application Service Protocols of OSI Model.
10. Write short notes on the following :
 - (a) IMAP
 - (b) ARP
 - (c) HTTP
 - (d) JDBC



: नये सत्र एवं पुराने सत्र के सभी विद्यार्थियों के लिए महत्वपूर्ण सूचना :

BCA, Part-III के Paper-XXIII, Project Viva-Voce की परीक्षा नीचे दिये जा रहे कार्यक्रम के अनुसार आयोजित होगी:

<i>Date</i>	<i>Time</i>	<i>Paper</i>	<i>Venue</i>
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