

BACHELOR OF COMPUTER APPLICATIONS (BCA_NEW)

BCA_NEW /ASSIGN/SEMESTER-IV

ASSIGNMENTS

(January - 2026 & July - 2026)

MCS-206, BCSL-146, BCS-053, BCSL-147, BCS-041, BCOC-131,



SCHOOL OF COMPUTER AND INFORMATION SCIENCES

**INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068**

Course Code	:	BCOC-131
Course Title	:	Financial Accounting
Assignment Number	:	BCA_NEW(IV)/131/Assignment/2026
Maximum Marks	:	100
Last date of Submission	:	30th April, 2026 (for January Session) 31st October, 2026 (for July Session)

Note: Attempt all the questions.

Section-A

(Attempt all the questions. Each question carries 10 marks)

- Question 1:** Name items which are recorded at the invoice price in the Consignment Account. Give journal entries passed for the adjustment of loading in respect of each item. **(10 Marks)**
- Question 2:** Why is journal sub-divided? Name the special journals and state the type of transactions entered in each of them. **(10 Marks)**
- Question 3:** How are branch balances incorporated in Head Office books at the end of the accounting year? **(10 Marks)**
- Question 4:** What do you mean by accounting concepts? Briefly explain the accounting concepts which guide the accountant at the recording stage. **(10 Marks)**
- Question 5:** Explain the need and significance of depreciation. What factors should be considered for determining the amount of depreciation? **(10 Marks)**

Section-B

(Attempt all the questions. Each question carries 6 marks)

- Question 6:** Define Ledger & Group. How Ledger is different from Group? **(6 Marks)**
- Question 7:** What are the different types of errors that are usually committed in recording transactions? Explain with examples. **(6 Marks)**
- Question 8:** State the journal entries passed to open various accounts under Stock and Debtors System as applicable to hire purchase business. **(6 Marks)**
- Question 9:** What are the qualitative characteristics of accounting information? Briefly explain. **(6 Marks)**
- Question 10:** Explain briefly various methods of recording the joint venture transactions without maintaining separate set of books. **(6 Marks)**

Section-C

(Attempt all the questions. Each question carries 6 marks)

Question 11: Explain the considerations which are required to be kept in mind while choosing accounting software. **(10 Marks)**

Question 12: Write short notes on the following: **(5 × 2= Marks)**

- a) Loading
- b) Joint venture
- c) Debit Note
- d) Normal loss
- e) Hire purchase

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**INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068**

Course Code	:	BCS-041
Course Title	:	Fundamentals of Computer Networks
Assignment Number	:	BCA_NEW(IV)/041/Assignment/2026
Maximum Marks	:	100
Weightage	:	25%
Last Date of Submission	:	30th April, 2026 (for January Session) 31st October, 2026 (for July Session)

This assignment has eight questions for a total of 80 marks. Answer all the questions. Each question carries 10 marks. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance explanations.

Question 1:

- Explain the basic working principle of **optical fiber communication**. How does light propagation differ in various types of optical fibers? **(5 Marks)**
- Describe the **TCP/IP reference model**. Explain the responsibilities of each layer and mention at least two commonly used protocols associated with every layer. **(5 Marks)**

Question 2:

- What is meant by **routing instability** in computer networks? Explain how incorrect routing information can spread among routers with the help of an example. **(5 Marks)**
- Define **modulation** in data communication. Explain **angle-based modulation techniques** and discuss any two challenges associated with their use. **(5 Marks)**

Question 3:

- A data stream 10101101 is to be transmitted using CRC. The generator polynomial is $x^3 + x + 1$. Calculate the CRC bits and write the final transmitted frame. Show all intermediate steps. **(5 Marks)**
- Explain the concept of a **self-organizing wireless network**. Why are such networks useful in situations where fixed infrastructure is unavailable? **(5 Marks)**

Question 4:

- What role does **ICMP** play in IP-based networks? Classify ICMP messages and explain their importance with suitable examples. **(5 Marks)**
- Define a **Network Interface Card (NIC)**. Explain how modern NICs handle data transmission efficiently between memory and the network medium. **(5 Marks)**

Question 5:

- Explain the purpose of **cryptographic hash functions**. Describe the main stages involved in generating a message digest using a standard hashing algorithm. **(5 Marks)**

- b) Differentiate between a **hub** and a **switch**. Also explain how switching decisions differ between **Layer-2 switches** and **Layer-3 switches**. (5 Marks)

Question 6:

- a) Compare **POP3** and **IMAP4** in terms of message storage, synchronization, and client support. Which protocol is more suitable for multi-device access and why? (5 Marks)
- b) In a public key cryptosystem, two prime numbers are selected as $p = 7$ and $q = 11$. Calculate the public key and private key using the RSA approach. (5 Marks)

Question 7:

- a) Compare **contention-based access methods** with **controlled access methods** in local area networks. Highlight their advantages and limitations. (5 Marks)
- b) Explain the **round-robin scheduling technique** used in data transmission. How does it differ from polling-based access control? (5 Marks)

Question 8:

- a) Describe the working principle of **distance-based routing algorithms**. What are the major drawbacks of such routing methods in large networks? (5 Marks)
- b) Define **Quality of Service (QoS)** in networking. Explain any three techniques used by networks to ensure better QoS for real-time applications. (5 Marks)

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**INDIRA GANDHI NATIONAL OPEN UNIVERSITY
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Course Code	:	BCS-053
Course Title	:	Web Programming
Assignment Number	:	BCA_NEW(IV)/053/Assignment/2026
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	30th April, 2026 (For January Session) 31st October, 2026 (For July Session)

This assignment has two questions of 80 marks. Answer all the questions. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of the presentation. Please give precise answers. The word limit for each part is 300 words.

Question1: (Covers Block 1)

- a) Explain the features of the following technologies: Content Networks, Social Media and Web Services. How are these technologies useful to you? **(6 Marks)**
- b) (i) Create an online admission form for an Institute using HTML. The form should ask for the following information: **(3 Marks)**
- The Name of the candidate
 - Mother's Name
 - Subject (Choose only one Subject from a drop-down list containing CS-01, CS-02, CS-03 and CS- 04)
 - Fee of the subject
 - Have you registered for a subject earlier? (Yes/No)
 - Your Educational Background (to be entered in text area)
 - A SUBMIT button
- (ii) Create an external CSS file for this form. This CSS file should select the font size of 16-point italics for all the labels; font colour should be Blue for the headings and dark green for the normal text. The background colour of the form should be light yellow. **(2 Marks)**
- (iii) Write JavaScript code to validate if any of the field of the form is not filled. **(3 Marks)**

Submit the HTML code, JavaScript code and screenshot of the form opened in a browser window. You must demonstrate the form and validations at the time of the viva.

- c) Using tables, create a webpage displaying the list of items in a departmental store. This webpage should display the item code, item name, unit price, and date of expiry of the item. Create a second page containing the ordered item by a customer, showing the item code, item name, unit price and ordered quantity. You should use <div> tags, wherever needed, and create an internal CSS file, which formats the web pages as given below:
- (i) The headings of the table must be in 14-point Bold, and all other content should be in 12-point Times Roman font.

- (ii) The table heading should be in a different shade. The data rows of the table should have alternate light yellow and light green colour shades. The background of the table should be light blue.
- (iii) The font of the ordered list should be "Arial" and the font size should be 12 points. The background colour of the list should be light blue.
- (iv) At the time of the viva, you should demonstrate how changes in CSS can change the display.

You must submit the HTML and CSS code and the screenshots of the pages in a browser window.

(6 Marks)

- d) A University maintains the list of Books in its library using XML. Every Book is allotted a unique book code, which should be used as an attribute in the XML document. In addition, the following information is stored about the Books: Title of the book, Author(s) (minimum 1 and maximum 3), year of publication, and publisher. Create an XML document containing information about five Books. Also, create the DTD to verify the XML document created by you. **(8 Marks)**
- e) Write JavaScript code that displays the text "The Power of JavaScript is Dynamism". When you bring the mouse pointer over this text on the screen, it changes to "This is a Demonstration of Dynamism". You may use event handling to perform the action as stated above. Make suitable assumptions, if any. Submit the code. You should demonstrate this code at the time of the viva. **(6 Marks)**
- f) Explain the WAP protocol stack. Also, explain the following WML elements with the help of an example of each:
 - WML tables
 - WML Images
 - WML<anchor>element

(6 Marks)

Question2: (Covers Block 2)

(10 × 4 = 40 Marks)

- a) Explain the following with the help of a diagram/example, if needed:
 - (i) Features of dynamic web pages
 - (ii) MVC Architecture
 - (iii) Tools for client-side scripting
 - (iv) HTTP methods
 - (v) Web Containers
- b) Explain with the help of an example/diagram or write code for the following using JSP:
 - (i) *Page* and *include* directives of JSP
 - (ii) Write a JSP scriptlet to display a list of the first 8 double-digit positive even numbers.
 - (iii) <jsp:useBean> and <jsp:plugin> action elements of JSP
 - (iv) *out* and *exception* implicit objects in JSP
 - (v) Steps of JSP page processing
- c) Write JSP programs which can perform the following tasks (you may create a single or multiple webpages for these tasks):
 - (i) Write a JSP code to create a simple web page that accepts user input for two variables, namely alpha and beta. After the successful input to these variables, the JSP program should display the values entered for the alpha and beta variables, along with the result of their multiplication.

(ii) Create a web page that takes input in two fields, namely the student ID and the Programme of the student. In case the data is correctly entered in both fields, two cookies, one for the student ID and the second for the Programme of the student, are created.

- d)** Create a database for the Student Examination System consisting of the following two tables:
Student (StudentID, Name, ProgrammeCode, DateOfEnrolment)
FeePaid (StudentID, Semester, dateofPayment, AmountPaid)

Develop and deploy a web-based “Student Examination System” using JSP, having a database backend and a web server (you may select DBMS and web server, as per your choice). Your system should use JDBC for input of information to both tables. The system should also display the StudentID, Name, dateofPayment and Amount paid for all the students.

Submit the JSP program, screens and database of the system. You must demonstrate this system at the time of viva voce.

Make and state suitable assumptions, if any.

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**INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068**

Course Code : **BCSL-146**
Course Title : **Object Oriented Programming using Java Lab**
Assignment Number : **BCA_NEW(IV)/L-146/Assignment/2026**
Maximum Marks : **50**
Weightage : **25%**
Last Dates for Submission : **30th April, 2026 (for January session)**
31th October, 2026 (for July session)

Note: This assignment is of 50 marks. 40 marks are for the assignment questions and rest 10 marks are for viva voce. As solution of assignment questions write the Java program and attach its output printout.

Question 1: Write a program to demonstrate use of different operators in Java. **(5 Marks)**

Question 2: Write java programs to demonstrate use of abstract class and interface. Make necessary assumptions. **(8 Marks)**

Question 3: Write a java program to demonstrate use of thread priority and how interthread communications take place. **(7 Marks)**

Question 4: Write java program to demonstrate useJavaFX in GUI development. **(5 Marks)**

Question 5: Write a program using JDBC for developing simple CRUD application for billing of a Medical Store. Use appropriate GUI components in your application. Make necessary assumptions. **(15 Marks)**

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**INDIRA GANDHI NATIONAL OPEN UNIVERSITY
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Course Code	:	BCSL-147
Course Title	:	Web Programming Lab
Assignment Number	:	BCA_NEW(IV)/L-147/Assignment/2026
Maximum Marks	:	50
Weightage	:	25%
Last date of submission	:	30th April, 2026 (For January Session) 31st October, 2026 (For July Session)

Note: This assignment has eight questions for a total of 40 marks. Answer all the questions. Each question carries 5 marks. Rest 10 marks are for viva voce. You may use illustrations and diagrams to enhance explanations.

Q1. HTML Basics

- Write HTML code to create a web page with a colored background and a title displayed in a different color. **(2 Marks)**
- Create an HTML document displaying personal details such as name, enrolment number, address, and contact information in a structured format. **(3 Marks)**

Q2. HTML Lists, Tables, and Formatting

- Create an HTML page showing an ordered list and an unordered list with appropriate headings. **(3 Marks)**
- Design an HTML table with multiple rows and columns, including the use of dummy data. **(2 Marks)**

Q3. Advanced HTML – Frames and Navigation

- Explain how browsers handle web pages when frame support is not available. **(2 Marks)**
- Write HTML code to design a web page divided into frames, where one frame contains links and the other displays the corresponding content. **(3 Marks)**

Q4. HTML Forms

- Design a simple HTML form to accept user details such as name and enrolment number. **(2 Marks)**
- Explain the purpose of hidden fields in forms and demonstrate their use with an example scenario. **(3 Marks)**

Q5. JavaScript Fundamentals

- Write a JavaScript program that prompts the user for their name and displays a welcome message. **(2 Marks)**
- Write a JavaScript program to evaluate basic arithmetic expressions and display the results. **(3 Marks)**

Q6. JavaScript Events and Validation

- a) Write a JavaScript program to change the color of text dynamically based on user interaction. **(2 Marks)**
- b) Design a JavaScript-based form validation script that checks for empty input fields and alerts the user. **(3 Marks)**

Q7. XML and CSS Concepts

- a) Create a simple XML document to store structured data and explain its components. **(2 Marks)**
- b) Explain how Cascading Style Sheets (CSS) can be used to enhance the presentation of HTML pages. **(3 Marks)**

Q8. Server-side Technologies (JSP / PHP Concepts)

- a) Explain how JSP or Servlet technology processes data submitted through an HTML form. **(2 Marks)**
- b) Describe the role of databases in dynamic web applications and explain how user authentication can be implemented. **(3 Marks)**

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Course Code	:	MCS-206
Course Title	:	Object Oriented Programming Using Java
Assignment Number	:	BCA_NEW (IV)/206/Assignment/2026
Maximum Marks	:	100
Weightage	:	30%
Last Dates for Submission	:	30th April, 2026 (for January session) 31st October, 2026 (for July session)

Note: This assignment has eight questions of 80 Marks. Answer all the questions. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Question 1:

- (a) Explain different operators available in java. **(5 Marks)**
- (b) What is object-oriented programming? What are its advantages? Explain Java is platform independent. **(5 Marks)**

Question 2:

- (a) What is a class? How a class is different from object? Explain need of private access specifiers in java with example program. **(4 Marks)**
- (b) Explain use of abstract class in Java programming. What is abstract method? Explain with example. **(4 Marks)**
- (c) What is String class? Explain use of any four methods of String class. **(2 Marks)**

Question 3:

- (a) Write a java program to find simple interest and compound interest. Define proper class and methods in your program. **(4 Marks)**
- (b) Explain use of InputSteam and OutputStream classes with the help of examples. **(6 Marks)**

Question 4:

- (a) What is inheritance? What are advantages of it? Explain how multilevel inheritance is implemented in java with the help of an example. **(7 Marks)**
- (b) Explain use of interface in Java with example program. **(3 Marks)**

Question 5:

- (a) What is polymorphism? What are different types of polymorphism supported by Java? Explain in detail. **(5 Marks)**
- (b) What is an exception? Explain various causes of exceptions. How exceptions are handled in java? Explain concept of exception hierarchy. **(5 Marks)**

Question 6:

- (a) What is multithreading? How threads are created in Java? Write a java program to demonstrate advantage of multithreading. **(5 Marks)**
- (b) Explain use of Mapinterface inJava. **(2 Marks)**
- (c) Explain Autoboxing and Unboxing with example. **(3 Marks)**

Question 7:

- (a) Explain Swing package/class hierarchy. What are different Swing components? **(4 Marks)**
- (b) What is FXML? Explain features of JavaFX. Also, explain differ layouts used in Java GUI development. **(6 Marks)**

Question 8:

- (a) Write a Java program using JDBC to manage issue and return of Books in a Library. Make Necessary assumptions. Make provisions of exception handling in your program. **(8 Marks)**
- (b) Explain different types of JDBC drivers. **(2 Marks)**