

3369

**B.C.A. IVth Semester
Examination, 2025**

SOFTWARE ENGINEERING

Paper : BCA-405

Time : 2 Hours]

[M.M. : 70

Note :- Attempt *Four* questions in all. *One* question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining *three* questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any *one* question.

1. Explain the qualities of software product in detail.

Or

2. Discuss the traditional project management approach.

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. Define COCOMO. Describe the various modes of COCOMO estimation model giving examples of application falling in each area.
4. Describe modularity. Explain the concept of cohesion and coupling in detail.
5. What is structural analysis ? Discuss the following tools available for structural analysis :
- (a) Data Flow Diagram
 - (b) Decision Table

6. Describe system testing. Discuss the following types of system testing in detail :
- (a) Performance Testing
 - (b) Stress Testing
 - (c) Security Testing
 - (d) Recovery Testing
7. Define software reliability. Demonstrate the ISO 9000 quality standards.
8. Explain the concept of encapsulation, abstraction and information hiding in detail.
9. Illustrate these in detail :
- (a) Spiral Model
 - (b) Iterative Model

10. (a) Discuss RAD and its stages in detail.
- (b) Demonstrate software requirement specification (SRS) document and outline its goals.

4015

BCA IIIrd Semester Examination, 2025
OBJECT ORIENTED PROGRAMMING
USING JAVA

Paper : NBCA 301

Time : 2 Hours]

[M.M. : 70

Note :- Attempt Four questions in all. One question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining three questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any one question.

1. Why and how object oriented programming concept better than classical/function based programming ?
Explain.

- Or
2. What is the relationship between Object Oriented Analyses, Object Oriented Modelling and Object Oriented Programming. Explain with example.

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. Explain tokens in detail with code of use.
4. Explain polymorphism. Its types, also discuss constructor overloading, all the concepts must be supported by suitable code in Java.
5. Explain a Java program which creates a class and with static and non static methods and create object/objects to access the methods of the class if required.
6. (a) Differentiate interface and abstract class with suitable example.
(b) Explain use of user defined package with example.
7. What is Thread ? What are different ways to create thread ? Create three threads by any method implement and start them.

8. What is Exception, its types, Illustrate exception handling by creating a program to system and user defined exception ?
9. (a) Explain use of final keyword with variable, method and class with example and explain effect of final keyword on variable, method and class.
- (b) Explain Vector with example.
10. What is Package ? Its types, explain how package-level access control (default access modifier) works ?

4016

BCA IIIrd Semester Examination, 2025

SOFTWARE ENGINEERING

Paper : NBCA 302

Time : 2 Hours]

[M.M. : 70

Note :- Attempt *Four* questions in all. *One* question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining *three* questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any *one* question.

1. Write down the similarities and differences between Software Engineering Process and Conventional Engineering Process.

Or

2. With the help of diagram, explain agile model in detail with its advantages and disadvantages.

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. With the help of example, explain Data Flow Diagram (DFD) and Flowchart. Additionally, differentiate between them too.
4. Write down in detail about Software Engineering Institute Capability Maturity Model (SEI-CMM). Furthermore, explain its methods and levels.
5. Write down in detail about the following terms :
Bottom-up approach, Algorithm, pseudocode, Top-down approach and Control flow graph.
6. Explain coupling and cohesion with their types.
7. Illustrate the term alpha testing with its process, phases and their advantages and disadvantages.

8. Describe the functional and non-functional testing. Additionally, differentiate between the following :
- (i) Manual and Automation testing
 - (ii) Stubs and Drivers
9. Explain why do we need reverse engineering and software re-engineering. Furthermore, illustrate the several aspects and categories of software maintenance.
10. What do you mean by Constructive Cost Model (COCOMO) ? Explain its types, importance and phases.

4018

BCA IIIrd Semester Examination, 2025

PYTHON PROGRAMMING

Paper : NBCA-304

Time : 2 Hours]

[M.M. : 70

Note :- Attempt *Four* questions in all. *One* question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining *three* questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any *one* question.

1. Explain why python is considered an interpreted language and also discuss about Programming Cycle for Python. Write Python Program to swap two numbers without Intermediate / Temporary variables. Prompt the user for input. [10]

Or

2. What is the difference between Nested if and if-elif-else statement in Python ? Write a program to check an input number is Prime or not. [10]

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. Define list operator (+, *, in, is, del and list slicing with step size) with example. Consider the list with mixed type of elements, such as $L1 = [1, 5, 'a', 4, 7, 'z', 9, 'x', 0, 6, 'b']$. Create another list using list comprehension which consists of only the string element present within list L1. [20]
4. Discuss concept of mutability in list with an example. Write a program to pass a list of function. Calculate the total number of positive and negative numbers from the list and then display the count in terms of dictionary. Where Input $L = [1, -2, -3, 4]$ and Output {'Neg':2, "Pos":2}. [20]

5. Show an example where both Keyword arguments and Default arguments are used for the same function in a call. Show both the definition of the function and its call. Write a recursive function to compute the factorial of an input number N. [20]
6. Explain the concept of immutability in tuples with an example. Write a Python function that accepts a list of tuples containing student names and marks.

Return a new tuple that contains:

- Names of top 3 scorers (sorted descending by marks)
- Average marks of all students

Example Input :

[("Riya", 85), ("Amit", 92), ("Neha", 78), ("Karan", 90)]

Expected Output : (('Amit', 'Karan', 'Riya'), 86.25)

[20]

7. How memory is managed in Python ? Also explain with an example how strings are immutable in Python. Write a Python program to print even length words in a string. [20]
8. What is difference between Instance variable and Instance method ? Define the Concept of overloading and overriding with example. [20]
9. What are the four pillars of OOPS in Python ? Define `__init__` in Python. Differentiate between Multilevel and Multiple Inheritance with example. [20]
10. Discuss File I/O in python. How to perform open, read, write, and close into a file ? Write a Python program to read a file line-by-line store it into a variable. [20]

4019

BCA IIIrd Semester Examination, 2025

**ACCOUNTING & FINANCIAL
MANAGEMENT**

Paper : NBCA-305

Time : 2 Hours]

[M.M. : 70

Note :- Attempt *Four* questions in all. *One* question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining *three* questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any *one* question.

4019 / 8

(1) KM-667 Turn Over

1. Explain the major conventions followed in the preparation of financial statements. [10]

Or

2. Prove that the accounting equation is satisfied in all the following transactions of Mr. Y :

- (a) Commenced business with cash ₹ 30,000.
- (b) Purchased goods for cash ₹ 12,000 and credit ₹ 18,000.
- (c) Sold goods for cash ₹ 24,000 costing ₹ 18,000.
- (d) Rent outstanding ₹ 600.
- (e) Bought refrigerator for personal use for ₹ 3,000.

[10]

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. (a) What is double entry system of accounting ? What are its features ? Explain. [10]

- (b) What is a Ledger ? What do you mean by posting ?
Explain the procedure for balancing a ledger
account. [10]

4. Write notes on the following :

- (i) Cash discount and trade discount
- (ii) Objectives of Trial Balance
- (iii) Capital expenditure
- (iv) Revenue expenditure [5×4=20]

5. (a) What is an Adjusting Entry ? Why are they
necessary for preparing the final accounts ?
Explain. [10]

- (b) Give the adjustment entry and treatment in Final
Accounts of the following :

- (i) Accrued income
- (ii) Interest on Loan [10]

6. (a) What is a cash flow statement ? State its objectives
and limitations. [10]

- (b) Describe in brief the procedure of determining
cash flow from operating activities as per the
indirect method. [10]

7. From the following Trial Balance of Mr. Ansh as at 31st December 2022 prepare the final accounts after considering the necessary adjustments :

Particulars	Dr. (₹)	Cr. (₹)
Capital Account		30,000
Drawings account	2,600	
Plant & Machinery	12,000	
Stock on 1-1-2022	5,000	
Purchases	35,000	
Sales		50,000
Return inward	2,000	
Return outward		1,000
Sundry debtors	8,000	
Sundry creditors		6,000
Carriage inward	500	
Carriage outward	500	

Wages	3,000	
Salaries	2,000	
Factory rent	200	
Office rent	500	
Insurance	500	
Discount received		600
Discount allowed	300	
Furniture	2,000	
Bad debts	400	
Commission	300	
Building	8,000	
Bills payable		2,000
Cash in hand	200	
Cash at bank	600	
Bills receivables	6,000	
Total	89,600	89,600

Adjustments :

- (a) Closing Stock ₹ 20,000
- (b) Prepaid Insurance ₹ 200
- (c) Interest on Capital at 5%
- (d) Office Rent outstanding ₹ 400
- (e) Depreciation on Plant and Machinery and Furniture at 10% [20]

8. Calculate the following ratios from the given information :

- (i) Working Capital Turnover Ratio
- (ii) Debt-Equity Ratio
- (iii) Gross Profit Ratio
- (iv) Operating Ratio
- (v) Current Ratio

Information :

Particulars	(₹)
Net Revenue from Operations	2,00,000
Cost of Revenue from Operations	1,20,000
Operating Expenses	30,000
Current Assets	60,000
Current Liabilities	30,000
Capital Employed	2,40,000
Long-term Debts	1,60,000

[20]

9. Define financial management and discuss its objectives.

[20]

10. Answer both of the following :

- (i) 'Generally individuals show a time preference for money.' Give reasons for such a preference. [10]

- (ii) Calculate the compound value of ₹ 1,000 invested today to earn 10%, if the amount is invested for a period of (a) 1 year (b) 4 years and (c) 8 years.

[10]

6652

**B.C.A. IInd Semester (Even)
Examination, 2023**

**ACCOUNTING AND FINANCIAL
MANAGEMENT**

Paper : BCA-205

Time : 3 Hours]

[M.M. : 70

Note :- Answer any five questions. All questions carry equal marks.

- ✓ 1. "Accounting principles are the backbone of accounting." With reference to this statement, explain various concepts and conventions of accounting in detail. 14
- ✓ 2. Define Accounting. What are its main objectives ?
Also explain various steps of accounting process. 14

3. Following Trial Balance has been extracted from the books of M/s. Raj Garg and Sons on 31st March, 2022 :

Particulars	Dr. (₹)	Particulars	Cr. (₹)
Machinery	4,00,000	Capital	9,00,000
Cash at Bank	1,00,000	Sales	16,00,000
Cash in Hand	50,000	Sundry debtors	4,50,000
Wages	1,00,000	Interest received	30,000
Purchases	8,00,000		
Stock on 1st April, 2021	6,00,000		
Sundry debtors	4,40,000		
Bills receivables	2,90,000		
Rent	45,000		
Commission	25,000		
General Expenses	80,000		
Salaries	50,000		
	29,80,000		29,80,000

Additional Information :

- (i) Outstanding Salaries were ₹ 45,000.✓
- (ii) Depreciate machinery at 10%.✓
- (iii) Wages outstanding were ₹ 5,000.✓
- (iv) Rent prepaid ₹ 10,000.✓
- (v) Provide for interest on capital @ 5% per annum. *pro*
- (vi) Stock on 31st March, 2022 was ₹ 8,00,000.

Prepare Trading and Profit and Loss Account for the year ended 31st March, 2022 and balance sheet as at that date.

14

- 4. Distinguish between Journal and Ledger. Explain the process of Journalising and Posting. 14
- 5. Define Trial Balance. What are the objectives of preparation of Trial Balance ? What are the methods of preparation of Trial Balance ? 14

6. The financial statements of a Company contain the following information for the year ending 31-12-2012 :

	(₹)
Cash	1,60,000
Sundry debtors	4,00,000
Short term investment	3,20,000
Stock	21,60,000
Prepaid expenses	10,000
Total current assets	30,50,000
Current liabilities	10,00,000
10% debentures	16,00,000
Equity share capital	20,00,000
Retained earnings	8,00,000

Statement of Profit for the year ending 31-12-2012

	(₹)
Sales (20% cash sales)	40,00,000
Less : Cost of goods sold	28,00,000
Profit before interest and tax	12,00,000
Less : Interest	1,60,000
Profit before tax	10,40,000
Less : Tax @ 30%	3,12,000
	7,28,000

Calculate :

- (i) Current Ratio
- (ii) Quick Ratio
- (iii) Debt Equity Ratio
- (iv) Return on Capital Employed
- (v) Average Collection Period (assuming 360 days
in a year)

14

7. Distinguish between the following :

(i) Fund Flow Statement and Profit and Loss Account

(ii) Fund Flow Statement and Balance sheet 7+7

8. Answer both of the following :

(a) "The profit maximization is not an operationally feasible criterion for financial decision making." Do you agree ? Illustrate.

(b) Explain the traditional approach and modern approach to financial management. 7+7

9. Attempt both of the following :

(a) Mudra Bank pays 12% interest and compounds interest quarterly. If one puts ₹ 1,000 initially into a saving account, how much will it have grown in $7\frac{1}{2}$ years ? 4

(b) An investment promises to pay ₹ 2,000 at the end of each year for the next 3 years and ₹ 1,000 at the end of each year for years 4 through 7 :

(i) What maximum amount will you pay for such investment if your required rate is 13% ?

5

(ii) If the payments are received at the beginning of each year, what maximum amount will you pay for investment ?

5

10. (a) What do you mean by financial statements ?

State the limitations of financial statements.

(b) Write a brief note on various sources of long-term finance.

7,7

8874

**BCA IIIrd (Odd) Semester
Examination, 2023**

**OBJECT ORIENTED PROGRAMMING
USING JAVA**

Paper : BCA-302

Time : 3 Hours] [M.M. : 70

Note :- Answer any *five* questions. All questions carry equal marks.

1. Explain the concept of object-oriented programming. Also explain object-oriented design origin and concepts.
2. Define an object and a class. What is data modelling ?

3. Distinguish Method Overriding and Method Overloading. Explain with suitable Java Code.
4. Explain Constructors and its types using appropriate code. Also explain constructor overloading.
5. Describe JVM. Also explain Type Casting in Java using appropriate code.
6. Mention various Arithmetic, Relational and logical assignment operators in java using appropriate example of each.
7. Write a program in java to represent one dimensional and two-dimensional arrays. Also explain the concept of Wrapper classes.
8. Write a java program to implement inheritance concept. Also explain Abstract Methods and Classes.
9. Write about various types of exceptions and exception handling using appropriate code.

10. Explain Life Cycle of a Thread. Also explain the concept of Thread Exceptions and Thread Priority using appropriate code.

8874

BCA IIIrd Semester Examination, 2025

(Old Course)

**OBJECT ORIENTED PROGRAMMING
USING JAVA**

Paper : BCA-302

Time : 2 Hours]

[M.M. : 70

Note :- Attempt *Four* questions in all. *One* question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining *three* questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any *one* question.

8874 / 3

(1) KM-675 Turn Over

1. What relationship is between object oriented analyses, object oriented modelling and object oriented programming ? Explain with example.

Or

2. Explain Java environment.

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. Explain different types of operators used in Java with suitable code of using operators.
4. Explain inheritance, its types with example. Why Java does not support multiple inheritance ? How to overcome this problem ?
5. Differentiate concrete class, abstract class and final class with suitable example.
6. Explain importance of wrapper classes, autoboxing and unboxing with example.

7. What is interface ? Compare it with abstract class. Illustrate with suitable code.
8. Explain the difference between checked and unchecked exceptions with examples. What is the difference between throw and throws keywords ?
9. Create two packages pack1 and pack2. In pack1, define a class A with a method display(). In pack2, import and use that class.
10. Create a class hierarchy (Person → Employee → Manager) to demonstrate the order of constructor invocation using super().

8877

**B.C.A. IIIrd Semester
Examination, 2023**

COMPUTER ARCHITECTURE

Paper : BCA-305

Time : 3 Hours]

[M.M. : 70

Note :- Answer any *five* questions. All questions carry equal marks.

✓ 1. Distinguish between computer architecture and computer organization. Also discuss general register and stack-based CPU organization with proper example.

2. What do you mean by addressing modes ? Explain the following :

(i) Indirect addressing mode

(ii) Stack addressing mode

(iii) Index register addressing mode

(iv) Immediate addressing mode

3. Explain different types of fields that are part of instruction. Also compare RISC and CISC architecture with example.
4. What are the micro operations ? With proper example explain the instruction cycles and sub-cycles. Also discuss different instruction format with example.
5. Distinguish between process and thread with proper example. Also discuss Flynn's classification of parallel architecture.
6. Explain the concept of instruction pipeline with example. Also mention the advantage and disadvantage of pipeline.

7. Consider a pipeline having 5 phases with duration 80, 20, 50, 40 and 10 ns. Given latch delay is 7 ns.

Calculate :

- (i) Pipeline cycle time
 - (ii) Non-pipeline execution time
 - (iii) Speed up ratio
 - (iv) Pipeline time for 100 tasks
 - (v) Sequential time for 100 tasks
 - (vi) Throughput
8. Compare and contrast control flow, data flow and demand driven flow mechanism in program flow mechanism.
9. What do you mean by reservation table ? Explain the following terms using appropriate example :
- (i) Forbidden latency
 - (ii) Permissible latency
 - (iii) Collision vector
 - (iv) Greedy cycle

10. Explain the following :

- (i) Grains sizes
- (ii) Latency in program parallelism
- (iii) Node degree
- (iv) Network diameter