UG-CS-1499 **BSCSS–11/ BCAS-11/ BCAS-11C**

U.G. (CS) DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science/Computer Applications

First Year – First Semester

PROBLEM SOLVING

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions.

1. Define Invariants with an example.

2. What are Subtraction-set Games? Give an example.

3. What is Induction? Why is it important in problem-solving?

4. What is the Fake-Coin Detection problem?

5. What are Lower and Upper Bounds in problem-solving?

PART B — (3 × 7 = 21 marks)

Answer any THREE questions.

6. Describe the Chocolate-bar Problem and its solution.

7. Explain the Matchstick Game and describe a winning strategy.

8. How does Black and White Colouring help in mathematical proofs?

9. Differentiate between Inductive Solution and Iterative Solution.

10. Explain the Knight's Circuit and its importance in computational problems.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions.

11. What is State-space Explosion? How does Abstraction help in handling it?

12. Discuss Sums of Games and their application in combinatorial game theory.

13. Discuss Cutting the Plane as a mathematical problem.

14. Explain the Sam Loyd's Chicken-Chasing Problem with its solution approach.

15. Discuss the Bridge Problem in terms of Outline Strategy and Regular Sequences.

16. Describe the Empty-box Problem and explain how brute-force search can be applied to solve it.

17. Explain the relationship between verification and construction in problem-solving.

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UG-CS-1501 **BSCSS-21/ BCAS-21/ BCAS-21C**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

First Year/Second Semester

PROGRAMMING IN C

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions.

1. Define Character Set in C.

2. What is the purpose of Comma Operator in C?

3. Define Function Prototype with an example.

4. What is a Structure in C? Give an example.

5. What are Pointers in C? How are they declared?

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions.

6. Explain Data Types in C with examples.

7. What are Nested Control Structures? Explain with an example.

8. Discuss Recursion in C with an example program.

9. Explain Bitwise Operations and their applications.

10. Describe the process of Opening and Closing a File in C.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions.

11. Discuss Expressions and Statements in C with examples.

12. Explain Flow Control Statements (if, if-else, switch) in C.

13. Describe Storage Classes and their significance in C programming.

14. How are Multi-dimensional Arrays used in C? Explain with an example.

15. Explain Arrays of Pointers and their applications.

16. Write a program to demonstrate File Handling in C and explain its working.

17. Discuss the relationship between Pointers and Structures with examples.

UG-CS-1504 **BSCSS-31/ BCAS-31/ BCAS-31C/ BCASX-31**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science/Computer Applications

Second Year/Third Semester

PROGRAMMING USING C++

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Define identifier. State the rule for valid identifier.

2. Explain the math library functions.

3. Describe the type conversions.

4. Discuss the hybrid inheritance in detail.

5. Explain the sequential files.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions
in 200 words each.
All questions carry equal marks.

6. Explain the operator overloading in C++.

7. Describe the friendly functions.

8. Discuss about the overloading binary operators.

9. Explain the multilevel inheritance and multiple inheritance.

10. What are the command-line arguments in C++.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions
in 500 words each.
All questions carry equal marks

11. Discuss about the basic concepts of OOP.

12. Explain the classes and objects in detail.

13. Describe about the concept of copy constructors.

14. Explain the pointers in detail with examples.

15. Explain the opening and closing a file in detail.

16. Describe the control structures with suitable examples.

17. Explain the virtual functions and pure virtual functions.

UG-CS-1505 **BCAS-32/ BSCSS-32/ BCASX32/BCAS32C**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science

Second Year – Third Semester

DATA STRUCTURES

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions.

All questions carry equal marks.

1. What are non-linear data structures? Give some examples.

2. What is circular queue? List its advantages

3. Define binary tree. Show the array representation of a binary tree.

4. Compare linear search and binary search.

5. List the advantages and disadvantages of bucket sorting.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions.

All questions carry equal marks.

6. Describe the types of arrays with illustrative examples.

7. Write the procedure for array implementation of a stack.

8. Compare binary tree and binary search tree.

9. Organize the different representation of a graph with suitable examples.

10. Sort the following numbers using Bubble sort : 34, 56, 12, 8, 90, 28, 66, 43, 97, 19

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions.
All questions carry equal marks.

11. Develop the procedure for multiplication of two dimensional matrices.

12. Explain the algorithm for implementing basic operations of a circular linked list.

13. Outline the operation of linked implementation of a queue.

14. With an example, explain the various binary tree traversals.

15. Discuss how to perform insert and delete operations on a Binary search tree.

16. Explain any one algorithm for finding the shortest path in a given graph. Give an example.

17. Write the procedure for Merge sort. Trace the algorithm to sort the given numbers :

    66, 44, 99, 77, 11, 88, 22, 33, 55

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UG-CS-1506 **BSCSS–41**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science

Second Year/Fourth Semester

STATISTICS

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions.

All questions carry equal marks.

1. Outline the uses of Scatter diagram.

2. What is meant by regression? Explain.

3. Explain about continuous random variable.

4. What do you mean by null hypothesis? Highlight its significance in statistics.

5. Describe the concept of interval estimation.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions.

All questions carry equal marks.

6. List and explain the properties of regression coefficients.

7. A discrete random variable X has the following probability distribution.

X :	0	1	2	3	4	5	6	7	8
$P(X)$:	a	$3a$	$5a$	$7a$	$9a$	$11a$	$13a$	$15a$	$17a$

Find the value of a and $P(X > 3)$.

8. Describe the properties of Expected Value and Variance.

9. The mean strength of a certain cutting tool is 41.5 hrs with standard deviation 2.5 hrs. What is the probability that a random sample of size 50 drawn from this population will have a mean between 40.5 hrs and 42 hrs?

10. The statistical investigation obtains the following regression equation in survey $x - y - 6 = 0$ and $0.64x - 4.08 = 0$. Find the mean of x and y.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions.

All questions carry equal marks.

11. Calculate the correlation coefficient for the following heights (in inches) for fathers (X) and their sons (Y) by Karl Pearson's method.

X :	65	66	67	67	68	69	70	72
Y :	67	68	65	68	72	72	69	71

12. From the following data, find the regression equations and the most likely marks in Statistics when marks in Economics are 30.

Marks in Economics	25	28	35	32	31	36	29	38	34	32
Marks in Statistics	43	46	49	41	36	32	31	30	33	39

13. A random variable X has the following probability distribution function. Find $k, E(X)$ and $Var(X)$.

X :	–2	–1	0	1
$P(X)$:	0.4	k	0.2	0.3

14. The following table gives the number of aircraft accidents that occur during the various day of week. Find whether the accidents are uniformly distributed over the week.

Days :	Sun	Mon	Tue	Wed	Thu	Fri	Sat
No. of accidents :	14	16	8	12	11	9	14

15. Two independent samples are chosen from two schools A and B, a common test is given in a subject. The scores of the students as follows:

School A	76	68	70	43	94	68	33	
School B	40	48	92	85	70	76	68	22

Can we conclude that students of school A performed better than students of school B?

16. The rank of some 16 students in Mathematics and Physics are as follows. Calculate the rank correlation coefficients for proficiency in Mathematics and Physics.

Rank in Maths :	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Rank in physics :	1	10	3	4	5	7	2	6	8	11	15	9	14	12	16	13

17. Find the mean and variance of X given

$$f(x)=\begin{cases} x;\ 0 \le x \le 1 \\ 2-x;\ 1 \le x \le 2 \\ 0;\ \textit{otherwise} \end{cases}$$

UG-CS-1507 **BSCSS-42**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science

Second Year/Fourth Semester

OPERATING SYSTEMS

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. How the system call works in OS?

2. Write brief notes on process.

3. List out the deadlock characterization.

4. What is meant by allocating kernel memory?

5. Discuss about the file system structure.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain the operating system structure.

7. Describe the implicit threading.

8. What is meant by Peterson's solution?

9. Discuss about the memory compression.

10. Explain the virtual file systems.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Explain about the building and booting an operating system.

12. Discuss about the inter process communication.

13. Describe the real-time CPU scheduling with example.

14. Explain about the page replacement.

15. How to allocate and manage the free space in OS?

16. Write about the communication in client—server systems.

17. Explain about the deadlock prevention and avoidance.

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UG-CS-1508 **BCAS–41**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science/Computer Application

Fourth Semester

DATABASE MANAGEMENT SYSTEMS

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Discuss about actors on the scene.

2. What is meant by specialization?

3. Describe the SELECT statement with example.

4. Describe a null value in DBMS.

5. Compare NoSQL and RDBMS.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain about the data models.

7. What are the structural constraints?

8. Explain ACID properties in SQL.

9. What are the three key components of relational database design?

10. What is the CAP theorem in MongoDB?

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Explain the architectures for DBMSs.

12. Discuss about the types of Entity in detail.

13. How do you insert, delete and update a value in SQL?

14. Explain in detail about database normalization.

15. Describe the bigdata in detail.

16. Explain about the Entity Relationship model.

17. Describe the difference between WHERE and HAVING in SQL.

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UG-CS-1509 **BSCSS–52**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science

Third Year / Fifth Semester

COMPUTER NETWORKS

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Write short notes on working of physical layer in TCP/IP.

2. Explain about the error detection.

3. What are the MAC Addresses? Explain in detail.

4. Discuss about the IP Addresses.

5. Explain the end-to-end delivery.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. What are the software's used in network? Explain it.

7. Explain the multiplexing and switching in detail.

8. Describe the multiple access protocols.

9. What are the services offered by network layer?

10. Explain the characteristics of transport layer.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Explain the OSI model in detail.

12. Explain in detail about data link layer.

13. Discuss about the data link layer in the internet.

14. Explain the forwarding and routing in detail.

15. Describe the Internet Transport Protocols (ITP).

16. Discuss the guided transmission media in detail.

17. Explain the concepts of elementary data link protocols.

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UG-CS-1510 **BSCSS–54**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science

Third Year/Fifth Semester

WEB DESIGNING

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.
All questions carry equal marks.

1. Brief it- JSP

2. Explain socket

3. Summarize AWT

4. Explain database.

5. Briefly explain customizers.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.
All questions carry equal marks.

6. Explain JDBC.

7. Enumerate on the basic concepts of RMI.

8. Describe swing.

9. Discriminate on basic concepts of database connectivity.

10. Explain bean property types.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.
All questions carry equal marks.

11. Describe control structures.

12. Explain implementing servers.

13. Describe tables.

14. Enumerate on result sets.

15. Explain the design of JDBC.

16. Describe the writing process of java beans.

17. Explain multi- tier applications.

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UG-CS-1511 **BSCSS–61**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science

Third Year/Sixth Semester

PROGRAMMING IN PYTHON

Time : Three hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Brief it-variables.

2. Explain return values.

3. Summarize classes.

4. Explain graphics.

5. Briefly explain version control system.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five in 200 words each.

All questions carry equal marks.

6. Explain expressions and statements.

7. Enumerate on conditions.

8. Describe objects.

9. Discriminate on GTK.

10. Explain writing block tests.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven in 500 words each.

All question carry equal marks.

11. Describe installing python in various operating systems.

12. Explain tuples.

13. Explain object oriented programming.

14. Describe inheritance.

15. Enumerate on MYSQL.

16. Explain developing GUI applications using pyGTK.

17. Describe creating documentation.

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UG-CS-1512 **BSCSS-62**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science

Sixth Semester

MOBILE COMPUTING

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Brief it-Personal digital assistant.

2. Explain Java card.

3. Summarize wireless LAN.

4. Explain MAC.

5. Briefly wireless sensor network.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain smart clients.

7. Enumerate on mobile-enabled applications.

8. Describe mobile TCP.

9. Discriminate on ADHOC wireless network.

10. Explain energy model.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Describe active transactions.

12. Explain synchronization protocol.

13. Explain satellite systems.

14. Describe transport layer protocol.

15. Enumerate on transport layer.

16. Explain design considerations for mobile computing.

17. Describe architecture and design if wireless sensor protocol.

UG-CS-1513 BSCSSE-63

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Computer Science

Third Year/Sixth Semester

SOFTWARE TESTING

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions.

1. What is the purpose of software quality model?

2. What is the primary purpose of software testing?

3. What are test metrics?

4. What is coverage monitoring in testing?

5. What is Test Maturity Model?

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions.

6. Describe the software quality model and its role in ensuring software quality.

7. Compare and contrast testing and debugging in software development.

8. Describe the V-Model in software testing and explain its significance.

9. Describe alpha and beta site testing programs and their importance in the Software development life cycle.

10. Explain the test maturity model and its purpose in improving testing processes.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions.

11. Explain the concept of software quality metrics. How are these metrics used to measure and improve software quality in development projects?

12. Describe the components and significance of software quality architecture in the development and the maintenance of software systems.

13. Explain STLC in detail.

14. Explain the responsibilities of a test team leader in managing software testing project.

15. What is risk based testing? Discuss its principles and benefits.

16. What is load testing? Discuss its purpose, process and significance in performance evaluation.

17. Explain code auditing and coverage monitoring in detail.

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