UG-CS-1170 **BMSSA-22**

U.G. DEGREE EXAMINATION – FEBRUARY 2023.

Computer Science

Third Semester

Allied – MATHEMATICS – 2

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions.

1. Define Gamma function.

2. Evaluate $I = \int_0^1 \frac{1}{1+x} dx$ by Trapezoidal rule using the table and correct to three decimal place.

x	0	0.5	1.0
y	1.000	0.666	0.5000

3. Evaluate $\int_0^1 \int_0^2 (x^2 + y^2) dy\, dx$.

4. Evaluate $L[t]$.

5. Define Rank Correlation.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions.

6. Prove that $\Gamma\frac{1}{2} = \sqrt{\pi}$.

7. The following table gives the corresponding values of x and y. Prepare a forward difference table and express y as a function of x. Also obtain y when $x = 2.5$.

x :	0	1	2	3	4
y :	7	10	13	22	43

8. Evaluate $\int_1^3 \int_2^3 \int_1^2 (x - y + z)\,dx\,dy\,dz$.

9. Find $L^{-1}\left[\frac{1}{s(s+1)(s+2)}\right]$.

10. Compute coefficient of correlation for the following:

x :	25	35	45	52	20	33	40	30
y :	20	15	10	14	23	18	22	30

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions.

11. Prove that $\beta(m,n)=\frac{\Gamma m\,\Gamma n}{\Gamma m+n}$.

12. Using Newton's Backward formula find the annual premium at the age of 33 from the data:

Age in years :	24	28	32	36	40
Annual premium :	28.06	30.19	32.75	34.94	40

13. Evaluate the following integral by change the order of integration.

$$\int_0^{\infty}\left[\int_x^{\infty}\frac{e^{-y}}{y}dy\right]dx.$$

14. Solve the differential equation using Laplace transform $\frac{d^2y}{dt^2}-\frac{dy}{dt}-2y=0$ given $y(0)=-2$ $y'(0)=5$.

15. Calculate the rank Correlation Coefficient from the following data :

x :	52	63	45	36	72	65	47	25
y :	62	53	51	25	79	43	60	33

16. From the following table using Simpson's $\left(\frac{1}{3}\right)^{rd}$ rule $\int_{7.47}^{7.52} y(x)dx$, $h = 0.01$. Evaluate

x :	7.47	7.48	7.49	7.50	7.51	7.52
y :	1.93	1.95	1.98	2.01	2.03	2.06

17. Calculate Karl Pearson's coefficient from the following:

x :	32	35	27	28	25	40
y :	28	32	26	35	24	38

UG-CS-1205 **BMSSA–22**

U.G. DEGREE EXAMINATION – FEBRUARY, 2023.

Computer Science/Computer Applications

Third Semester

ALLIED MATHEMATICS – II

Time : 3 hours Maximum marks : 70

PART A — ($3 \times 3 = 9$ marks)

Answer any THREE questions.

1. Define Gamma function.

2. Evaluate $I = \int_0^1 \frac{1}{1+x} dx$ by Trapezoidal rule using the Table and correct to three decimal place

x	0	0.5	1.0
y	1.000	0.666	0.5000

3. Evaluate $\int_0^1 \int_0^2 (x^2 + y^2)\, dy\, dx$.

4. Evaluate $L[t]$.

5. Define Rank correlation.

PART B — ($3 \times 7 = 21$ marks)

Answer any THREE questions.

6. Prove that $\left|\frac{1}{2} = \sqrt{\pi}\right.$.

7. The following table gives the corresponding values of x and y. Prepare a forward difference table and express y as a function of x. Also obtain y when $x = 2.5$.

x	0	1	2	3	4
y	7	10	13	22	43

8. Evaluate $\int_1^3 \int_2^3 \int_1^2 (x - y + z)\, dx\, dy\, dz$.

9. Find $L^{-1}\left[\frac{1}{s(s+1)(s+2)}\right]$.

10. Compute coefficient of correlation for the following data :

x	25	35	45	52	20	33	40	30
y	20	15	10	14	23	18	22	30

PART C — ($4 \times 10 = 40$ marks)

Answer any FOUR questions.

11. Prove that $\beta(m, n) = \dfrac{\lceil m \lceil n}{\lceil (m+n)}$.

12. Using Newton's Backward formula find the annual premium at the age of 33 from the data

Age (in years)	24	28	32	36	40
Annual premium	28.06	30.19	32.75	34.94	40

13. Evaluate the following integral by change the order of integration

$$\int_0^{\infty} \left[\int_x^{\infty} \frac{e^{-y}}{y} dy \right] dx .$$

14. Solve the differential equations using Laplace transform

$$\frac{d^2y}{dt^2} - \frac{dy}{dt} - 2y = 0 \text{ given } y(0) = -2,\ y'(0) = 5$$

15. Calculate the rank correlation coefficient from the following data

x	52	63	45	36	72	65	47	25
y	62	53	51	25	79	43	60	33

16. From the following table using Simpson's $\left(\frac{1}{3}\right)^{rd}$ rule $h = 0.01$. Evaluate :

x	7.47	7.48	7.49	7.50	7.51	7.52
y	1.93	1.95	1.98	2.01	2.03	2.06

17. Calculate Karl Pearson's coefficient from the following data

x	32	35	27	28	25	40
y	28	32	26	35	24	38

UG–CS–1206 **BSCSS-31/ BCAS-31/ BCASX-31**

U.G. DEGREE EXAMINATION — FEBRUARY, 2023.

Computer Applications

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 the term Encapsulation.
2. What is a Constant? Give example.
3. Define Manipulator.
4. Write about operator overloading and give example.
5. What is an inheritance?

PART B — $(3 \times 7 = 21$ marks)

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

All questions carry equal marks.

6. Describe the Basic Data Types with example.

7. Discuss about Scope Resolution Operator with example.

8. Briefly explain Return by Reference.

9. Write about multiple constructors in a class.

10. Write a note on Pointers with necessary example.

PART C — $(4 \times 10 = 40$ marks)

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

All questions carry equal marks.

11. Discuss in detail about basic concepts of OOP.

12. Explicate in detail about Operators.

13. Explain In line Functions with example.

14. Illustrate the Static Data Members.

15. Describe Inheritance in detail.

16. Explain Pointers in detail with necessary example.

17. Write a C++ Program to find the palindrome of a number.

UG–CS–1207 **BSCSS-32/ BCAS–32/ BCASX-32**

U.G. DEGREE EXAMINATION, FEBRUARY 2023

Computer Science

Third Semester

DATA STRUCTURES

Time : 3 hours Maximum marks : 70

PART A — ($3 \times 3 = 9$ marks)

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

1. Define the term “Data Type”?

2. List out the advantages of circular queues?

3. Write the advantages of a linked list?

4. What is Stack? Give example.

5. What is sorting? Give one example.

PART B — $(3 \times 7 = 21$ marks)

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

All questions carry equal marks.

6. Explain the Linear Data Structure with example.

7. Write about Array Insertion and Deletion.

8. Briefly explain Operations on Queue using Linked Lists.

9. Write about array representation of Trees.

10. Write about selection sort with necessary examples?

PART C — $(4 \times 10 = 40$ marks)

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

All questions carry equal marks.

11. Describe in detail about Matrix Operations.

12. Write in detail about Linked List Implementation with suitable example.

13. Discuss about Graph Traversals with neat diagram.

14. Write about Operations in a Binary Tree.

15. Explain Implementing Graphs using Adjacency Matrix.

16. Illustrate Bellman-Ford's Algorithms with neat sketch.

17. Explain about merge sort with neat diagram.

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UG-CS–1211 BCASX-41

U.G. DEGREE EXAMINATION — FEBRUARY 2023.

Computer Applications

Fourth Semester

OPERATING SYSTEMS

Time : 3 hours Maximum marks : 70

PART A — ($3 \times 3 = 9$ marks)

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

All questions carry equal marks.

1. Explain the concept of system calls.

2. What is meant by thread libraries?

3. Explain the concept of process synchronization.

4. What is meant by kernel?

5. Explain the partitions and mounting.

PART B — $(3 \times 7 = 21$ marks)

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

All questions carry equal marks.

6. Explain building and booting an operating system.

7. Describe the IPC in shared-memory systems.

8. Explain about the semaphores.

9. Discuss about Copy-on-Write.

10. Explain about the virtual file systems.

PART C — $(4 \times 10 = 40$ marks)

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

11. Explain the operating system operations.

12. Describe the interprocess communication.

13. Explain about the deadlock in detail.

14. Explain the concept of paging and swapping.

15. Discuss about the network file systems.

16. Describe the resource management.

17. Explain the allocation methods and free-space management.

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UG-CS-1212 **BCAS–42/ BCASX–42**

U.G. DEGREE EXAMINATION - FEBRUARY, 2023

Computer Application

Fourth Semester

DATA BASE MANAGEMENT SYSTEM

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 DBMS and RDBMS.

2. What is Strong Entity Types in DBMS?

3. Explain the views in SQL.

4. What is second normal form?

5. Write short notes on CAP Theorem.

SECTION B — (3 × 7 = 21 marks)

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

All questions carry equal marks.

6. Explain the characteristics of database approach.

7. Write the characterization of specialization and generalization hierarchies.

8. Explain the insert, delete and update statements in SQL.

9. Explain mapping entity relationship model to relations.

10. Discuss the introduction to map reduce and hadoop.

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 data models, schemas and instances.

12. Discuss the relationship types, relationship sets and roles.

13. Explain the relational model concepts.

14. Describe the functional dependencies in detail.

15. Explain about the bigdata in detail.

16. Discuss the basic retrieval queries in SQL.

17. Explain the concept of NOSQL in detail.

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UG–CS-1213 BCASX–43

U.G. DEGREE EXAMINATION — FEBRUARY, 2023.

Computer Applications

Fourth Semester

WEB DESIGNING

Time : 3 hours Maximum marks : 70

PART A — ($3 \times 3 = 9$ marks)

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

All questions carry equal marks.

1. Explain about the cookies in brief.

2. Write short notes on server.

3. Explain the AWT.

4. What is meant by servlets?

5. What is meant by javabeans?

PART B — $(3 \times 7 = 21$ marks)

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

All questions carry equal marks.

6. Explain about the multi tier applications.

7. Describe about the connecting to a server.

8. Explain the styled text components.

9. What is metadata? Explain it.

10. Explain the bean property types.

PART C — $(4 \times 10 = 40$ marks)

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

All questions carry equal marks.

11. Explain the lifecycle of applet.

12. What is advanced socket programming? Explain it.

13. Write in detail about the concept of lists.

14. Explain about the Design of JDBC.

15. Explain the using beans to build an application.

16. Describe the control structures with examples.

17. Discuss about the images in detail.

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UG-CS–1214 BCASX-44

U.G. DEGREE EXAMINATION — FEBRUARY 2023.

Computer Applications

Fourth Semester

SOFTWARE DESIGNING

Time : 3 hours Maximum marks : 70

PART A — ($3 \times 3 = 9$ marks)

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

All questions carry equal marks.

1. Describe the process assessment and improvement.

2. Explain the process technology.

3. Discuss about the negotiating requirement.

4. Write about the concept of coupling.

5. What is meant by alpha and beta testing?

PART B — $(3 \times 7 = 21$ marks)

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

All questions carry equal marks

6. Explain the software development myths.

7. Discuss about the unified process.

8. Explain the requirements modeling.

9. Explain the design process.

10. Describe about the validation testing.

PART C — $(4 \times 10 = 40$ marks)

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

All questions carry equal marks.

11. Explain about the software engineering practice.

12. Write any two prescriptive process models.

13. Explain about the scenario based modeling.

14. Describe the design concepts.

15. Explain the control structure testing.

16. Describe about the requirements analysis.

17. Explain about the unit testing and integration testing.
