UG — BCA (C – 5001)

2025

Time : 3 hours

Full Marks : 70

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Sections as directed.

Section – A

Answer any **four** questions of the following :

10×4 = 40

1. Discuss the overview of the TCP/IP model, including its layers and their functions.

2. Explain the steps of how does a web client communicate with a web server during a standard web browsing session.

3. Discuss the advantages of JavaScript in terms of client-side execution and cross-platform compatibility.

SN – 93/2 (Turn over)

4. Explain the various operators is JavaScript and how they are used to form expressions. Give suitables example for each of them.

5. Compare and contrast XML and HTML in terms of their structure, usage, and flexibility.

6. Explain the role of DTD in defining the structure and rules of an XML document. Give examples of elements and attributes defined in a DTD.

7. Explain the different types of arrays in PHP and provide examples.

8. Write the PHP code for fetching the data from a database to a webpage. Write a PHP Script to create a database named "Gadgets" having table "Mobile" with fields names Mob_Id, Mob_Company, Mob_Cost, Pur_Year. Write insert quaery for inserting records in "Mobile" table and select query for retrieving the data.

Section – B

Answer all questions of the following : 3×10 = 30

9. What do you understand by Internet Server Identity (ISI) ?

10. What is a static and dynamic IP address ?

11. How does a web client differ from a web server ?

12. Why is it important to register a domain name for a website ?

13. Write a JavaScript code that checks if a given string is a palindrome.

14. What is type casting in JavaScript ?

15. How do you define a user-defined function in JavaScript ?

16. Which function is used to get the current date and time in PHP ? Give syntax.

17. Explain the purpose of the strlen() and str-replace() functions in PHP with examples.

18. What the different types of loops available in PHP ?

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UG — BCA (C – 5002)

2025

Time : 3 hours

Full Marks : 70

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Groups as directed.

Group – A

Answer any **four** questions of the following :

10×4 = 40

1. What is an Algorithm, and what are its key characteristics ? Write the asymptotic notations used for best case, average case and worst case analysis of algorithms.

2. Define an Array. Write an algorithm for finding maximum and minimum element of an array.

3. Write divide and conquer recursive Quick sort algorithm and analyze the algorithm for worst time complexity.

4. Use an algorithm for greedy strategies for the knapsack to find an optimal solution to the knapsack instance n=7, m=15, (p1, p2...., p7) = (10, 5, 15, 7, 6, 18, 3), and (w1, w2,...w7) = (2, 3, 5, 7, 1, 4, 1).

5. What is a Spanning tree ? Explain Prim's Minimum cost spanning tree algorithm with suitable example and also find the time complexity.

6. What are the fundamental operation of set ? Explain any three with an example.

7. Define Binary Search Tree (BST). Write an algorithm to insert a node in BST.

8. Compare BFS and DFS algorithm with an example graph and denote its time complexities.

Group – B

Answer all questions of the following : 3×10 = 30

9. What is an optimal solution ?

10. What is space complexity of algorithm ? .

11. Define weighted graph.

12. What is Hashing ?

13. Differentiate between Linear search and Binary search.

14. Write an algorithm using recursive function to find the sum of n numbers.

15. List any four examples of problems using Divide and Conquer.

16. What is the principle difference between Dynamic Programming and Divide and Conquer techniques ?

17. Define recurrence relation.

18. Define order of an algorithm.

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UG — BCA (C – 5003)

2025

Time : 3 hours

Full Marks : 70

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Groups as directed.

Group – A

Answer any **four** questions of the following :

10×4 = 40

1. Discuss the technical strengths of Python. Write the major features of Python.

2. Define Operators. List the various operators that can be used in Python.

3. Discuss different control flow statements used in Python. Write a program to find the maximum among three numbers.

4. What are strings in Python and illustrate how strings are immutable ? Write a Python function to check whether the given character is vowel or consonant.

5. Define Tuple. What are the advantages of Tuple over List ? Elaborate the different ways to create tuple. Also explain about tuple indexing.

6. What is list in Python ? Explain any five built-in functions that are used in Lists. How to display the existing list in ascending order ?

7. What is a class ? How to create a class and an object in Python ? Give an example.

8. What is Pandas ? Why do we use Pandas ? Write the major differences between Pandas and Numpy.

Group – B

Answer **all** questions of the following : 3×10 = 30

9. What is Indentation in Python ?

10. Define comments. Also write the syntax of multiline comment.

11. What is the use of pass statements ?

12. Write a python function to check the given number is even or odd.

13. What is the _init_() function in Python ?

14. What is lambda function ?

15. What are Membership Operators ?

16. What do you mean by scope and lifetime of variables ?

17. Define dictionary in Python.

18. What is a module in Python ?

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UG — BCA (C – 5004)

2025

Time : 3 hours

Full Marks : 70

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Groups as directed.

Calculator is allowed.

Group – A

Answer any **four** questions of the following :

$$10 \times 4 = 40$$

1. The following numbers are all approximate and are correct as far as their last digits only. Find their sum :

   136.421, 28.3, 321, 68.243, 17.482.

2. Find a root of $x - \cos x = 0$, using Bisection method.

3. Establish Newton formula for Backword Interpolation.

(Turn over)

4. Find $f'(3)$ using the table :

x	f(x)
1	0
2	2
4	6
7	10
10	25

5. Compute the value of definite integral, using Weddle's rule $\int_4^{5.2} \ln x \, dx$.

6. Find the root of $x^3+x^2-1 = 0$, using Newton-Raphson method correct to three decimal places.

7. Compute $\int_0^1 x \, dx$ correct to four decimal places by Simpson's One-third rule.

8. Solve the system of linear equations, using matrix inversion method :

$x+y+z = 1$

$x+2y+z = 2$

$x+y+2z = 0$

Group – B

Answer all questions of the following : $3 \times 10 = 30$

9. Define Transcedental equation.

10. Define the second forward difference $\Delta^2 y$.

11. Define absolute and relative errors.

12. State the formula of the Trapezoidal rule for $\int_a^b y \, dx$.

13. Write down the Newton Interpolation formula.

14. Write the successive iteration for $x = \phi(x)$.

15. Find the approximate value of the real roots of the equation :

$3x - \log_{10} x = 6$

16. Find the integral value of x, in between the roots of the equation $x^2-3 = 0$ lies.

17. Find the inverse of a matrix : $\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & -1 & 0 \end{bmatrix}$

18. Write down Runge-Kutta Method.

UG — BCA (E – 5008)

2025

Time : 3 hours

Full Marks : 70

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Sections as directed.

Section – A

Answer any **four** questions of the following :

10×4 = 40

1. Explain the evolution of e-commerce and its impact on global business. Also discuss examples of successful e-commerce businesses.

2. Explain clearly how internet technology has enabled smaller web business organizations to compete with larger ones ? Also discuss, how has the internet impacted traditional retail businesses ?

3. Describe the four important types of e-commerce business models. Compare and contrast the B2B and B2C e-commerce models with suitable examples.

4. What are the different types of service model for e-commerce website ? Discuss the benefits and drawbacks of any three.

5. Describe the process of setting up an e-commerce website. What are the key considerations for ensuring its success ? Explain using suitable example.

6. Discuss the various types of e-commerce payment systems and their advantages and disadvantages. Name three popular e-commerce payment gateways in India.

7. What are the main challenges and measures related to security and data privacy concerns in e-commerce infrastructure ?

8. Evaluate the ethical and legal challenges faced by e-commerce businesses. How can these challenges be addressed ?

Section – B

Answer all questions of the following : 3×10 = 30

9. What is the importance of middleware in e-commerce ?

10. Define intellectual property.

11. What are the impacts of AI in e-commerce ?

12. Briefly describe the importance of social media in e-commerce.

13. Name any three grocery supplier e-commerce website.

14. What do you understand by supply chain management ?

15. List important benefits of CRM in e-commerce.

16. What are the important issues involved in choosing the most appropriate hardware for an e-commerce site ?

17. What do you mean by IT Act, 2000 ?

18. Write the steps of e-commerce workflow ?

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