1B3N23042 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester B.Sc Computer Science Degree Examination, November 2023

BCS3B04 – Data Structures

(2022 Admission onwards)

Time: 2 hours Max. Marks: 60

Part A
Answer all questions.
Each question carries Two marks.
Ceiling - 20 Marks

1. Define Binary Tree. Name various Tree traversal methods.
2. Differentiate Linear search and Binary search.
3. What is the significance of an Array index?
4. Differentiate Graph and Tree.
5. What is a Minimum Spanning Tree?
6. Write any four applications of Stack.
7. What is a data structure? Name its categories.
8. What are the different operation on Stack?
9. Convert the following infix expression to both prefix and postfix

   (e/b)/d-((e+f)*g)

10. What is clustering in hashing? How do we solve it?
11. Differentiate complete and full binary Tree.
12. What is mean by polish notation?

PART B
Answer all questions.
Each question carries Five marks.
Ceiling - 30 Marks

13 Differentiate Adjacency Matrix and Adjacency List with an example.

14. What is a Sparse matrix? Briefly explain its representation.
15. Differentiate Array and Linked List.
16. What is a queue? Briefly explain different types of queues.
17. With an example write the difference between Binary Tree (BT) and Threaded Binary Tree (TBT). Also write the benefits of TBT over BT.
18. What is Recursion? Differentiate Direct and Indirect recursion.
19. With an Example explain Depth First Spanning Tree.

Part C

Answer any one questions.
Each question carries Ten marks.

20. What is Sorting? Explain the Quick sort procedure with an example.

21. Explain the following

    a) Hashing (3)

    b) Hash functions (3)

    c) Collision handling(4)

(1 x 10 = 10 Marks)

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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester B.Sc Computer Science Degree Examination, November 2023

BCS3B05 – Operating System Concepts

(2022 Admission onwards)

Time: 2 hours Max. Marks: 60

Part A
Answer all questions.
Each question carries two marks.
Ceiling – 20 Marks

1. Discuss the evolution of Operating System.
2. What is meant by Real Time Operating System?
3. Explain the concept of threads.
4. What is Process control block?
5. What is TLB (Translation Look aside Buffer) ?
6. Explain the concept of swapping.
7. What is the key difference between preemptive and non - preemptive scheduling algorithms?
8. What are the advantages of using 'Round Robin' scheduling?
9. Differentiate between Logical and Physical address.
10. Explain the concept of Virtual Memory.
11. Differentiate between Protection and Security.
12. Name any two mobile OS.

Part B
Answer all questions.
Each question carries five marks.
Ceiling – 30 Marks

13. Explain various deadlock handling techniques.
14. Explain allocation and free space management in file systems.
15. How paging is implemented? Mention its merits and demerits.
16. Differentiate between paging and demand paging.
17. Briefly discuss UNIX operating system.
18. Compare the working of virtual and cache memory.
19. Explain file protection mechanisms.

Part C

Answer any one question.
Each question carries ten marks.

20. Explain the critical section problem. Also explain any one classical synchronization problem.

21. Explain and compare any three process scheduling algorithms, using suitable examples.

(1 x 10 = 10 marks)

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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester B.Sc Computer Science Degree Examination, November 2023

BCS3A11 – Numerical Skills

(2022 Admission onwards)

Time: 2½ hours Max. Marks: 80

PART — A
Answer *all* questions.
Each question carries Two mark.
Ceiling -25 Marks

1. What do you mean by positive logic?
2. What is Gray code? Convert 101010 gray code in to binary.
3. Prove that x.(x+y) = x
4. Define base of a Number system? Give example
5. What is principle of duality? Give an example.
6. Define statistics? list the limitations of statistics.
7. Differentiate multiplexer and demultiplexer
8. What is an EX-NOR gate?
9. Explain POS form of a Boolean expression.
10. What do you mean by Statistical inference?
11. Define an encoder.
12. State De Morgan's Theorem.
13. Define Canonical form of Boolean expression.
14. Differentiate Mean, Median and Mode.
15. Define random experiment.

PART — B
Answer *all*questions.
Each question carries Five marks.
Ceiling -35 Marks

16. Subtract 1101 from 1011 using both 1sand 2scomplement method.
17. Write the difference between Latch and Flip-Flop?
18. Briefly explain the rules and laws of Boolean algebra.
19. Prove that any Boolean function can be expressed as the product of Max terms or Sun
20. Convert 101010 gray code in to binary and BCD.
21. Explain with diagrams and truth table, the working of XOR, NAND and NOR gates.

22. Construct Hamming code for the following 8-bit words

(a) 10101010 (b) 11111111

23. Briefly explain

(a) Arithmetic mean

(b) Geometric mean

(c) Harmonic mean

PART - C

Answer any *two* questions.
Each question carries Tenmarks.

24. Write notes on

(a)Excess-3 code (b) ASCII code (c) Hamming code

(d) BCD code (e) Gray code

25. What are universal gates? Realize all the fundamental gates using NAND and NOR gate.

26. What are sequential circuits? Explain SR flip-flop and JK flip-flop with block diagram and truth table.

27. Simplify using K Map in SOP forms $f(A, B, C, D) = \Sigma(0, 2, 8, 9, 10, 11, 14, 15)$. Draw thelogic diagram ofsimplified form

2 x 10 = 20 Marks

33

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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester B.Sc Computer Science Degree Examination, November 2023

BCS3A12 – Web Designing

(2022 Admission onwards)

Time: 2 ½ hours Max. Marks: 80

PART A

Answer all questions.
Each question carries Two marks.
Ceiling – 25 Marks

1. What are the different levels of heading in HTML?
2. Write the application of internet.
3. Define CSS Class.
4. How to create an alert box using JavaScript?
5. What is the primary role of Joomla's frontend?
6. Mention the role of frames in HTML.
7. Explain typical structure of URL.
8. Explain in brief the <br> and <hr> tags with its attribute.
9. What are input types in HTML.
10. Briefly explain the different CSS fonts and its properties?
11. How to display output to the user using JavaScript?
12. What is a content management system?
13. How do you create a new article in Joomla, and what are the key components you can include within an article?
14. Differentiate GET and POST methods.
15. How to create a new content category in Joomla?

PART B

Answer any all questions.
Each question carries Five marks.
Ceiling – 35 Marks

16. Explain the logical operators in JavaScript with examples.
17. Briefly explain the difference between Joomla's featured articles and regular articles.
18. What is HTTPS, and why is it considered more secure than HTTP for web browsing?

19. Explain any five text formatting tags in HTML.
20. How does the "do while" loop differ from the "while" loop in JavaScript?
21. Explain how to create text, password, button and checkbox in HTML?
22. How can you create a new menu in Joomla, and what options are available for configuring menu settings?
23. What is the purpose of JavaScript variables, and how can you declare and initialize them?

PART C

Answer any Two questions.
Each question carries Ten marks.

24. Explain the following: WWW, XML, SGML, CSS and Web Browser.
25. How can you access the Global Configuration settings in Joomla, and what are the various tabs or sections available for configuration?
26. Explain Arithmetic, Assignment, Relational, Logical operators in JavaScript and provide examples of their use.
27. Generate html page for our own bio data (use all formatting tag) with CSS.

(2 x 10 = 20Marks)