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1B3N22036 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester B.Sc Degree Examination, November 2022

BCS3B04 - Data Structures

(2019 Admission onwards)

Time: 2 hours Max. Marks: 60

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

1. What is the significance of an Array index?
2. What is a Double linked list?
3. Compare the worst case complexities of Quick sort and Merge sort.
4. Name and describe the different operations performed on Stack?
5. Define Data Structure. List its categories.
6. What is the significance of the term "top of the stack"?
7. List out limitations of linear queue.
8. Differentiate infix, prefix and postfix expressions
9. What is mean by Traversal? Name various tree traversal methods
10. What is mean by Minimum spanning tree of a graph? Name two algorithm to find MST of a graph.
11. Give the node structure for Single and Doubly linked list.
12. What is mean by probing in hashing?

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

13. What is a sparse matrix? With an example explain the linked representation of sparse Matrix.
14. Differentiate linear search and Binary search
15. Convert the expression (A +B) * (C / D) + E to postfix form using
    a) Direct Conversion (2)
    b) With Stack (3)

16. What is a De-queue and what are its variants?

17. Draw a Binary tree with the following elements and then find the in-order and post-order Traversal

P , S, A, T, W, H , B, M , R

18. Explain Depth First Search with an example.

19. Briefly explain the various representation of Graph.

Part C

Answer any one questions.
Each question carries Ten marks.

20. What is a Graph? Explain various representations and applications of Graph.

21. Explain the following
    a) Hashing and Hash functions (3)
    b) Types of Hashing(4)
    c) Collision resolution methods (3)

(1 x 10 = 10 Marks

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester B.Sc Degree Examination, November 2022

BCS3B05 - Operating System Concepts

(2019 Admission onwards)

Time: 2 hours Max. Marks: 60

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

1. Explain parallel processing systems.
2. What are the different states of a process?
3. What is the duty of a short-term scheduler?
4. Explain the term external fragmentation with examples.
5. Describe the working of Multiprogramming systems.
6. What do you mean by mutual exclusion?
7. Briefly discuss the functions of an operating system.
8. Explain how file systems handle free spaces.
9. Write a note on PCB.
10. What do you mean by page hit?
11. Compare logical and physical address space.
12. Discuss the working of RR and SJF scheduling policies.

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

13. What is meant by deadlock? Discuss various methods for deadlock prevention.
14. Explain CPU Scheduling with the help of various scheduling algorithms.
15. Explain paged memory management scheme. Discuss its merits and demerits
16. What do you mean by file protection? Explain.
17. What is the critical section problem? How can semaphores be used to handle them?
18. Compare the working of virtual and cache memory.
19. What is the kernel of an Operating System? Explain

Part C

Answer any one question.
Each question carries ten marks.

20. Explain the working and architecture of the Android operating System.

21. Compare the following terms:

    (a) Time sharing system.

    (b) Batch processing system.

    (c) Real-time system.

(1 x 10 = 10 Marks

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester B.Sc Degree Examination, November 2022

BCS3A11 - Numerical Skills

(2019 Admission onwards)

Time: 2 ½ hours Max. Marks: 80

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

1. Define random experiment.
2. What are the limitation of statistics?
3. Define primary data and secondary data.
4. Distinguish between discrete frequency distribution and continuous frequency distribution.
5. What is K-map? What are the limitation of K-map?
6. Simplify the expression xyz + xyz` + x`z.
7. Design the logic circuit of the expression A·B + C
8. Convert $(101101.01101)_2$ to Octal and Hexadecimal number.
9. What are excess-3 code?
10. Define multiplexer and de-multiplexer.
11. Design an exclusive OR gate with three input.
12. Calculate the Arithmetic mean of the following data

Class	0-4	4-8	8-12	12-16
Frequency	1	4	3	2

13. What are the clocked flip flop?
14. Convert the following decimal number to binary coded decimal number -321.
15. Define the group of flip flop used for data storage.

PART – B

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

16. Let the average mark of 40 students of class A be 38. The average mark of 60 students o another class B is 42. What is the average mark of combined group of 100 students?

17. For the following frequency distribution of the wages of 200 workers. Calculate Harmonic Mean.

Wages	100-110	110-120	120-130	130-140	140-150	150-160	160
Workers	10	25	36	68	32	21	

18. Convert $(E5)_{16}$ and $(B2F8)_{16}$ to equivalent decimal numbers.

19. What is Gray code? Explain Binary to Gray code conversion and Gray code to Binary conversion with example.

20. Explain various combinational circuit.

21. Perform BCD additions on a) 67+53 b) 55+25

22. Convert $(25.16)_{10}$ and $(946.152)_{10}$ to binary.

23. What is the difference between a latch and a flip - flop?

PART - C

Answer any *two* questions.
Each question carries Ten marks.

24. Simplify using K-map in SOP form $f(A,B,C,D) = \Sigma(0,2,8,9,10,11,14,15)$. Draw the diagram of the simplified form

25. Explain the operation of Master salve JK flip-flop with truth table and logical diagram

26. Construct basic logic gates using NOR and NAND gates.

27. Describe half adder and full adder with truth table.

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester B.Sc Degree Examination, November 2022

BCS3A12 - Web Designing

(2019 Admission onwards)

Time: 2 ½ hours Max. Marks: 80

PART A
Answer *all* questions
Each question carries *Two* marks
Ceiling – 25 Marks

1. What is SGML?
2. Mention the basic HTML data types.
3. What are attributes in HTML?
4. Write down any four client scripting languages.
5. What are the different ways of including Java script into HTML page?
6. Distinguish between = = and = = = in Java script?
7. What type of software is Joomla?
8. What is Content in Joomla?
9. What is the purpose of using Global Configuration in Joomla?
10. What do you mean by Article Manager in Joomla?
11. What do you mean by Menu Manager in Joomla?
12. What do you mean by Module Manager in Joomla?
13. Differentiate between Pages and Posts in WordPress.
14. What are WordPress Child Pages?
15. What does publish in WordPress do?

PART B
Answer *all* questions
Each question carries *Five* marks
Ceiling – 35 Marks

16. Explain the features and structure of HTML document.
17. Write down about any five conditional statements in Java script.
18. Briefly explain about Java script Literals.

19. How Categories are managed in Joomla?

20. Explain about Component Manager in Joomla.

21. Summarize Archive Manager in Joomla.

22. Distinguish between visual editor and HTML editor in WordPress?

23. Briefly explain about WordPress General settings.

Part C

Answer any *Two* questions
Each question carries *Ten* marks

24. Prepare a webpage for a student registration using HTML (include 10 formatting tags).

25. Illustrate the different types of operators in Java script.

26. Explain Joomla Media Manager in detail.

27. Explain the different ways of installing a new WordPress theme.

(2 x 10 = 20 Marks)