2M2M21364 (Pages : 1) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester MSc Degree Examination, March/April 2021

MCS2C01 – Design and Analysis of Algorithms

(2020 Admission onwards)

Time: 3 hours Max. Weightage : 30

PART A

Answer any 4 questions. Each question carries 2 weightage

1. List four asymptotic notations and write corresponding functions/ equations
2. What is backtracking?
3. How can we analyze the performance of algorithms?
4. Write a paragraph on NP - Completeness.
5. Write a short note on brute force approach for string matching
6. Explain space complexity. How it is related to parallel algorithms?
7. Define Theta notations.

(4x2 = 8 weightage)

PART B

Answer any four questions. Each question carries 3 weightage

8. Briefly explain about PRAM model
9. Solve the recurrence $\mathbf{T(n) = 9\ T(n/3) + n}$ using Master Theorem.
10. Differentiate P and NP problems
11. What do you mean by knapsack problem?
12. Explain the steps involved in problem development
13. What do you know about divide and conquer method? How it is used in quick sort?
14. Explain best case, worst case and average case complexities with example

(4x3 = 12 weightage)

Part C

Answer any two questions. Each question carries 5 weightage

15. Explain various methods for solving recurrences.
16. Discuss about various complexity classes.
17. What is Euler tour technique? How does it work?
18. What is an algorithm? Explain any three basic techniques for designing efficient algorithms

(2x5 = 10 weightage)

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester M.Sc Degree Examination, March/April 2021

MCS2C02 – Operating System Concepts

(2020 Admission onwards)

Time: 3 hours Max. Weightage : 30

PART A (Answer any four. Each question carries *Two* weightage.)

1. What is a translation look-aside buffer?
2. What is Cache Memory? Explain its functions.
3. When does Page fault error occur?
4. What complications does concurrent processing adds to an operating system?
5. What is context switching? When it is used?
6. What is Compaction?
7. What is the relationship between threads and processes?

(4 x 2 = 8)

PART B (Answer any four. Each question carries *Three* weightage.)

8. Explain the concept of swapping.
9. Describe the life cycle of a process.
10. What are the basic functions of process management in OS?
11. Evaluate the merits and demerits of multi-level queue scheduling.
12. Write note about different mobile Operating systems.
13. Explain paging and segmentation.
14. What must the banker's algorithm know priori, in order to prevent deadlock?

(4 x 3 = 12)

PART C(Answer any two. Each question carries *Five* weightage)

15. What are the three requirements of any solution to the critical sections problem? Why are the requirements needed?
16. With a suitable example explain any three page replacement algorithms.
17. Name and describe any three processor scheduling algorithms. Critically compare them with each other with taking suitable example (assume required values suitably).
18. Compare the features of iOS and Android.

(2 x 5 = 10)

14

2M2M21366 (Pages :1) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester M.Sc Degree Examination, March/April 2021

MCS2C03 – Computer Networks

(2020 Admission onwards)

Time: 3 hours Max. Weightage : 30

PART A

Answer any FOUR questions:

Each Questions carries TWO weightage

1. List and explain different types networks topologies.
2. Distinguish between network edge and network core.
3. What is DNS ? Explain the structure and function of DNS.
4. Explain the different approaches to congestion control.
5. What are bridgs ? Explain.
6. Write a note on wireless networks.
7. Explain the goals of security in computer networks .

(4x2=8 weightage)

PART B

Answer any FOUR questions

Each Question carries THREE weightage

8. Explain any two bounded transmission media.
9. What is internet ? Explain any three services of internet.
10. Explain sliding window protocol.
11. Explain the principle characteristics of ATM.
12. Write note on PPP.
13. Explain error detection and correction strategies.
14. What is multicast routing?

(4x3=12 weightage)

PART C

Answer any TWO questions

Each question carries FIVE weightage

15. Explain the function of various layers of TCP/IP model.
16. Describe different types of routing algorithms.
17. Compare and contrast IP4 and IP6 addressing schemes.
18. What are the principles of cryptography. Explain.

(2x5=10 weightage)

15

2M2N21367 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester M.Sc Degree Examination, March/April 2021

MCS2C04– Artificial Intelligence

(2020 Admission onwards)

Time: 3 hours Max. Weightage : 30

PART A

Answer any *four* questions. Each carries *2* weightage.

1. Define state space of a problem. Explain its importance in AI.
2. Distinguish between simple neural network and deep neural network.
3. Explain reward system in reinforcement learning.
4. Compare and contrast ES system programs with conventional programs.
5. What are CNF and DNF? Explain.
6. What is meant by problem reduction? What is its importance in AI? Give an Example.
7. Explain informed search and uninformed search. Give examples.

(4 x 2 = 8 weightage)

PART B

Answer any *four* questions. Each carries *3* weightage.

8. With the help of diagram explain basic structure of an ES.
9. List any two most common methods of problem representation in AI. Explain them in detail.
10. What is meant by Hill Climbing? Explain.
11. Explain Best First Search Algorithm in detail.
12. Distinguish between supervised learning and unsupervised learning.
13. What are heuristics? Give two examples for heuristic functions.
14. Show the validity of the argument

    (i) If you overslept, you are late.

    (ii) You are late.

    Conclusion: Therefore, you overslept.

(4 x 3 = 12 weightage)

PART C

Answer any *two* questions. Each carries 5 weightage.

15. (a) Transform the following into disjunctive normal forms.

(i) $\sim(A \vee \sim B) \wedge (S \rightarrow T)$, (ii) $(A \rightarrow B) \rightarrow R$

(b) Assume P: He needs a doctor, Q: He needs a lawyer, R: He has an accident, S: He is sick, U: He is injured.

State the following in English.

a) $(S \rightarrow P) \wedge (R \rightarrow Q)$

b) $P \rightarrow (S \vee U)$

c) $(P \wedge Q) \rightarrow R$

d) $(P \wedge Q) \leftrightarrow (S \wedge U)$

16. Explain script, frames and semantic networks for knowledge representation.

17. Give any five rules of inferences. Explain each of them.

18. Give a detailed account for Expert system development life cycle.

(2 x 5 = 10 weightage

16

2M2M21368 (Pages : 1) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester MSc Degree Examination, March/April 2021

MCS2C05– Principles of Software Engineering

(2020 Admission onwards)

Time: 3 hours Max. Weightage : 30

Section A

Answer any *four*questions. Each question carries *Two* weightage

1. Discuss Build and Fix Model with itsadvantages and disadvantages.
2. Define the term Software Configuration Management?
3. Define Requirement Validation
4. What is meant by Quality Control? Explain.
5. What are Milestones and Deliverables in Project Management?
6. Define Modularity in design Process
7. What is meant by Portability of a Software Product?

(4x2=8 weightage)

Section B

Answer any *four* Questions. Each question carries *Three* weightage

8. Explain Evolutionary Model of Development. What are its merits and demerits?
9. What are the characteristics of a good SRS?
10. Discuss Top-Down Programming and Bottom-Up programming.
11. What is meant by Version Control System?
12. Differentiate Validation and Verification in Software Development Process.
13. Discuss Data Flow Diagram with a suitable example.
14. Explain Waterfall and Spiral Model of Development. Compare both.

(4x3=12 weightage)

Section C

Answer any *Two* Questions, Each question carries *Five* weightage

15. Recall the phases in Software Development Life Cycle.
16. Illustrate Cohesion and Coupling with its different forms
17. Explain the following with suitable Examples
    i. Sequence Diagram
    ii. Collaboration Diagram
    iii. Deployment Diagram
18. Discuss the following in detail
    i. Equivalence Class Portioning and Boundary Value analysis with examples
    ii. Control Flow Graphs