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1M2M18032 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester M.Sc Computer Science Degree Examination, March 2018

MCS2C01 – Design and Analysis of Algorithms

(2017 Admission onwards)

Max. Time: 3 hours Max. Weightage : 36

Part A
(Answer all questions, Each question carries 1 weightage)

1. Define O (Big Oh) notation.
2. Distinguish between RAM model and PRAM model.
3. What are the methods to specify an algorithm?
4. Write a note on growth rate of a function.
5. What is Direct Recursion?
6. What is Euler Tour Technique?
7. Define time complexity in the case of parallel algorithm.
8. What is the difference between Fractional Knapsack problem and (0/1) Knapsack Problem?
9. What do you mean by dynamic programming?
10. Write a short note on Hamiltonian cycle.
11. What are the important characteristics of an algorithm?
12. What do mean by Parallel Prefix Computation?

(12 x 1 = 12 weightage)

Part B
(Answer any 6 questions, Each question carries 2 weightage)

13. Explain Big Omega Ratio Theorem.
14. Write a paragraph on 'deterministic symmetry breaking'.
15. Let $\mathbf{f(n) = 3n^2 + 5n}$. Show that $\mathbf{f(n) = \Omega\ (n)}$
16. Write a paragraph on NP - Completeness.
17. Explain the concept of parallel sorting with an example.
18. Solve the recurrence $\mathbf{T(n) = 9\ T(n/3) + n}$ using Master Theorem.
19. 'The running time is directly proportional to the frequency count of the algorithm.' Explain the meaning of the statement in detail.

20. Compute the time complexity of the following:

```
for i ← 4 to m-1

{ for j ← 5 to i

  {
        Set Y ← Y + X[i][j]
  }
}
```

21. Explain the procedure to analyze control structures.

(6 x 2 = 12 wei

Part C
(Answer any 3 questions, Each question carries 4 weightage)

22. Show that Strassen's matrix multiplication algorithm is faster than standard matrix multip algorithm.

23. Solve the recurrence $\mathbf{T(n) = 2T(\sqrt{n}) + \log n}$

24. i) 'Merge sort algorithm closely follows the divide and conquer paradigm.' Explain the mea the statement.
    ii) Compute the runtime complexity of Merge sort algorithm.

25. Explain in detail about Algorithm Design Techniques.

26. i) How can we solve Knapsack problem using Branch-and-Bound technique?
    ii) Given a set S = **{3, 4, 5, 6}** and Weight = **13**. Find subset sum using backtracking approa

27. Explain the difference between Prim's algorithm and Kruskal's algorithm with the support example.

(3 x 4 = 12 weig

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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester M.Sc Computer Science Degree Examination, March 2018

MCSS2C02 – Operating System Concepts

(2017 Admission onwards)

Max. Time: 3 hours Max. Weightage : 36

Part A

Answer* all *questions.

Each question carries 1 weightage.

1. Differentiate Process and Program ?
2. Differentiate between Logical and Physical address.
3. What is a translation look-aside buffer?
4. What is an inverted page table?
5. Describe System call.
6. What is the working set of a process?
7. When does Page fault error occur?
8. What is Cache Memory? Explain its functions.
9. What is the producer consumer problem?
10. What is the Belady`s anomaly and when it occurs?
11. What is Compaction?
12. What are the advantages of using Threads?

(12 x 1 = 12 weightage)

Part B

Answer any* six *questions.

Each question carries 2 weightage.

13. Interrupt disabling and enabling is a common approach to implementing mutual exclusion, what are its advantages and disadvantages?
14. Compare first fit, best fit and worst fit.
15. Compare I/O based on polling with interrupt-driven I/O. In what situation would you favour one technique over the other?
16. What are the functions of Operating System?

17. Describe RPC.
18. What are the basic functions of file management in OS?
19. What is a semaphore? Explain its usage with an example.
20. What must the banker's algorithm know priori in order to prevent deadlock?
21. Describe the life cycle of a process.

(6 x 2 = 12 weightage)

Part C

Answer any* three *questions.
Each question carries 4 weightage.

22. What are the four conditions required for deadlock to occur? Explain.
23. Name and describe any three processor scheduling algorithms. Critically compare them with each other with taking suitable example (assume required values suitably).
24. What are three requirements of any solution to the critical sections problem? Why are the requirements needed? Explain.
25. Describe page-based virtual memory. You should consider pages, frames, page tables, and Memory Management Units in your answer.
26. Describe the sequence of step that occurs when a timer interrupt occurs that eventually results in a context switch to another application.
27. Draw the UNIX process state transition diagram and explain.

(3 x 4 = 12 weightage)

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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester M.Sc Computer Science Degree Examination, March 2018

MCSS2C03 – Computer Networks

(2017 Admission onwards)

Max. Time: 3 hours Max. Weightage : 36

Part A

Answer all questions

Each question carries 1 weightage

1. What do you mean by topology?
2. What is a socket?
3. Which are the two metrics to define performance of a network? Define them.
4. What is the use of a hub?
5. Define hamming distance.
6. Define cryptography.
7. What do you mean by multiplexing?
8. Differentiate between port address and IP address.
9. What is the use of user agent?
10. What is the use of client-server model?
11. What do you mean by burst error?
12. What do you mean by half duplex transmission?

(12 × 1 = 12 weightage)

Part B

Answer any 6 questions

Each question carries 2 weightage

13. Write a short note on categories on types of network.
14. Explain the purpose of DNS.
15. Explain two ways of implementing multicast routing.
16. How bridges help in data transmission?
17. Write a short note on firewall.
18. Write short note on CSMA/CD.
19. Differentiate circuit switched networks and datagram networks.
20. Explain various ARQ's.
21. Explain frame format of IPV6.

(6 × 2 = 12 weightage)

Part C

Answer any 3 questions

Each question carries 4 weightage

22. Explain the functions of various layers in ISO OSI.

23. Explain various multiplexing techniques.

24. Explain a public key and a private key encryption technique.

25. Explain various error detection techniques.

26. Write short notes on two guided and two unguided transmission media techniques.

27. Explain HTTP in detail.

(3 × 4 = 12 weightage)

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1M2M18035 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester M.Sc Computer Science Degree Examination, March 2018

MCSS2C04 – Artificial Intelligence

(2017 Admission onwards)

Max. Time: 3 hours Max. Weightage : 36

PART A

Answer *all* questions.

Each question carries *one* weightage.

1. What is MYCIN?
2. Give any two types of knowledge?
3. Define a production System.
4. Define knowledge acquisition?
5. What is semantic net?
6. Define problem reduction?
7. Give an example for AND - OR Graph.
8. What do you meant by non-monotonic reasoning?
9. Explain DENRAL.
10. Define proposition.
11. Two examples of knowledge representation methods.
12. Define State Space of a Problem?

(12 x 1 =12 weightage)

PART B

Answer any *six* questions.

Each question carries *two* weightage.

13. What are the issues to be addressed in Knowledge representation?
14. What are Semantic nets? What is its importance?
15. Differentiate CNF and DNF.
16. What is rote learning? Explain.

17. Express the following statement in propositional logic :

(i) If he work hard, he will get a pass.

(ii) If you are intelligent and hardworking, you will be placed through Campus Interview or through placement drive.

18. Differentiate skolemisation, skolem constant and skolem function.

19. Distinguish between Brute Force Search and Heuristic Search.

20. Explain forward and backward chaining. Give example for each.

21. Differentiate Frames and Scripts.

(6 x 2 =12 weightage)

PART C

Answer any *three* questions.
Each question carries *two* weightage.

22. Explain the following

a. BFS Algorithms.

b. DFS Algorithms.

c. Explain A* Algorithm.

23. a) What is meant by minimax strategy? Explain in the context of Game theory.

b) What is the significance of alpha and beta cutoffs? Explain alpha-beta pruning.

24. What is meant by machine learning? What are the categories of learning algorithms? Explain any two learning methods.

25. Explain heuristic search in the context of Best First Search with a suitable example.

26. Write a note on

a. Hill-climbing.

b. Constraint satisfaction.

c. Knowledge and information.

d. Procedural and declarative knowledges.

(3 x 4 = 12 weightag

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M2M18036 (Pages : 2) Reg. No:.....
Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester M.Sc Computer Science Degree Examination, March 2018

MCS2E05(3) – Web Technology

(2017 Admission onwards)

Max. Time: 3 hours Max. Weightage : 36

Part A
Answer* all *questions

1. Define SGML.
2. What are External Links in HTML?
3. What is Unordered List in HTML?
4. What is JavaScript?
5. What are Cookies?
6. What is Document Object Model?
7. What is LAMP?
8. What is Dynamic Web?
9. What is Host Based Authentication?
10. What are sever side scripts?
11. Recall the different variable scopes in PHP?
12. Write a shot note on Joomla?

(12 x 1 = 12 weightage)

Part B
Answer any* six *questions
Each question carries 2 weightge

13. Explain any six basic formatting tags in HTML.
14. Illustrate Framesets and Frames in CSS.
15. Explain increment and decrement operators in JavaSript.
16. Explain the Strength and weaknesses of JavaScript.
17. Explain the role of Apache Web Server in the Internet.
18. Give a detailed note on Server Side Includes.
19. What are Proxy Servers? How an Apache server can be installed as a Proxy Server.
20. Explain different ways PHP establishes connection with MySQL database with examples..
21. Illustrate how an Article can be published using Joomla.

(6 x 2 = 12 weightage)

Part C

Answer any* three *questions

Each question carries 4 weightge

22. Discuss Error handling in DHTML.

23. Give a detailed account of Browser Objects.

24. Explain various action tags in JSP.

25. Explain different methods of implementing security in Web Programming.

26. Describe with example different control flow constructs in PHP.

27. Illustrate any one Content Management system and its features with examples?

(3 x 4 = 12 wei