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1M2M17156   (Pages : 2)   Reg. No:...............................

Name: ....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE
Second Semester M.Sc Computer Science Degree Examination, March 2017
CSS2C04 – Computational Intelligence
(2016 Admission onwards)

Max. Time: 3 hours   Max. Weightage : 36

PART A
Answer *all* questions.
Each question carries *one* weightage.

1. Explain the purpose of Turing test.

2. Define problem space in Artificial Intelligence.

3. Briefly explain importance of knowledge acquisition.

4. Explain any two characteristics of AI problems.

5. Define a production System.

6. What is meant by problem reduction?

7. What do you meant by non-monotonic reasoning?

8. Give two examples for expert systems and its use.

9. Give any two state space search techniques used in AI problem solving.

10. What do you mean by Knowledge Representation?

11. List important task domains of AI

12. Define predicate.

(12 x 1 =12 Weightage)

PART B

Answer any *six* questions.

Each question carries *two* weightage.

13. Discuss various Knowledge representation issues.
14. Transform the following into Disjunctive Normal Form (DNF) :
    $(P \rightarrow (\sim (Q \wedge R)))$
15. What is rote learning? Explain.
16. Differentiate skolem constant and skolem function.
17. What is a contradiction statement? Explain.
18. Compare BFS and DFS algorithms.
19. Express the following statements in symbolic form:
    (i) If you over sleep, you will be late
    (ii) If the humidity is high, it will rain either today or tomorrow.
20. Distinguish between Brute Force Search and Heuristic Search.
21. Explain how Hill climbing algorithm works.

(6 x 2 =12 Weightage)

PART C

Answer any *three* questions.

Each question carries *four* weightage.

22. Under what conditions would it make sense to use both forward and backward chaining? Give an example where both of these are used.
23. What is meant by machine learning? What are the categories of learning algorithms? Explain any two learning methods.
24. a) Explain Mini-Max search procedure
    b) What is the significance of alpha and beta cutoffs? Explain alpha-beta pruning.
25. Compare and contrast the given pairs from the following :
    a. Predicate Logic and Propositional Logic
    b. Frames and Scripts
    c. Resolution and Unification
    d. MYCIN and DENDRAL
26. Write a notes on
    a. Best-first search.
    b. Constraint satisfaction.
    c. Semantic nets and frames.
    d. Genetic algorithms
27. Using the search tree given below, perform DFS to search for Goal node. Also write the algorithm for DFS.
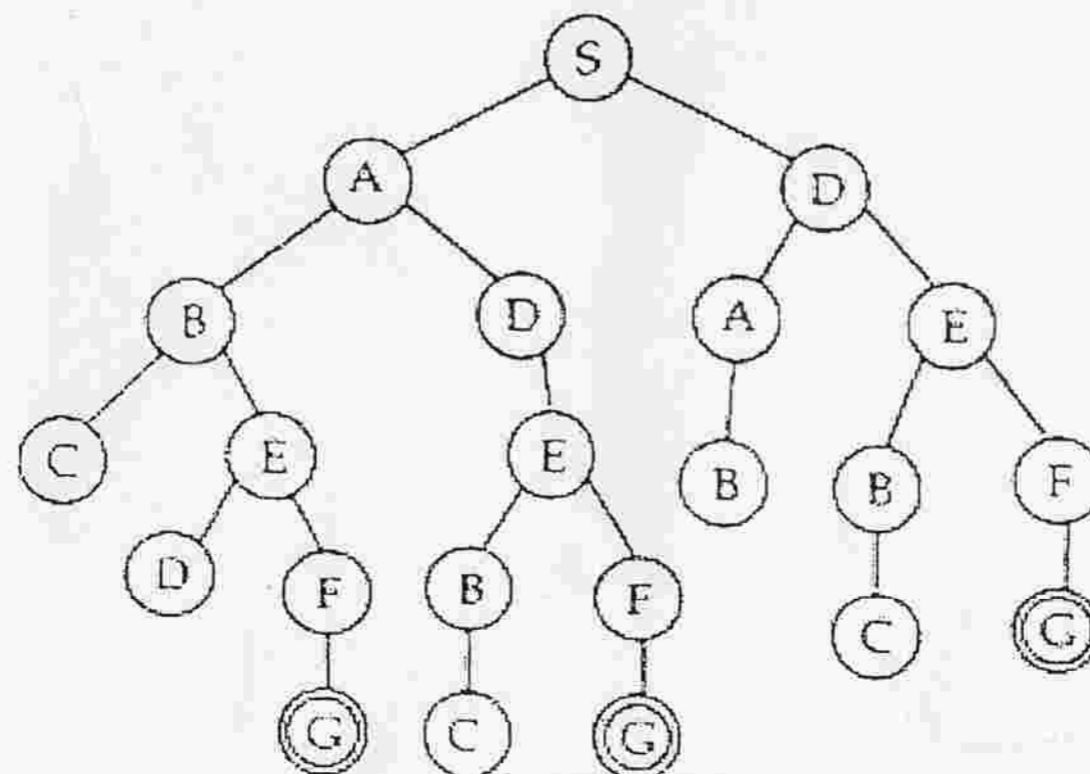
(3 x 4 = 12 Weightage)

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Name: ....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE
Second Semester M.Sc Computer Science Degree Examination, March 2017
CSS2E05a – Computer Graphics
(2016 Admission onwards)

Max. Time: 3 hours　　　　　　　　　　　　　　　Max. Weightage : 36

Part A
Answer all questions.
Each question carries 1 weightage

1. What is bitmap?
2. What is persistence?
3. What is homogeneous coordinate system?
4. What is 2D viewing transformation pipeline?
5. Give matrix representation for 2D shearing
6. Give an idea on antialiasing.
7. What are properties of Bezier curves ?
8. What are the methods for specifying spline representations?
9. Give nine four digit binary region codes used for Cohen Sutherland line clipping algorithm
10. What are the disadvantages of DDA algorithm?
11. What is GLUT?
12. What do you mean by one point perspective and two point perspective in projection?

(12 x 1 = 12 Marks)

Part B
Answer any six questions.
Each question carries 2 weightage

13. Explain various applications of computer graphics.

14. Write note on

    a)Liquid-Crystal Displays

    b)Color CRT monitors

15. Discuss Eight way symmetry of a circle.

16. Explain in detail about parallel projections

17. Discuss window to viewport transformation

18. Explain back face detection algorithm.

19. Describe classification of visible surface detection algorithm

20. Discuss the following

    a) general pivot point rotation　　　　　　b) general fixed point scaling

21. Write a sample OpenGL program and explain it's working

(6 x 2 = 12 Marks)

Part C

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

22. Explain

    a) Refresh cathode ray tube   b) Raster scan displays

    c) Direct View Storage Tubes

23. Explain Bresenham's midpoint line algorithm

24. a) Explain flood fill algorithm

    b)Discuss briefly Sutherland-Hodgeman Polygon clipping

25. Explain various 3D transformations in detail.

26. Discuss in detail Depth –Buffer method

27. Explain in detail features and operations of OpenGL

(3 x 4 = 12 weightage)

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE
Second Semester M.Sc Computer Science Degree Examination, March 2017
CSS2C03 – Computer Networks
(2016 Admission onwards)

Max. Time: 3 hours   Max. Weightage :

Part A
Answer All Questions
Each carries 1 weightage

1. What do you mean by piggy backing?
2. What is a router?
3. What is the use of SMTP protocol?
4. What do you mean by port number?
5. Expand HTTP.
6. What is a burst error?
7. What do you mean by multicast routing?
8. What is a IP address?
9. Define Hamming distance?
10. What do you mean by address resolution?
11. What is the feature of microwave transmission?
12. What are the functionalities of data link layer?

(12 x 1=12 weightage)

Part B
Answer any 6 Questions
Each carries 2 weightage

13. Write short note on fibre optics and coaxial cable.
14. Write about HTTP protocol.
15. Short note on TCP.
16. What is Diffie-Helman key exchange. Explain.
17. Write short note on ARQ's.
18. Explain various congestion control mechanisms.
19. What are Firewalls ? Explain.
20. Explain various network toplogies.
21. Write short note on FTP.

(6 x 2=12 weightage)

Part C
Answer any 3 Questions
Each carries 4 weightage

22. Compare of ISO-OSI and TCP/IP reference model.
23. Explain architecture of email and POP3 protocol.
24. Explain briefly various routing algorithms.
25. Explain Hamming code error correction and CRC methods.
26. Give a detailed account Encryption algorithms.
27. Describe bridges and switches in detail.

(3 x 4=12 weightage)

67
12

79

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Second Semester M.Sc Computer Science Degree Examination, March 2017

CSS2C01 – Design and Analysis of Algorithms

(2016 Admission onwards)

Max. Time: 3 hours   Max. Weightage : 36

Part A
Answer all questions
Each question carries 1 weightage

1. Give any two examples of geometric problems.
2. Compare RAM and PRAM models.
3. What is divide and conquer technique?
4. Give the recurrence relation for binary search algorithm.
5. How will you analyse the space complexity of an algorithm?
6. If $f(n) = a_m n^m + \ldots + a_1 n + a_0$, then show that $f(n) = O(n^m)$.
7. State Omega Ratio Theorem.
8. What do you mean by state space tree?
9. What is asymptotic analysis?
10. Give any four applications of NP Hard problems.
11. What is a Hamiltonian cycle?
12. What do you mean by scalability of parallel algorithms?

(12 x1=12 weightage)

Part B
Answer any 6 questions
Each question carries 2 weightage.

13. Write short notes on numerical problems and graph problems.
14. Explain cost estimation based on key operations.
15. Explain recurrence tree method for solving recurrences, with suitable example.
16. Write an algorithm to perform merge sort on the following set of numbers:
    38, 27, 43, 3, 9, 82, 10
17. Solve $T(n) = 2T(\sqrt{n}) + \log n$
18. Compare and contrast dynamic programming and divide and conquer technique.
19. State and prove Cook's theorem.
20. Discuss, in brief, the merits of parallel algorithms.
21. Write short note on odd even merge sort.

(6 x 2=12 weightage)

Part C
Answer any 3 questions.
Each question carries 4 weightage

22. Explain knapsack problem. How will you solve it using branch and bound method?

23. Consider a set S = {5, 10, 12, 13, 15, 18} and N=30. Solve the sum of subsets problem using backtracking.

24. Apply Prim's and Kruskal's algorithm, to the following graph, to obtain its minimum spanning tree. Will both algorithms produce the same output? Discuss.
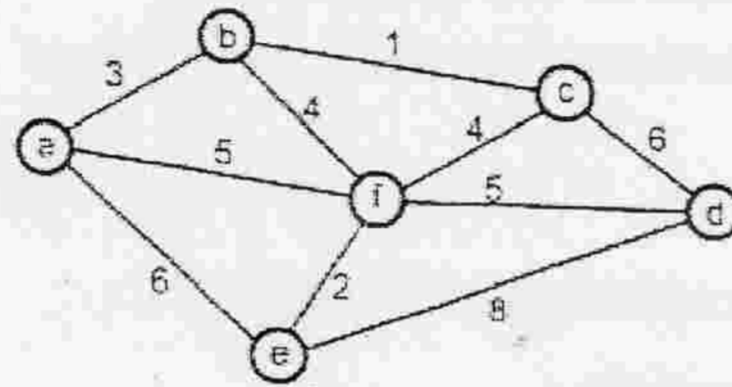
25. With the help of a suitable example, explain how a recursive algorithm can be represented by recurrence relation.

26. Explain Strassen's matrix multiplication method to analyse its complexity.

27. Prove that Travelling Salesperson problem is NP Complete.

(3 x 4=12 weightage)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE
Second Semester M.Sc Computer Science Degree Examination, March 2017
CSS2C02 – Operating System Concepts
(2016 Admission onwards)

Max. Time: 3 hours   Max. Weightage : 36

Part A
Answer all *questions.*
Each question carries 1 weightage.

1. Differentiate between Logical and Physical addresses.
2. Define the term embedded system.
3. What is deadlock?
4. What is an inverted page table?
5. Describe System call.
6. What is Kernel?
7. When does Page fault error occur?
8. Is it possible to have a deadlock involving only one process? Explain your answer.
9. What is the dining philosopher problem?
10. What is the Belady's anomaly and when it occurs?
11. What is Process descriptor?
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 I/O based on polling with interrupt-driven I/O. In what situation would you favour one technique over the other?
15. What is Synchronization in OS? What are the different Synchronization mechanisms?
16. Differentiate between paging and demand paging.
17. Describe RPC.
18. What is the working set principle?
19. What is a semaphore? Explain its usage with an example.
20. What must the banker's algorithm know a priori in order to prevent deadlock?
21. Give any two disk scheduling algorithms.

(6 x 2 = 12 weightage)

* out of syllabus

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

22. What are the data structures used in Bankers algorithm? Explain.
23. Explain any two page replacement algorithms and find the page faults, by simulating the algorithms using four frames, considering the following page references.

    2, 4, 3, 4, 2, 6, 3, 2, 1, 5, 4, 3, 2, 3, 4, 2

24. What are the three requirements of any solution to the critical sections problem? Why are the requirements needed?
25. Describe page-based virtual memory. You should consider pages, frames, page tables, and Memory Management Units in your answer.
26. Name and describe any two processor scheduling algorithms. Critically compare them with each other with taking suitable example and find out average waiting time and average turn around time (assume required values suitably).
27. Explain any one classical synchronization problem.

(3 x 4 = 12 weightage)