

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 2C 10—PRINCIPLES OF SOFTWARE ENGINEERING

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Section A

Answer any four questions.

Each question carries 2 weightage.

1. Explain the concept of Software process.
2. What are the different types of feasibility ?
3. What is the use of Data flow Diagrams in Software Engineering ?
4. What do we do in configuration management ?
5. What are the important characteristics of User Interface design ?
6. Identify any *two* techniques for generating ideas.
7. What activity is performed in project story preparation ?

(4 × 2 = 8 weightage)

Turn over

Section B

Answer any four questions.

Each question carries 3 weightage.

8. Explain major challenges in Software engineering.
9. Explain cohesion and coupling with examples.
10. Demonstrate class diagram and activity diagram with examples.
11. Explain any *one* cost estimation method.
12. Explain the activities performed in risk management.
13. Briefly explain the need and steps in literature survey.
14. Discuss any *four* problems faced by research scholars.

(4 × 3 = 12 weightage)

Section C

Answer any two questions.

Each question carries 5 weightage.

15. Outline the features and methodology of agile model.
16. Give a detailed account of requirements specification.
17. Elaborate different software testing strategies.
18. Give the structure and content of a report and highlight important rules to be followed while writing a report.

(2 × 5 = 10 weightage)

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) .
EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 2C 09—COMPUTATIONAL INTELLIGENCES

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

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Section A

Answer any four questions.

Each question carries 2 weightage.

1. What do you mean by production system ?
2. How is Knowledge different from information ?
3. What do you mean by Heuristics search ?
4. List the challenges of Knowledge representation ?
5. What is Hopfield Network in Neural Networks ?
6. What do you mean by Knowledge engineering ?
7. Write any two applications of depth first search.

(4 × 2 = 8 weightage)

Turn over

Section B

Answer any **four** questions.

Each question carries 3 weightage.

8. What are the two different reasoning strategies for state space search ?
9. What do you mean by backward and forward reasoning ?
10. Is it possible to relate the scripts and frames ?
11. Give a short note on the components of a typical planning system in AI.
12. What is the significance of Back propagation in Neural Networks.
13. Write the steps in genetic algorithm.
14. Write the algorithm for breadth first search.

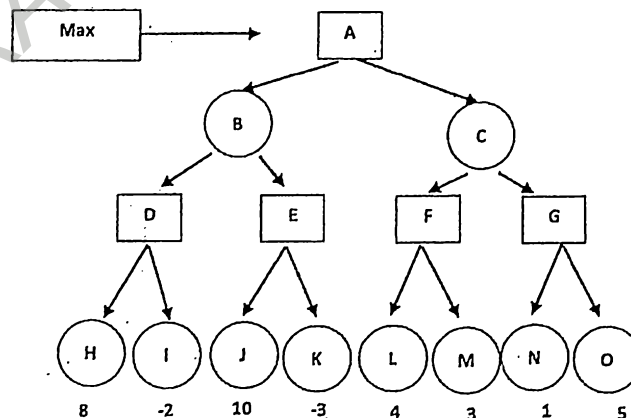
(4 × 3 = 12 weightage)

Section C

Answer any **two** questions.

Each question carries 5 weightage.

15. Explain the hill-climbing strategy of problem-solving with an example.
16. How is Knowledge different from information ? Explain the different types of Knowledge and examples for each.
17. Find the search tree of the below given search tree after applying alpha-beta pruning algorithm. Mark where you wanted to apply the alpha and beta cuts.



18. What is Back propagation in Neural Networks and explain the working.

(2 × 5 = 10 weightage)

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 2C 08—COMPUTER NETWORKS

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

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Section A

Answer any four questions.

Each question carries 2 marks.

1. Explain inverse multiplexing.
2. Name the advantages of optical fiber over twisted-pair and coaxial cable.
3. What are the three important characteristics of a periodic signals ?
4. Distinguish between multilevel TDM and pulse-stuffed TDM.
5. Compare the FM bandwidth with the AM bandwidth in terms of the modulating signal.
6. Explain pure ALOHA protocol.
7. Explain briefly FTP.

(4 × 2 = 8 weightage)

Turn over

Section B

Answer any four questions.

Each question carries 3 weightage.

8. Briefly describe the following networks with example and application : (a)Wired networks ; (b) Wireless networks ; and (c) Ad hoc networks.
9. Explain message authentication.
10. Explain packet-filter firewall.
11. Explain domain name spaces.
12. Distinguish between recursive and iterative resolution.
13. Explain stop-and-wait protocol algorithms.
14. Explain the services provided by PPP.

(4 × 3 = 12 weightage)

Section C

Answer any two questions.

Each question carries 5 weightage.

15. Explain symmetric and public key distributions.
16. Explain electronic mail architecture.
17. Illustrate error detection and correction using cyclic codes with example.
18. Describe the significance of IPV4 and IPV6 with examples.

(2 × 5 = 10 weightage)

**SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022**

(CBCSS)

Computer Science

CSS 2C 07—OPERATING SYSTEM CONCEPTS

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

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Section A

*Answer any **four** questions.*

Each question carries 2 weightage.

1. Differentiate multi core and multi-threading.
2. Differentiate between deadlock prevention and avoidance.
3. Give the relevance of "Monitors" in operating system.
4. Explain the concept and use of overlays.
5. Define non-preemptive and pre-emptive scheduling algorithms.
6. Explain priority inversion.
7. Why do we require Remote Procedure Call ?

(4 × 2 = 8 weightage)

Section B

Answer any four questions.

Each question carries 3 weightage.

8. Explain five state model of processes.
9. List and explain functions of an Operating System.
10. Explain dining Philosophers problem.
11. Demonstrate the concept of demand paging with example.
12. Outline dynamic linking and dynamic loading.
13. Explain Multilevel Feedback queue scheduling.
14. Write a note on Service oriented architecture.

(4 × 3 = 12 weightage)

Section C

Answer any two questions.

Each question carries 5 weightage.

15. Discuss aspects of Unix concurrency mechanism.
16. Discuss the need and implementation details of virtual memory.
17. With suitable example, demonstrate the working of FCFS, SJF and RR scheduling algorithms.
18. Compare the features of iOS and Android.

(2 × 5 = 10 weightage)

**SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2022**

(CBCSS)

Computer Science

CSS 2C 06—DESIGN AND ANALYSIS OF ALGORITHMS

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

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Section A

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

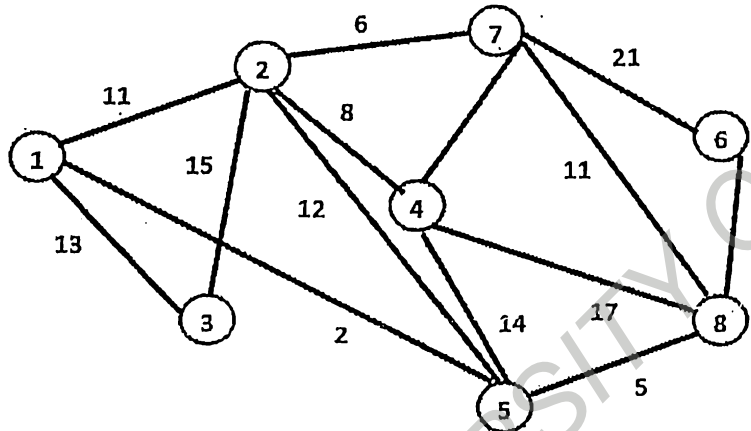
1. Explain the general method of Branch-and-bound algorithms.
2. Justify that Merge sort is a Divide and Conquer algorithm.
3. Compare RAM and PRAM models.
4. Define and compare Big Oh and Little Oh.
5. Prove that $f(n) = 3n + 2 - \Theta(n)$.
6. Define P, NP, NP Hard and NP complete problems.
7. Explain speed up and Scalability in parallel algorithms.

(4 × 2 = 8 weightage)

Section B

Answer any four questions.
Each question carries 3 weightage.

8. For the following graph, show the stages of Kruskal's algorithm to find the minimum cost spanning tree :



9. Let $w = (1, 7, 10, 15, 17, 20, 18, 25)$ and $m = 35$. Demonstrate backtracking by finding subsets of w that sum to m .
10. What is a combinatorial problem? Give one example.
11. Demonstrate cost estimation based on key operations with suitable example.
12. Demonstrate substitution method for solving recurrences with suitable example.
13. Explain the concept of reductions in NP completeness.
14. Demonstrate the advantage of parallel merging algorithm.

(4 × 3 = 12 weightage)

Section C

Answer any two questions.
Each question carries 5 weightage.

15. Demonstrate Dynamic programming solution for Longest common subsequence.
16. Analyse Merge sort algorithm.
17. Show that Hamiltonian Cycle problem is NP complete.
18. Explain with example, parallel prefix computation.

(2 × 5 = 10 weightage)

**SECOND SEMESTER M.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION
APRIL 2021**

(CUCSS)

Computer Science

CSS 2C 02—OPERATING SYSTEM CONCEPTS

(2014 Admissions)

Time : Three Hours

Maximum : 36 Weightage

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

1. What is PCB ?
2. What is context switching ?
3. What do you mean by multithreading ?
4. Define race condition.
5. What do you mean by message passing ?
6. What is dynamic linking ?
7. What do you mean by thrashing ?
8. What is the use of overlays ?
9. What is SJF ?
10. What is Real Time Operating System ?
11. What are mobile operating systems ?
12. What is the use of middleware ? Give one example.

(12 × 1 = 12 weightage)

Section B*Answer any six questions.**Each question carries 2 weightage.*

13. Draw the process transition diagram.
14. Explain, how process are created and managed in Linux ?
15. Explain the major principles of concurrency.

Turn over

16. What is a deadlock ? Explain how is it detected.
17. Explain the concept of virtual memory.
18. Explain the differences between paging and segmentation.
19. Give a short account on Real Time Scheduling policies.
20. Write a note on cluster computer architecture.
21. Explain the implementation of RPC.

(6 × 2 = 12 weightage)

Section C

*Answer any **three** questions.*

Each question carries 4 weightage.

22. Explain the major functions of an operating system.
23. What are semaphores ? Explain solution to producer-consumer problem using semaphores.
24. Consider the reference stream 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6. How many page faults occurs while using FCFS and SJF using 2 frames ?
25. Give a detailed account on CPU scheduling algorithms.
26. Explain the architecture of three-tier client-server model.
27. Compare and contrast the features of iOS and Android Operating Systems.

(3 × 4 = 12 weightage)