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Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree Examination, January 2023

Career Related First Degree Programme under CBCSS

Computer Science/Computer Applications/Physics and Computer Applications

Core Course/Vocational Course

CS 1343/CP 1342/PC 1371 – OPERATING SYSTEMS

(2014-2017 Admission)

Time : 3 Hours **Max. Marks : 80**

PART – A
(Very Short Answer Type)

One word to maximum of two sentences. Answer **all** questions. **Each question carries 1** mark.

1. What is Shell?

2. What are the benefits of multiprogramming?

3. What is the mode of the system during the boot process?

4. What are the two operations that a binary semaphore can perform?

5. What is deadlock?

6. What is a kernel?

7. What do antivirus programmes do?

8. What triggers internal fragmentation?

9. Define seek time.

10. How does the operating system handle free memory space?

(10 × 1 = 10 Marks)

PART – B
(Short Answer)

Not to exceed **one** paragraph. Answer any **eight** questions. **Each** question carries **2** marks.

11. What is a Process Control Block (PCB)? What are its attributes?

12. Differentiate between kernel-level and user-level threads.

13. What do you mean by distributed and real time systems?

14. Explain any one classical synchronization problem.

15. Elaborate any one deadlock avoidance algorithm.

16. What is virtual memory and what is its significance?

17. What are the different types of partitions?

18. Compare and contrast logical address and physical address.

19. What characteristics distinguish a good password?

20. What are the functions of kernel I/O subsystem?

21. List the different operations that can be done on a file.

22. Discuss the concept of disk I/O, in brief.

(8 × 2 = 16 Marks)

PART – C
(Short Essay)

Not to exceed 120 words. Answer any **six** questions. **Each** question carries **4** marks.

23. What is an operating system? List any four operating system services?

24. Define "process" in your own words. How many states can a process have? With the use of a state diagram, explain how a process changes its state.

25. Explain different types of fragmentation

26. Explain Inter Process Communication, in brief.

27. Discuss Peterson's solution to the critical-section problem.

28. Compare and contrast paging and segmentation.

29. How page replacements results in thrashing? How can we avoid it?

30. Write a note on RAID.

31. Explain different attributes of a file.

(6 × 4 = 24 Marks)

PART – D
(Long Essay)

Answer any **two** questions. **Each** question carries **15** marks.

32. Elaborate any one preemptive and non-preemptive scheduling algorithm, with example.

33. Discuss various methods to recover from deadlocks. Also, explain how we can prevent its occurrence.

34. With suitable examples. explain any three page replacement algorithms.

35. Explain any three disk scheduling algorithms, with examples.

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree Examination, January 2023.

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Computer Applications

Core Course

CS 1343/CP 1342 – OPERATING SYSTEMS

(2019 & 2020 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer Questions)

Answer **all** questions. Each question carries **1** mark.

1. Define the term operating system.
2. What is a process?
3. Expand PCB.
4. Write the need for process synchronization.
5. What is a thread?
6. What do you mean by deadlock?
7. What is a logical address?
8. What is the use of Operating System?

9. What do you mean by thrashing?

10. Write about free space management.

(10 × 1 = 10 Marks)

SECTION – B (Brief Answer Questions)

Answer **any eight** questions. Each question carries **2** marks.

11. Explain various types of Operating system.

12. Explain thread life cycle.

13. What do you mean by inter process communication?

14. Write note on Critical section problem.

15. Write notes on swapping technique in memory management.

16. Explain various security threats.

17. What is the use of a monitor?

18. What is a Resource Allocation graph?

19. What is an overlay?

20. What is RAID?

21. Mention a few file access methods.

22. What are various types of system calls?

23. What do you mean by scheduling?

24. Explain physical address space.

25. What is fragmentation?

26. Mention File system structure.

(8 × 2 = 16 Marks)

SECTION – C (Short Essay Type Questions)

Answer **any six** questions. Each questions carries **4** marks.

27. Explain functions of an operating system.

28. Describe various operations on process.

29. Explain a multithreading model.

30. Explain the concept of semaphore.

31. Explain about contiguous memory allocation.

32. Discuss on various principles of OS protection.

33. Give Short note on disk scheduling.

34. Explain directory structure.

35. Write note on segmentation.

36. Explain paging in detail.

37. Give Short note on Access matrix.

38. Write short note on PCB.

(6 × 4 = 24 Marks)

SECTION – D (Long Essays)

Answer **any two** questions. Each question carries **15** marks.

39. Explain various process scheduling algorithms.

40. Discuss on deadlock recovery methods.

41. Explain segmentation in detail.

42. Explain file system implementation in detail.

43. Elaborate on various page replacement algorithms.

44. Discuss on the concept of process synchronization.

(2 × 15 = 30 Marks)

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Third Semester B.Sc./B.C.A. Degree Examination, January 2023

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Computer Applications

Core Course

CS 1345 / CP 1343 : DATABASE MANAGEMENT SYSTEMS

(2019 & 2020 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

One word to maximum of one sentence. Answer all questions.

1. Expand UOD
2. What are attributes?
3. Who is an application programmer?
4. Define RDBMS
5. What do you mean by the term "populating a table"?
6. What is domain?
7. Expand COBOL
8. Write the syntax of UPDATE command

P.T.O.

9. What is tuple?

10. What is DQL?

(10 × 1 = 10 Marks)

SECTION – B

Not to exceed one paragraph. Answer any **eight** questions.

11. What is data dictionary?

12. What do you mean by data independence?

13. What is the difference between DDL and DML?

14. Write the mathematical definition of candidate key

15. What is single primary key and composite primary key?

16. List the symbols used in E-R diagram

17. What do you mean by database integrity?

18. What is lossy decomposition?

19. Define physical data independence.

20. What is relational algebra?

21. What is cardinality?

22. Write SQL query for creating a table with the EMPLOYEE with attributes EMPNO, DESIGNATION, DEPARTMENT and SALARY where EMPNO is the primary key.

23. What are the characteristics of SQL?

24. What is the use of WHERE clause?

25. Define fully functional dependency.

26. What is super key?

(8 × 2 = 16 Marks)

SECTION – C

Not to exceed **120 words**. Answer any **six** questions.

27. Explain the three main advantages of DBMS.

28. What is relational data model?

29. Write a note on attribute domains.

30. Describe one-to-one and many-to-many relationship with suitable diagrams.

31. What is BCNF? When is a relation said to be in BCNF? Explain with examples.

32. Who are different types of users in a database system?

33. Describe various types of JOIN operations.

34. Differentiate between 2NF and 3NF.

35. Write SQL queries for creating a table with five attributes and inserting four records in it (Table must have a primary key)

36. Write a note on referential integrity constraints

37. What are functions? Detail any six mathematical functions used in SQL

38. Describe select and project operations used in relational algebra with example data.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions.

39. Explain and illustrate database system architecture.

40. What is a relation? What are various set operations on relations? Explain with examples.

41. Discuss on security issues in databases

42. Write and explain DML commands in SQL

43. What is functional dependency? Write and explain the inference axioms.

44. Differentiate between lossy and loseless decomposition

(2 × 15 = 30 Marks)

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Reg. No. : .....

Name : .....

Third Semester B.C.A. Degree Examination, January 2023

Career Related First Degree Programme under CBCSS

Group 2(b): Computer Applications

Core Course

CP 1341 — COMPUTER NETWORKS AND SECURITY

(2019 and 2020 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer)

(One Word to Maximum of **2** sentences. Answer **all** questions. Each question carries **1** mark)

1. MIME stands for ————.
2. Define data communication.
3. What is bit rate?
4. What is Hub?
5. Define Error control.
6. The ———— layer is the layer closest to the transmission medium.
7. What is bandwidth?

8. Define the term 'Protocol'.

9. What is the duty of a Switch?

10. What is Congestion?

(10 × 1 = 10 Marks)

SECTION – B (Short Answer Type)

(Not to Exceed **1** paragraph. Answer **any eight** questions. Each question carries **2** marks)

11. Explain fiber optics cables.

12. What is DSS?

13. Explain Parity.

14. Define router.

15. What do you mean by 'Flow control'?

16. What is piggy backing?

17. Explain token bus cables.

18. Write any two domain names.

19. Define computer networks.

20. What is Broadcasting?

21. Explain the services of data link layer in ISO-OSI Model.

22. Define stenography.

23. What is anti virus software? Give an example.

24. What is Fragmentation?

25. Define malicious software.

26. What is consumer protection act?

(8 × 2 = 16 Marks)

SECTION – C (Short Essay Type)

(Not to exceed **120** words. Answer **any six** questions. Each question carries **4** marks)

27. Define the term firewall.

28. Explain public key cryptography.

29. What is full duplex connection?

30. Define connection oriented protocol.

31. Explain radio transmission.

32. Explain stop and wait ARQ.

33. Define MIME.

34. Explain slotted ALOHA.

35. Explain Circuit switching.

36. Explain Distance vector routing.

37. Write note on CRC.

38. Explain Leaky bucket algorithm.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay Type)

(Answer **any two** questions. Each question carries **15** marks)

39. Explain RSA Algorithm with an example.

40. Discuss on different transmission media in detail.

41. Write in detail about Framing.

42. Describe different types of connection in detail.

43. Elaborate on TCP/IP Model in detail.

44. Write a note on

    (a) UDP

    (b) FDP

(2 × 15 = 30 Marks)
