**ESE- All**

Printed Pages: UID No: ……………

Academic year Semester 2022 – 2023.

Program Name/Code: B.E. (CSE) with IBM CG201/202, CS204 /205 /206 /214 /215 /216 /217 /220 /221 /222 /224 /225

Semester: III

Subject Title: Operating System

Subject Code: 21CSH242

Time: 3 Hour Maximum Marks: 60

**Instructions: 1. Attempt all questions.**

**2. Calculator is permitted.**

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| **Q. No** | **Statement** |
| **Section A**  5 x 2 = 10 marks | |
| 1 | What is OS? List the functions of OS |
| 2 | What is fragmentation? List its types with disadvantages. |
| 3 | List the file protection methods and tell how they provide the protection? |
| 4 | What is authentication? List all authentication methods. |
| 5 | Write difference between protection and security. |
| **Section B**  4 x 5 = 20 marks | |
| 6 | What is dead lock? How to use Banker’s algorithm to avoid deadlock? |
| 7 | Consider the following page reference string 1, 2, 3, 4, 2, 1, 4, 5, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2  Find out the number of page faults if there are 4 page frames for following page replacement algorithms.  (a) LRU  (b) FIFO |
| 8 | Discuss the different methods used to solve the problem of security in operating system. |
| 9 | What is network operating system? How is it different from distributed operating system? Write applications of network operating system. |
| **Section C**  3 x 10 = 30 marks | |
| 10 | Consider the following set of processes with the length of the CPU-burst time given in milliseconds:   |  |  |  | | --- | --- | --- | | **Process** | **Burst time** | **Priority** | | P1 | 6 | 2 | | P2 | 1 | 1 | | P3 | 2 | 3 | | P4 | 1 | 4 | | P5 | 5 | 2 |   Processes are arrived in P1, P2, P3, P4, P5 order of all at time 0. Draw Gantt charts to show execution using FCFS, SJF, non-preemptive priority (lower number implies higher priority) and RR (time quantum = 1) scheduling. Also calculate waiting and turnaround time for FCFS. |
| 11 | Consider the following sequence queue –  98, 183, 37, 124, 14, 120, 65, 67 with request queue 0-199 and head pointer at 53.  Perform the disk scheduling using SCAN and C-SCAN algorithm and also calculate total head movement. |
| 12 | What are various methods used to provide security in operating system and how to implement them? |