

Total No. of Questions : 5]

SEAT No. :

PD-1572

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T.Y.B.Sc. (Computer Science)

CS-351 : OPERATING SYSTEMS- I

(Rev. 2019) (Semester - V) (New CBCS) (Paper - I)

Time : 2 Hours]

[Max. Marks : 35]

Instructions to the candidates :

- 1) *All questions are compulsory.*
- 2) *Assume suitable data if necessary.*
- 3) *Figures to the right indicate full marks.*

Q1) Attempt any EIGHT of the followings.

[8 × 1 = 8]

- a) What is System call?
- b) In Peer-to-Peer computing, clients and servers are not distinguished from one another. State True / False and Justify.
- c) Where the information about the state of a process, its program counter, stack pointer and other information are stored?
- d) What is the purpose of Boot-strap program?
- e) Which scheduler controls the degree of multiprogramming?
- f) What is aging?
- g) What is race condition?
- h) List any two advantages of microkernels.
- i) What is the value of relocation register, if logical address is 346 and physical address is 14346?
- j) List any two thread libraries.

P.T.O.

Q2) Attempt any FOUR of the followings: [4 × 2 = 8]

- a) What is dynamic linking and dynamic loading in operating system?
- b) State a system call used for process creation and process termination.
- c) What is segmentation? State any two advantages of segmentation.
- d) Differentiate between FCFS and priority CPU scheduling algorithm.
- e) What is Internal Fragmentation and External Fragmentation?

Q3) Attempt any TWO of the followings: [2 × 4 = 8]

- a) Define process? Explain process state diagram.
- b) Consider the following snapshot of a system:

Process	Arrival Time	CPU Burst Time
P1	1	4
P2	0	2
P3	2	1
P4	3	3
P5	10	3

Compute average turnaround time and average waiting time using Round Robin (RR) CPU scheduling algorithm with time quantum 2, also draw the Gantt chart.

- c) What is distributed operating system? States its advantages and disadvantages.

Q4) Attempt any TWO of the followings: [2 × 4 = 8]

- a) Explain bounded buffer problem of synchronization in detail.
- b) Consider the page reference string 3, 2, 3, 1, 5, 3, 4, 5, 2, 3, 5, 3. How many page faults occur for the following page replacement algorithm, assuming 3 frames?
 - i) FIFO
 - ii) Optimal Page Replacement (OPT)
- c) What is thread? Explain any 2 multithreading models in brief with diagram.

Q5) Attempt any ONE of the followings: [1 × 3 = 3]

- a) Explain different CPU scheduling criteria that scheduling algorithms must have.
- b) Which three requirements must be satisfied while designing a solutions to the critical section problem? Explain in brief.

