

Total No. of Questions : 8]

SEAT No. :

P2579

[5153]-555

[Total No. of Pages : 2

T.E. (E & T.C.)

**SYSTEM PROGRAMMING AND OPERATING SYSTEM
(2012 Pattern) (Semester - I) (Endsem.)(304185)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume Suitable data if necessary.

- Q1)** a) Explain in brief imperative statements, declaration statements and assembler directives with examples for assembly language programming. [9]
- b) Explain advanced macros facilities with examples. [6]
- c) Explain phases of compiler with examples. [5]

OR

- Q2)** a) Explain translated origin, link origin, and load origin. [6]
- b) Explain lexical analysis, syntax analysis, and semantic analysis for Language processor. [9]
- c) What is difference between compiler and Interpreter? [5]

- Q3)** a) Explain following CPU scheduling techniques with examples. [6]
- i) FCFS ii) SJF
- b) What is difference between starvation and deadlock? Explain it with the help of 'Dining Philosophers Problem'. [6]
- c) What is Bankers algorithm? Explain it with suitable examples. [6]

OR

- Q4)** a) What is Producer–Consumer Problem? How to solve it using Semaphore and Mutex? [6]
- b) What are the various states of a processes and how it is managed by operating system? [6]

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- c) Consider the following processes where Arrival and Burst time (in seconds) are as shown below.

process	Burst Time	Arrival Time
P1	13	3
P2	15	3
P3	08	1
P4	12	1

Calculate the Average Waiting Time and Average turn-around Time if the processes are scheduled using SJF. [6]

- Q5)** a) Explain memory management with Bit Map method and with Linked Lists method. [5]
- b) What do you mean by page replacement algorithm? Enlist different page replacement algorithms. [5]
- c) Consider the following page reference string: 7, 1, 2, 1, 2, 5, 4, 5, 9, 4, 9, 8, 1, 3. The number of page frames = 3, calculate the page faults and the hit ratio for First In First Out Page replacement algorithm. [6]

OR

- Q6)** a) How logical address is converted into physical address by memory management unit? Explain it with example. [5]
- b) What is structure of typical page table entry? What is significance of modified bit, referenced bit, protection bits, and present/absent bit in page table entry? [6]
- c) Explain how LRU page replacement algorithm is simulated in software? [5]
- Q7)** a) What are different file types and how to access it. [6]
- b) What is difference between programmed I/O and I/O mapped I/O. [4]
- c) Explain input output software layers. [6]

OR

- Q8)** a) Explain Programmed I/O, Interrupt driven I/O, and I/O using DMA with examples. [9]
- b) Explain in detail file systems and its implementation. [7]

