



DG-1736

B. Sc. (IT) (Sem. V) Examination
March / April - 2016
Operating System

Time : 3 Hours]

[Total Marks : 70

Instruction :

नीचे दृशावेक निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
B. Sc. (IT) (Sem. V)

Name of the Subject :
Operating System

Subject Code No. : 1 7 3 6 Section No. (1, 2,.....): Nil

Seat No. :

Student's Signature

- 1 Answer following questions : (any four) 16
- (1) Explain PCB in detail.
 - (2) Explain Multi Programming and Real Time Operating System.
 - (3) Explain short, medium and long term scheduler.
 - (4) Differentiate block oriented and character oriented device.
 - (5) Explain Overlays in detail. When is it required ?
- 2 Answer following questions in detail : (any three) 18
- (1) Consider the following set of processes with the length of the CPU burst time given in milliseconds.

Process	CPU burst time	Arrival Time
P1	12	0
P2	7	5
P3	5	12
P4	21	20
P5	9	25

- (a) Calculate average turnaround time and average waiting time by using Shortest Remaining Time First (SRTF) and Round robin algorithm (time quantum = 3 ms).
- (b) Compare and find out which is best suitable for above set of processes.

- (2) Given a memory partitions of 200 K, 500 K, 300 K and 600 K (in order), how would each of the first fit, best fit, and worst fit algorithms place processes of 321 K, 200 K 112 K, 336 K (in order) ? Which algorithm makes the most efficient use of memory ?
- (3) Explain various I/O buffering techniques in detail.
- (4) What is DMA technique ? What is the role of DMA controller ?
- 3 Answer following questions in detail : (any three) 18**
- (1) Consider following disk request sequence for a disk with 100 tracks. Head Pointer is on track 50.
53, 21, 55, 32, 70, 12, 47, 31, 87, 5
Calculate and compare total seek time by using SCAN and C-SCAN algorithm.
- (2) What is process ? Explain five state process model along with transition between each process in detail.
- (3) What is swapping ? Does swapping increase the operating system's overheads ? When is it required ?
- (4) Define Interrupts. How are they handled by the operating system ?
- 4 Answer following questions in detail : (any three) 18**
- (1) Consider a paging system with 3 frames, where the number of frames denotes the number of pages that can be held in RAM at any given time. Assume the pages are accessed by some program in the order shown below, from left to right. Also, assume that the program has just started, so the frames are initially empty. How many pages faults will be generated assuming that the FCFS algorithm is being used ?
4, 0, 2, 1, 0, 2, 1, 4, 2, 1, 0, 3, 2, 1, 2, 5, 1, 4, 0, 1
- (2) Explain contiguous, linked allocation and indexed allocation of a disk space.
- (3) What is Semaphore ? Why is it required ? Explain Counting and binary semaphore in detail.
- (4) List out the different strategies for free space management for file system. Explain any one.