T.E./Insem. - 537
T.E. (Computer Engineering)
OPERATING SYSTEM DESIGNS
(2012 Pattern) (Semester - I)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates :

    1)   *Neat diagrams must be drawn wherever necessary.*

    2)   *Figures to the right indicate full marks.*

    3)   *Assume suitable data, if necessary.*

Q1) a) Explain the terms BIOS, MBR, GRUB in detail. **[6]**

    b) Explain following algorithms. **[4]**

       i)   iget

       ii)   getblk

OR

Q2) a) What is buffer cache? Explain different buffer retrieval scenarios. **[5]**

    b) Explain different file access methods with the help of suitable diagram. **[5]**

Q3) a) Consider the following snapshot of system at time T0. **[8]**

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	2	1	0	0
P1	2	0	0	0	2	7	5	0				
P2	0	0	3	4	6	6	5	6				
P3	2	3	5	4	4	3	5	6				
P4	0	3	3	2	0	6	5	2				

i) Calculate the need matrix.

ii) State weather system is safe? If yes, give safe sequence (Show calculations).

iii) For the system snapshot at time T0, if a request from P2 arrives for (0,1, 0,0). Can the request be safely granted?

b) Wha is shell? Enlist different types of shell. **[2]**

OR

Q4) a) What is difference between process and thread? State the advantages and disadvantages of user level threads. **[5]**

b) What is deadlock? Describe necessary and sufficient conditions to occur deadlock. **[5]**

Q5) a) A process reference pages in the following order : **[6]**

5, 6, 7, 8, 5, 6, 9, 5, 6, 7, 8, 9

Use FIFO and LRU and Optimal page replacement algorithms to find out number of page faults for this reference string using 3 page frames.

b) Explain internal and external fragmentation with suitable example. **[4]**

OR

Q6) a) Describe how address translation takes place (logical address to physical address) with the help of a neat diagram in

i) Paging

ii) Segmentation

[5]

b) Explain the following memory allocation strategies with suitable example: **[5]**

i) Best fit

ii) First fit

iii) Next fit

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