(Please write your Roll No immediately) Roll No:_____

First – Term Examination (Feb-March, 2018)

VI[th] Semester [B.Tech]

Paper Code: ETCS-304 *Subject: Operating System*

Time: 1 & ½ Hrs. Max. Marks: 30

Note: Q. No.1 is compulsory and attempt any two questions from the rest.

Q.1 (a) How Timesharing is different from Multiprogramming.

(b) Differentiate between External and Internal fragmentation.

(c) Why Medium Term scheduler is required? Explain with diagram.

(d) Explain advantages and disadvantages of Multithreading.

(e) What is thrashing? Explain why it occurs. (2*5 = 10)

Q.2 Consider the set of processes P_1 to P_5 with the following CPU burst times. Find the average turnaround time and waiting time for Shortest Remaining Job First and FCFS scheduling techniques. (10)

Process	CPU burst Time	Arrival Time
P_1	3	0
P_2	6	2
P_3	4	4
P_4	5	6
P_5	2	8

Q3. (a) Why are segmentation and paging sometimes combined into one scheme? Explain with suitable diagram. (5)

(b) Calculate total number of page fault that will occur while processing the page reference string given below: 4,7,6,1,7,6,1,2,7,2.using LRU page replacement policy, when page frames are Three. (5)

Q4. A process contains a logical address space of 4050 bytes. Main memory size is 1024 bytes. If the process is divided into fixed size partition of 16byte each then a) what will be size of offset/displacement bits? b) How many pages are there in the process? c) How much internal fragmentation will occur? d) Find out the number of entries in general page table e) if the page table in inverted one then how many entries will be there? (10)

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FIRST TERM EXAMINATION

Sixth Semester [B.Tech] February/March 2017

Code ETCS-304 Subject: Operating Systems

Time: 1 ½ hours Max Marks: 30

Note: **Attempt Q.No.1 which is compulsory and any two more questions.**

Question No 1. (2.5*4=10)

a. What is Convoy effect? Explain with the help of suitable example.

b. What is Batch operating system? Explain.

c. Explain various states of a Process.

d. What is Belady's Anomaly?

Question No 2. (5, 5)

a. Differentiate between Multi Programming, Multi Processing and Multi Tasking OS?

b. Consider there are 3 frames allocated to a process and the reference string is : 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6. Calculate the number of page faults for the following page replacement algorithms, assuming all frames are initially empty.

i. LRU ii. FIFO iii. Optimal

Question No 3. (3, 2, 5)

a. Explain various scheduling queues and scheduler in process scheduling.

b. Define thread.

c. Consider the following set of processes with the CPU burst & arrival time in milliseconds.

Process	Arrival Time	Burst Time
A	3	10
B	1	1
C	4	2
D	3	1
E	0	5

Draw the Gantt chart & find:

i. Average waiting time for these processes with the Shortest Remaining Time First, Round Robin (Time quantum = 3ms) & FCFS scheduling algorithm.

ii. Average turnaround time for these processes with the SRTF, Round Robin & FCFS Algorithms.

Question No 4. (4, 3, 3)

a. Explain bakery algorithm. Prove that it satisfies all the three requirements for critical section problem.

b. Explain Race condition with suitable example.

c. What advantage is there in having different time quantum sizes on different levels of a multilevel queuing system?