(Please write your Exam Roll No.) Exam Roll No. .....

END TERM EXAMINATION

FIFTH SEMESTER [B.TECH/M.TECH] DECEMBER 2015-JANUARY 2016

Paper Code: IT-317 **Subject: Operating System**

Time: 3 Hours **Maximum Marks: 60**

Note: Attempt any five questions including Q.no.1 which is compulsory. Select one question from each unit.

Q1 Attempt all the questions. Each questions carries 2 Marks. **(10x2=20)**

(a) Define time sharing system.
(b) What is Process control block?
(c) What is the need of context switch?
(d) Define Semaphore?
(e) List the approaches for deadlock prevention.
(f) Explain Belady's anomaly?
(g) Explain Optimal page replacement policy.
(h) Write a note on free space management.
(i) Give the fields in a typical directory entry.
(j) List the disk scheduling policies.

Unit-I

Q2 (a) What are real time applications? Explain the features of real time operating system. **(5)**
(b) What are the various functions of operating system in general? **(5)**

Q3 (a) What is a process? How is it different from a program? Can a program have only one process? Justify your answer. **(5)**
(b) Differentiate between pre-emptive and non-preemptive scheduling. **(5)**

Unit-II

Q4 (a) What is critical section? Define critical section problem. Explain one of the classical process synchronization problems. **(8)**
(b) Define and explain Race condition. **(2)**

Q5 (a) Define deadlock. What are essential conditions for deadlock to occur? **(2)**
(b) In the following system: **(8)**

Max needed

	R1	R2	R3
P1	3	6	8
P2	4	3	3
P3	3	4	4

Allocated Resources

	R1	R2	R3
P1	2	2	3
P2	2	0	3
P3	1	2	4

	R1	R2	R3
Total Exist	7	7	10

	R1	R2	R3
Total Allocated	5	4	10

(i) Is the current allocation state safe?
(ii) Would the following request be granted in the current state?
(a) Process P1 requests (1,1,0)
(b) Process P3 requests (0,1,0)
(c) Process P2 requests (0,1,0)

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Unit-III

Q6 (a) Explain a memory management scheme which can reduce the extent of external fragmentation with the help of a diagram. **(5)**

(b) What is the cause of thrashing? How does the system detect thrashing? Once it detects thrashing, what can a system do to eliminate the problem? **(5)**

Q7 Explain with the help of a diagram how segmentation with paging is implemented? **(10)**

Unit-IV

Q8 (a) How is disk space allocated? Differentiate between linked allocation and indexed allocation. **(6)**

(b) Define the following: **(4)**

(i) Access methods

(ii) Free space management

Q9 Explain the structure of UNIX and Windows operating system. **(10)**

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