Roll No…….. **Total No. of Printed Pages: 1**

Total No. of Questions: [09]

BCA (Semester – 4th)

OPERATING SYSTEM

Subject Code: BCAP1417

Paper ID: [160117]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(2 marks each)**

Q1. Attempt the following:

a) Give four major functions of Operating System.
b) Compare and contrast monoprogramming and multiprogramming with a suitable example.
c) What is kernel? Describe various operations performed by kernel.
d) What is the difference between process and program?
e) Explain preemptive and non-preemptive scheduling.
f) Define race condition.
g) Is it possible to have deadlock involving only one process? Explain your answer.
h) Explain difference between internal and external fragmentation.
i) Explain the term threat.
j) What is threading?

Section – B **(5 marks each)**

Q2. What are semaphores? What is the usage of semaphores? Explain with a suitable example.

Q3. What is the role of critical section in process synchronization? Explain in detail.

Q4. Compare and contrast deadlock prevention and deadlock avoidance.

Q5. Describe demand paging with its advantages and disadvantages.

Q6. What are CPU schedulers? Describe various type of schedulers.

Section – C **(10 marks each)**

Q7. For the following table calculate average turn-around time, waiting time and average throughput using

i. First Come First Served (FCFS)
ii. Shortest Job First (SCF)
iii. Round Robin (quantum =1)

Process	Arrival Time	Processing Time
P_0	0.0	3
P_1	1.0	6
P_2	4.0	4
P_3	6.0	2

Q8. Write short notes on:

i. System calls
ii. Firewalls
iii. Thrashing
iv. Segmentation

Q9. Explain in detail:

i. Concept of process
ii. Process scheduling
iii. Various operations on process
iv. Inter-process communication