II B. E. Class Test III 2021
Computer Engineering
CER4C2: Operating System

Time: **70** min Max Marks: **20**

***NOTE: NOTE: Attempt all questions.***

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|---|---|---|
| **Q1** | What are three essential conditions for solution to critical section problem? Write hardware solution that satisfies all three conditions for critical section problem using Test and set atomic instruction. | **10** |
| **Q2** | Many CPU-scheduling algorithms are parameterized. For example, the RR algorithm requires a parameter to indicate the time slice. Multilevel feedback queues require parameters to define the number of queues, the scheduling algorithms for each queue, the criteria used to move processes between queues, and so on. These algorithms are thus really sets of algorithms (for example, the set of RR algorithms for all time slices, and so on). One set of algorithms may include another (for example, the FCFS algorithm is the RR algorithm with an infinite time quantum). What (if any) relation holds between the following pairs of algorithm sets?<br>a. Priority and SJF<br>b. Multilevel feedback queues and FCFS<br>c. Priority and FCFS<br>d. RR and SJF | **5** |
| **Q3** | What is semaphore? Write code for semaphore that avoids busy waiting. | **5** |