Jahangirnagar University
Department of Computer Science and Engineering
3rd Year 1st Semester B.Sc. (Hons.) Final Examination - 2020 (Online)

Course Title: **Operating Systems** Course No: **CSE-301**
Time: **45 minutes** Full Marks: **10**

Section-A

[There are 3(**Three**) questions. Answer any 2(**Two**) questions. Number shown at the right margin bears the mark of corresponding question.]

1. a) ***Show*** how the system calls are used in an operating system. ***Demonstrate*** mutual exclusion using a two-process example. 2.5

   b) ***Demonstrate*** the relation among safe state, unsafe state and deadlock state. ***Interpret*** the necessary conditions that are required to enter into a deadlock situation. 2.5

   c) ***Write*** down the steps of handling page fault with block diagram. 2.5

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Section-B

[There are 2(**Two**) questions. Answer any 1(**One**) question. Number shown at the right margin bears the mark of corresponding question.]

2. a) Test the segmentation system implementation with the given data: 5

   There are five segments in a logical address space.

Segment Number	Number of words
Segment 0	1000 words
Segment 1	400 words
Segment 2	400 words
Segment 3	1100 words
Segment 4	1000 words

   Outline the physical memory with segment table.

   b) Consider the reference string *1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6* for a memory with 3 frames. ***Solve*** how many page-faults, failure ratio and success ratio for each of the following page replacement algorithm: 5

   i. Optimal page replacement

   ii. LRU algorithm

   iii. Identify why optimal page replacement algorithm is not practical oriented.

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