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BICS-037

DIPLOMA – VIEP – COMPUTER SCIENCE AND ENGINEERING (DCSVI)

Term-End Examination

00133

December, 2016

BICS-037 : OPERATING SYSTEM

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt **five** questions in all. Question no. **1** is **compulsory**. Each question carries equal marks.*

1. Choose the correct answer from the given four alternatives : *7×2=14*

(a) In an operating system, a process is

(i) a program in execution

(ii) an instance of a program running on a computer

(iii) the entity that can be assigned to and executed

(iv) All of the above

(b) Serial scheduling suffers from the problem of

(i) Deadlock

(ii) Starvation

(iii) Both (i) and (ii)

(iv) None of the above

(c) _____ is the ability of multiple process to coordinate their activities by exchange of information.

(i) Synchronization

(ii) Mutual exclusion

(iii) Deadlock

(iv) None of the above

(d) _____ is the facility that allows a programmer to address memory from logical point of view, independent of the physical availability of main memory.

(i) Visual Memory

(ii) Secondary Memory

(iii) Virtual Memory

(iv) None of the above

(e) _____ policy selects the disk I/O request that requires the least movement of the disk arm from its current position.

(i) FSCAN

(ii) SSTF

(iii) SCAN

(iv) CSCAN

4. Describe the following in brief : *7+7=14*

   (a) Multiprocessing environment

   (b) Multithreading environment

5. (a) What is virtual memory ? Describe the utility of virtual memory from the point of view of both system and user. *7*

   (b) What are monitors in an operating system ? Discuss the structure of monitors and their role in interprocess synchronization. *7*

6. Explain any ***two*** of the following : *7+7=14*

   (a) Round Robin Algorithm

   (b) Disk Scheduling Strategies

   (c) Memory Allocation Strategies

7. Differentiate between any ***two*** of the following : *7+7=14*

   (a) Concurrent environment and Parallel environment

   (b) Wait-Wound protocol and Wait-Die protocol

   (c) Kernels and Micro-kernels

8. Write short notes on any ***two*** of the following (give suitable examples) : *7+7=14*

   (a) Shell Programming

   (b) AWK Programming

   (c) Command Line Programming

(f) Throughput of a system is the

(i) number of programs processed by it per unit time

(ii) number of times the program is invoked by the system

(iii) number of requests made to a program by the system

(iv) None of the above

(g) Round Robin algorithm is a pre-emptive version of

(i) first in first out

(ii) shortest job first

(iii) longest job first

(iv) None of the above

2. (a) What are Process Control Blocks (PCBs) ? Explain the structure of a PCB. 7

(b) Compare and contrast Paging and Segmentation. 7

3. (a) What are semaphores ? Describe the producer-consumer problem with its possible solution. 7

(b) What do you understand by the term 'Deadlock' in operating systems ? List the necessary conditions for the occurrence of deadlock. 7