

Roll No .....

**IT-504****B.E. V Semester**

Examination, June 2016

**System Programming and Operating System***Time : Three Hours**Maximum Marks : 70*

- Note:* i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.  
ii) All parts of each question are to be attempted at one place.  
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.  
iv) Except numericals, Derivation, Design and Drawing etc.

**Unit - I**

1.
  - a) Discuss the design of two-pass assembler.
  - b) What are needs of assembler and compiler in operating system?
  - c) Describe the differences between symmetric and asymmetric multiprocessing. What are three advantages and one disadvantage of multiprocessor system?
  - d) Define the essential properties of the following types of operating systems:
    - i) Batch
    - ii) Interactive

**OR**

What are five major activities of an operating system with regard to file management?

**Unit - II**

2. a) How many types of scheduling criteria are used to comparing CPU scheduling?
- b) In which conditions, a process is preemptive or nonpreemptive?
- c) Why do critical section problem occur in operating system? How will it solve?
- d) What is role of dining philosophers problem and readers writers problem in operating system?

OR

What is meant by inter-process communication? Also discuss two fundamentals of inter process communication.

**Unit - III**

3. a) How can the directed graph used to describe deadlocks? Explain.
- b) Is it possible to have a deadlock involving only one process? Explain your answer.
- c) Why are page sizes always powers of 2?
- d) Describe the following allocation algorithms:
- First fit
  - Best fit
  - Worst fit

OR

Why are segmentation and paging sometimes combined into one scheme?

**Unit - IV**

4. a) In which situation, second chance algorithm is used. And how is it work?
- b) What are different schemes for allocation algorithms? Explain.
- c) What is the cause of thrashing? How does the system detect thrashing?
- d) How many page faults occur for an optimal page replacement algorithm for the following reference string, with our page frames? 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2.

OR

Discuss the FIFO and LRU page replacement algorithm with the suitable examples.

**Unit - V**

5. a) Define the functioning of virtual file system.
- b) How do possible allocation through linked method?
- c) Explain how process management is done in Linux.
- d) Why must the bit map for file allocation be kept on mass storage, rather than in main memory?

OR

Explain briefly automatic allocation and dynamic allocation techniques in connection with file system.

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