

Time: 2½ hrs.

Marks:75

- Note:**
1. All questions are compulsory with internal choice.
 2. Draw neat diagrams wherever necessary.
 3. Figures to the right indicate full marks.
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- Q.1 Answer the following (any Three) (15)**
- (a) Explain the following terms of Hardware Fault tolerance with its types:
 - BIST
 - TMR
 - (b) Explain the characteristics of the OS
 - (c) Explain the process control block with the help of a diagram
 - (d) Explain process life cycle with the help of a diagram.
 - (e) Define OS. Explain Categories of OS.
 - (f) Explain any two type operating system with its features and drawbacks.
- Q.2 Answer the following (any Three) (15)**
- (a) Explain Peterson's solution, conditions and drawbacks.
 - (b) Explain critical section problems with example.
 - (c) Explain race conditions with the help of examples.
 - (d) Define mutual exclusion and need for mutual exclusion in process synchronization.
 - (e) Explain process synchronization in detail with its Features and Drawback.
 - (f) Explain thread in operating system? Why do we need thread in OS.
- Q.3 Answer the following (any Three) (15)**
- (a) Explain Deadlock with the help of an example.
 - (b) Explain Starvation with suitable examples.
 - (c) Explain the following category of fixed partition allocation
 - First fit
 - Best fit
 - Worst fit
 - (d) Explain methods for handling deadlock.
 - (e) Explain main memory with the help of a suitable diagram.
 - (f) Explain virtual memory and its advantages and disadvantages.
- Q.4 Answer the following (any Three) (15)**
- (a) Explain scheduling and its type.
 - (b) Explain Context switching with the help of a diagram.
 - (c) Explain the difference between long term, short term and medium term scheduler.
 - (d) Explain SJN with an example.
 - (e) Explain Priority based scheduling with the help of an example?(Note: Consider 1 as high priority).
 - (f) Explain process scheduling queues and its importance.
- Q.5 Answer the following (any Three) (15)**
- (a) Explain device controller in hardware OS.
 - (b) Explain program threats in OS.
 - (c) Explain computer security classification in OS.
 - (d) Explain I/O Softwares in OS.
 - (e) Define OTP. Explain various ways to generate OTP.
 - (f) Explain file system structures with the help of diagram.