

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2064)

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B. Tech 4th Semester Examination

System Software (O.S.)

CS(ID)-4001

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all. Select one question from each of sections A, B, C and D. Section E with all its subparts is compulsory.

SECTION - A

1. (a) Give generic machine architecture with clear diagram. Explain various addressing modes for the same. (10)
(b) With the help of flowchart show how different registers and system variables are used for ADD and SUBTRACT instructions. (10)
2. (a) How pointers are useful in C programming language? How are they declared and used in C? Create a linked list using pointers and show how items can be searched, inserted and deleted in a linked list. (10)
(b) Using C write a program to create and use stack for various operations like PUSH and POP. (10)

SECTION - B

3. (a) What is a two pass assembler? What is the reason for having two passes? Explain its design and working. (10)

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- (b) What is the role of symbol table during assembling? Give various methods of managing a symbol table. (10)
- 4. (a) What are various methods of binding formal and actual parameters in macros? How is the parameter passing in macros different from that in subroutines? Explain with example. (10)
- (b) What is a macro preprocessor? How it differs from macro processor? With proper example explain its working. (10)

SECTION - C

- 5. (a) Explain relocation of a program using proper example. Explain the design of a relocating loader. How it differs from absolute loader? (10)
- (b) Explain dynamic linking and loading and differentiate between linking & loading. (10)
- 6. (a) List the advantages of binding at load time over binding at assembly time. Explain with example. (10)
- (b) What are linkage editors? Explain the working of a linkage editor with suitable example. (10)

SECTION - D

- 7. (a) What are interrupts and why they are needed? Differentiate between hardware interrupts and software interrupts. List various hardware and software interrupts according to their priorities. (10)
- (b) Write in brief about:
 - (i) Interrupt calls from C
 - (ii) TRAP and its use (10)

8. (a) Give the internal structure of DOS. Also, explain the complete DOS booting process. Show the role of interrupts, loading, linking and binding etc. during the complete booting process. (10)
- (b) What are memory resident programs? Explain with example. What are its advantages? (10)

SECTION - E

9. Attempt all subparts
- (a) What is the difference between phases and passes of an assembler?
- (b) Differentiate between positional arguments and keyword arguments in a macro call?
- (c) What are device drivers and device controllers? Are they same or different? Justify your answer.
- (d) What are batch files? Why are they used and give two examples of such system files used in DOS.
- (e) Explain various machine-independent and machine-dependent features of a loader.
- (f) Differentiate between Soft boot and Warm boot. When each of them is used?
- (g) What are assembler directives? Give two examples of assembler directives.
- (h) What is a reentrant code? Where and why it is used?
- (i) Explain in short use of hashing in symbol table management.
- (j) Write in short about BIOS. (10×2=20)