

III B.Tech. I Semester Regular Examinations, November -2005

SYSTEMS PROGRAMMING

(Computer Science & Systems Engineering)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. (a) What particular END statements are concerned with terminating.
 - i. A program,
 - ii. A procedure, and
 - iii. A segment?
- (b) DOS performs certain operations when it loads an EXE program for execution. What values does DOS initialize:
 - i. In the CS and IP registers,
 - ii. In the SS and SP registers and
 - iii. In the DS and ES registers?
- (c) What are the four ways to provide normal termination of an assembly language program?

[6+6+4]

2. Explain How the Boolean Operations are used in processing Arithmetic Data? [16]
3. Write an Assembly Language Program for finding the prime factorization of a number, n.
Suppose $n = 12$ then ; factors = 2, 2, 3. [16]

4. (a) Explain the different conditional directives used in macro programming.
- (b) Write short notes on the EXITM directive.

[8+8]

5. (a) List different services offered by BIOS INT 10H.
- (b) Write short notes on with format Blinking, Reverse video and Scrolling.

[8+8]

6. (a) What is a hard disk ? Explain the characteristics of a hard disk.
- (b) What is a boot record ? Which files are loaded by it?

[8+8]

7. (a) A user types in the command TYPE C:\AUTOEXEC.BAT, to display the contents of specified file. Show the hex contents in the program's PSP at
 - i. 5CH, parameter area 1, (FCB #1)
 - ii. 80H, the default DTA

(b) What is a memory block ? Which programs are stored in first, second and third memory blouses ?

(c) Write the instructions to get the address of the PSP and save it in ES register.

[8+4+4]

8. (a) Describe the function of each RLD, ESD, TXT and END cards. .

(b) What is the order of RLD, ESD, TXT and END cards in object deck and why are they in this order

[8+8]

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1. (a) Explain the terms.
 - i. Segments.
 - ii. Off sets.
 - iii. Boundaries.
- (b) What are
 - i. Three kinds of segments
 - ii. Their maximum size and
 - iii. The address boundary on which they begin.
- (c) Show the EAX register and the size and position of the AH, AL and AX within it.

[6+3+7]

2. Explain use of XLAT instruction with a suitable example. [16]
3. (a) Write an Assembly Language Program which converts a binary number to ASCII format.
- (b) Print contents of AL register onto the screen in decimal notation.

[8+8]

4. (a) What is meant by a MACRO? With suitable example explain a MACRO instruction?
- (b) Explain the pass-2 macro definition and expansion algorithm.

[8+8]

5. Write an Assembly language program to illustrate displaying a menu setting a uses press the Up and Down Arrow keys to select an item from menu. [16]

6. (a) What is a file handle ? Explain the functions of INT 21H used to carry out the following operations using file handles.
 - i. Create file
 - ii. Open file
 - iii. Write record
 - iv. Close file

- (b) What is an ASCII string? Explain with the help of an example.

[10+6]

7. (a) What is BIOS INT 13H ? What are two major disadvantages of using BIOS INT 13H ? Explain.
- (b) Explain the basic disk functions carried out by BIOS INT 13H.

[8+8]

8. Explain the design of simple one-pass macro processor to provide macro definitions within macros.

[16]

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1. (a) Explain about COM programs.
(b) Explain about addressing formats and addressing modes.
[6+10]
2. List and explain various ASCII instructions set with an example? [16]
3. Compute the primes between 1 and 10,000. Recall that an integer n is prime if it is at least 2 and if it can't be divided evenly by any positive integer except 1 and itself. The list of primes begins 2, 3, 5, 7, 11, 13, 17, 19,(You can use any one of the easiest ways of finding the prime), in assembly language. [16]
4. (a) Under what circumstances would the use of macros be recommended?
(b) Explain with an example, the implementation of macro calls with in macros.
[8+8]
5. (a) i. What does it mean when the address of the head and tail in the keyboard buffer are the same?
ii. What does it mean when the address of the tail immediately follows the head?
(b) Provide the Scan code for the following extended functions:
 - i. Down Arrow
 - ii. Program function key F2
 - iii. Home
 - iv. Pg Down
[8+8]
6. (a) What is a hard disk ? Explain the characteristics of a hard disk.
(b) What is a boot record ? Which files are loaded by it?
[8+8]
7. (a) What is TSR ? How TSR is activated ? Explain.
(b) A link map for an .EXE program shows the following:

START	STOP	LENGTH	NAME	CLASS
00000H	0002FH	00030H	STACK	STACK
00030H	0005BH	0002CH	CODESG	CODE
00060H	0007CH	0001DH	DATASG	DATA

DOS loads the program with the PSP beginning at location 1A25[0]H. Showing calculations wherever required, give the contents of each of the following registers at the time of loading (ignore reverse-byte notation):

- i. CS;
- ii. DS;
- iii. ES;
- iv. SS;
- v. SP

[5+11]

8. (a) In an assembler it is often convenient to enable pass 1 to access symbols from the symbol table before the pass is completed For eg, in the following Pseudo-opA EQU B It is necessary to obtain the value of B to get value for A. In view of this requirement, suggest the best method of data storage and retrieval for symbol table. Explain your answer.
- (b) Explain the format of Data Bases used by assembler pass 1 and pass 2.

[10+6]

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1. (a) Distinguish between assembly language and high level language.
- (b) Explain about Intel Pentium architecture.
- (c) Add the following binary numbers.

000011011	01010101	00001111
111111111	10101010	11110000
_____	_____	_____

[4+9+3]

2. Explain the following with examples:

- (a) The JMP & conditional Jump
- (b) The LOOP instructions
- (c) Shifting instructions
- (d) STOS and CMPSW instructions
- (e) REPE and CLD instructions
- (f) IMUL instruction
- (g) AAM, DAA instructions
- (h) XLAT instruction

[16]

3. (a) Write an Assembly Language Program which converts a binary number to ASCII format.
- (b) Print contents of AL register onto the screen in decimal notation.

[8+8]

4. (a) Under what circumstances would the use of macros be recommended?
- (b) Explain with an example, the implementation of macro calls with in macros.

[8+8]

5. Write a ASL program to display ASCII character set. [16]

6. (a) Explain the functions of INT 21H used to carry out the following operations using FCB.

- i. Create file
 - ii. Set DTA
 - iii. Write record
 - iv. Close file
 - (b) Explain the functions of INT 21H used for random processing of disk files using FCBs
 - (c) Does FCB method support path names ?
- [6+5+5]
7. (a) Which functions of DOS INT21H, carries out the following operations ? Explain.
- i. Get memory allocation strategy
 - ii. Set memory allocation strategy
 - iii. Get upper memory link
 - iv. Set upper memory link
- (b) Show the contents in the program's PSP at, FCB #1, FCB #2, and, default DAT, Which starts at 5CH, 6CH and 80H respectively, for
- i. Command with No operand
 - ii. Command with Text operand
- [8+8]
8. (a) Explain various phases in loaders?
- (b) How the loading and linking process can be resolved in relocating loaders?
- [8+8]
