

III B.Tech I Semester Regular Examinations, November 2006

SYSTEMS PROGRAMMING

(Computer Science & Systems Engineering)

Time: 3 hours

Max Marks: 80

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

1. (a) Explain about COM programs.
(b) Explain about addressing formats and addressing modes. [6+10]
2. Explain SHORT, NEAR and FAR addressing types in JMP instructions with suitable examples? [16]
3. Write an One-Line Screen Editor that does the following :
 - (a) clears the screen ,and position cursor at the top -left corner.
 - (b) Let the user type text, cursor must advance after each character is displayed.
 - (c) Esc key to terminate the program. [6+5+5]
4. (a) Explain the different conditional directives used in macro programming.
(b) Write short notes on the EXITM directive. [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) Explain the procedure for reading a disk file using file handles.
(b) What are the error return codes for:
 - i. Path not found
 - ii. Invalid format
 - iii. Write fault
 - iv. Printer out of paper
(c) What is the maximum length of an ASCIIZ string? Define an ASCIIZ string named PATH2 for a file named NU.EXE on drive C. [5+6+5]
7. (a) Write a program to read sectors from disk into memory using BIOS.

- (b) Under which circumstances a programmer choose BIOS INT 13H? [8+8]
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) What is a reserved word in assembly language? Give two examples.
(b) Explain the purpose of a procedure. How do you define the beginning and end of a procedure? When do you define a procedure as FAR? When do you define a procedure as NEAR?
(c) Distinguish between the statement that ends an assembly and the statements That end execution. [3+9+4]
2. Explain Shift and Rotate Instructions and their usage in Arithmetic operations, specifying an example? [16]
3. Using String Operations implement procedures for reversing a string, copying a string and length of a string. [16]
4. (a) Explain the design overview of macro preprocessor.
(b) Explain the PORGE directive. [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) Explain the following terms with respect to a disk.
i. Track
ii. Sector
iii. Cylinder
iv. Cluster
(b) What is the purpose of a disk controller ? Explain briefly. [8+8]
7. (a) You are given with memory address SECTIN, drive A, head 0, track 8, and sector 4. Use this data to write instructions for BIOS 13H to read one sector.

- (b) Explain briefly which functions of INT 13H carry out the following operations on disk.
- i. Initialize Drive
 - ii. Seek Cylinder
 - iii. Get Disk Type
 - iv. Set Diskette Type [8+8]
8. (a) Explain two pass algorithm for the design of a macro processor.
- (b) What are the different data structures used in this algorithm. [8+8]

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1. (a) Give the commands that cause the assembler when listing a program.
 - i. to advance to a new page.
 - ii. to print a heading at the top of a page.(b) Consider the instruction MOV AX,4C00H used with INT21H.
 - i. Explain what instruction performs.
 - ii. Explain the purpose of 4C00H.(c) Explain the directives for defining data. [4+6+6]
2. Explain the following with examples:
 - (a) AAS and AAM instructions
 - (b) IMVL and CBW instructions
 - (c) LODSD and CMPSW
 - (d) Keyboard input functions
 - (e) Control Transfer operations
 - (f) Jump Based on Signed Data
 - (g) REPE instructions
 - (h) XLAT instructions [16]
3. Write an Assembly Language Program that asks the user to input an integer and check whether that integer is a multiple of three, printing its conclusion to the screen. The Program should work with input integers having as many as 79 digits. [16]
4. Write a macro definition name DIVIDE that generates a routine to perform division by successive subtraction. [16]
5. (a) Provide the Scan codes for the following extended functions:
 - i. Up arrow.
 - ii. program function key F3
 - iii. Home
 - iv. Page up(b) Explain how the numbers are stored from(0-255) in memory as ASCII Characters. [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 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 single pass macro process capable of handling macro calls within macro definitions. [16]

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1. (a) Write about internal memory of a processor .
(b) Explain about segments.
(c) Provide the two's complement of the following binary numbers.
 - i. 001100110
 - ii. 0011101101
 - iii. 111111111
 - iv. 00111101

[6+6+4]
2. Explain SCAN instruction with suitable example?

[16]
3. Write a program that calculates the sum of Fibonacci series 1,1,2,3,5,8,13 for 12 iterations?

[16]
4. (a) Explain the design overview of macro preprocessor.
(b) Explain the PORGE directive.

[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 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) Which function of INT 13H returns disk parameters ? What are those parameters ? Explain.

(b) Write and explain the instructions,

i. To reset the diskette controller

ii. To read the diskette status

[8+8]

8. Write various phases included in the execution of a program using loaders? [16]
