

GUJARAT TECHNOLOGICAL UNIVERSITY

M.C.A. Sem-III - Examination –June- 2011

Subject code: 630005**Subject Name: System Software****Date:11/06/2011****Time: 02.30 pm – 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** Select correct option for below question and justify your selection.
- a) To recognize valid string which of these will use **02**
 1) Derivation 2) Reduction
- b) Which technique is better for memory allocation. **02**
 1) First fit 2) Best fit
- c) A college uses a student code which is obtained by concatenation the branch id of a student, which is alphabetic in nature, with numeric code. Student code can be specified as **02**
 1) $\langle \text{branch code} \rangle ::= l \mid \langle \text{branch code} \rangle l$
 $\langle \text{numeric code} \rangle ::= d \mid \langle \text{numeric code} \rangle d$
 $\langle \text{student code} \rangle ::= \langle \text{branch code} \rangle \langle \text{numeric code} \rangle$
 2) $\langle \text{br_code} \rangle ::= l \mid d \mid \langle \text{br_code} \rangle l \mid \langle \text{br_code} \rangle d$
 3) 1) and 2) both are correct.
- d) What will be effect of statement A DS 200 **02**
 1) 1 word will reserve for A with value 200.
 2) 200 words will reserve and associate with name A
- e) For storing parameters name and values which data structure is better? **02**
 1) APT with (name, value) fields
 2) PNTAB with (name) field and APTAB with (value) field.
- f) For accessing non local variable which pointer will be used? **02**
 1) Static Pointer
 2) Dynamic Pointer
- g) For evaluation of expression $(a+b) / (c+d)$ which operation should perform first so that fewer MOVEM/MOVER instructions required in generated code. **02**
 1) $(a+b)$
 2) $(c+d)$
 3) Any one of above
- Q.2 (a)**
1. Explain classification of Grammer. **04**
2. A compiler typically generates a .OBJ file, which is later converted into .EXE or a .COM File. **03**
 Clearly describe the difference between the three files.

- (b) 1. Write a short note on Debug Monitor. **04**
 2. Write a short note on character device drivers. **03**

OR

- (b) 1. Explain the entry format for the macro name table(MNT). **04**
 2. Write a short note on block device drivers. **03**

- Q.3 (a)** What do you understand by operator precedence parsing? **07**
 Parse the following string giving the Diagrammatic trace of the algorithm.

$\langle id \rangle_a + \langle id \rangle_b * \langle id \rangle_c$

- (b) Define Optimizing Transformations. Explain with suitable example. **07**

OR

- Q.3 (a)** Explain allocation and access of local and non-local variable for a block structured language with below given code. **07**

```
void main()
{
    int i=5;
    {
        int j=7;
        {
            int k=10, l=15;
            k=i;
        }
    }
}
```

- (b) 1. Write note on LL(1) parser **04**
 2. Explain static and dynamic memory allocation. **03**

- Q.4 (a)** Given the following macro definition: **07**

```
MACRO
CLEARMEN      &X, &N, &REG= AREG
LCL           &M
&M SET       0
MOVER        &REG, ='0'
.MO MOVEM    &REG, &X + &M
&M SET       &M +1
AIF          (&M NE &N) .MO
MEND
```

Show the contents of the data structures deployed by the macro-processor for the call.

```
CLEARMEN      AREA, 10
```

- (b) Describe the architecture of 8088 microprocessor in detail. **07**

OR

Q.4 (a) Given the following program: **07**

	START	300
ID1	DS	5
L1	MOVER	AREG, D
	ADD	AREG, C
	SUB	AREG, ID2
	MOVEM	AREG, ID1
D	EQU	ID2
L2	PRINT	D
	ORIGIN	ID1-1
C	DC	'9'
	ORIGIN	L2+1
	STOP	
ID2	DC	'13'
	END	L1

Show the contents of symbol table and intermediate code using variant 1 at the end of pass-1

Q.4 (b) Explain data structures used for Macro Processing. **07**

Q.5 (a) Explain an algorithm for pass 1 of linker. **07**

- (b)**
1. In an assembly language program, a certain action is required at 10 places in the program. Under what conditions would you code this action as
 - a. A macro?
 - b. A sub-routine?
 2. Discuss the problem of deletion of entries in the sequential search organization. **03**

OR

Q.5 (a)

1. Write the advantages of overlay techniques. **04**
2. Write a short note on program relocation with suitable example. **03**

- (b)**
1. What do you mean by forward reference? How single pass assembler take care of forward-reference? **04**
 2. If you have given following grammar: **03**

<Sentence>	=	<NounPhrase><Verb hrase>
<Noun Phrase>	=	<Article> <Noun>
<Article>	=	a an the
<Noun>	=	Government College
<Verb>	=	made

IF the input string is “the Government made a college” then performs reduction operation stepwise.
