DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER V [IT]
SUBJECT: (IT506) ADVANCED MICROPROCESSOR ARCHITECTURE

Examination	**: First Sessional**	**Seat No.**	**: _____**
Date	**: 27/07/2015**	**Day**	**: Monday**
Time	**: 11.15 to 12.30**	**Max. Marks**	**: 36**

INSTRUCTIONS:
1. ***Figures to the right indicate maximum marks for that question.***
2. ***The symbols used carry their usual meanings.***
3. ***Assume suitable data, if required & mention them clearly.***
4. ***Draw neat sketches wherever necessary.***
5. ***Calculator is not allowed.***

Q.1 State true/false and justify your answer. (No marks without justification) 12

(a) Single stepping and maskable interrupt will be automatically disabled by 8086 as a part of an interrupt response. 02

(b) In 8086, starting address of memory segment could be FFFFF1H. 02

(c) If DS=2000H, SS=1000H, BP=E000H, SI=E000H, the instruction MOV AL,[BP+SI] will move the data from physical memory location 2C000H. 02

Do as directed.

(d) Write the instruction for indirect far jump and indirect near jump using one of the 24 memory addressing mode with proper assembler directives. 02

(e) If CS=1000H and DS=1001H , write the two logical addresses (one from Code Segment and one from Data Segment) which will point to same physical address 1FFFFH. 02

(f) Assume SS=1000H, SP=FFEEH, AX=5678H. If PUSH AX instruction is executed, which physical memory locations AL and AH will be stored ? 02

Q.2

(a) The 8086 system requires following memory map : 06
EPROM - to be mapped to last 128 Kbytes of processor address space. EPROM device available is of size 32 Kbytes. Use 3625 bipolar PROM as decoder to map above devices using absolute decoding. Write down the truth table and draw the complete circuit diagram. State your assumptions, if any, very clearly.

(b) Write a main line program which passes two 8-bit numbers on STACK to a FAR procedure 'MULTIPLY'. Result is returned in registered and stored in PRODUCT in main line program. State your assumptions, if any, clearly. Draw neat flow chart. 06

OR

(b) Write a program to compare two strings STR1 And STR2 using string related instruction. If they are equal, set carry flag and break the program, otherwise reset carry flag and break the program. Draw the neat flow chart. State your assumptions, if any, clearly. 06

Q.3

(a) Calculate the displacement for jump. 02

```
        MOV CX,5        ; size 3 bytes
NEXT:   ADD AX,BX       ; size 2 bytes
        NOP             ; size 1 byte
        NOP             ; size 1 byte
        NOP             ; size 1 byte
        JMP NEXT        ; size 2 bytes
```

(b) Define re-locatable code. Which program addressing mode in 8086 helps to write re-locatable code ? 02

(c) Explain the type of jump in detail for the following instructions: **04**

```
(a)  JMP BX
(b)  JMP DWORD PTR[SI[
(c)  JMP WORD PTR [BX]
(d)  JMP NEXT
       :
NEXT:
```

(d) If ICW2 is initialized with T7=0, T6=0, T5=0, T4=1 and T3=1 interrupt arrives on IR7 pin of 8259, what type number will be sent by 8259 during 2nd INTA pulse? If memory locations 0007CH=00, 0007DH=00, 0007EH=00, 0007FH=80H, 00080H=00, 00081H=00, 00082H=00 and 00083H=90H, what is the starting address of the interrupt subroutine for this interrupt ? **04**

OR

Q.3 (a) In the following program OF flag will not set. State true/false and justify. **02**

```
MOV AL,FFH
MOV BL,FFH
ADD AL,BL
```

(b) Define re-entrant procedure. Which methods of parameter passing are to be used for re-entrant procedure ? **02**

(c) Determine the addressing modes for following 8086 instructions. **04**

(i) ADD BX, 59H[DI]
(ii) XCHG CH, ES:[BX]
(iii) OR BYTE PTR [BP+SI+ 1234H],AL
(iv) SUB BYTE PTR [2048],DH

(d) **04**

```
PUSHF
MOV BP,SP
OR WORD PTR [BP+0],0100H
POPF
MOV AX,7FFFEH
MOV BX,02H
ADD AX,BX
INTO
```

Describe the response of 8086 for all instructions after POPF instruction. Assume single step interrupt subroutine saves all registers.