Total No. of Questions: 6   Total No. of Printed Pages:2

Faculty of Engineering
End Sem Examination May-2024
EE3CO53 Microprocessors & Microcontrollers

Programme: B.Tech.   Branch/Specialisation: EE

Duration: 3 Hrs.   **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i.   The intel 8086 microprocessor is a _____ processor.   **1**
          (a) 8 bit   (b) 16 bit   (c) 32 bit   (d) 4 bit

     ii. The CF is known as _____.   **1**
          (a) Carry flag   (b) Condition flag
          (c) Common flag   (d) Single flag

     iii. The BIU prefetches the instruction from memory and store them in   **1**
          _____.
          (a) Queue   (b) Register   (c) Memory   (d) Stack

     iv. The result of MOV AL, 65 is to store-   **1**
          (a) Store 0100 0010 in AL   (b) Store 42H in AL
          (c) Store 40H in AL   (d) Store 0100 0001 in AL

     v.   In 8255, BSR mode is _____.   **1**
          (a) Enabled by a '1' in the MSB of control word
          (b) Enabled by a '1' in the LSB of control word
          (c) Used to set/reset port B pins
          (d) Used to set/reset port C pins

     vi. DSR in USART 8251 has the meaning of-   **1**
          (a) Data set ready   (b) Data set request
          (c) Data send request   (d) Data sort request

     vii. 8051 Microcontroller has _____ timer.   **1**
          (a) One   (b) Two   (c) Three   (d) Four

     viii. 8051 has _____ Bytes of internal ROM.   **1**
          (a) 2K   (b) 4K   (c) 6K   (d) 8K

     ix. PIC 18 microcontroller supports _____ architecture.   **1**
          (a) Harvard   (b) Von-Neumann's
          (c) System   (d) Princeton

P.T.O.

     x.   In PIC 18 micro controller, PIC stands for _____.   **1**
          (a) Programmable Interface Controller
          (b) Programmable Interrupt Controller
          (c) Peripheral Interface Controller
          (d) Peripheral Interrupt controller

Q.2 i.   List the features of 80286 microprocessor.   **3**
     ii. Define microprocessor. Explain the brief history of evolution of   **7**
          microprocessor.
OR   iii. With the help of neat block diagram, describe the functionality of bus **7**
          interface unit and execution unit of 8086 microprocessor.

Q.3 i.   What are the differences between maximum mode and minimum mode?   **4**
     ii. List the various addressing modes of 8086 microprocessor and explain   **6**
          any 4 addressing modes with suitable example.
OR   iii. Explain the functions of-   **6**
          (a) HLDA   (b) RQ/GT0   (c) DEN
          (d) ALE   (e) HOLD   (f) RESET

Q.4 i.   Draw the block diagram of DMA controller (8257).   **3**
     ii. Explain how D/A and D/A interfacing is done with 8086 with an   **7**
          application.
OR   iii. Draw and explain the architecture of 8255 PPI. List the operating modes **7**
          of 8255 PPI.

Q.5 i.   List any 4 applications of 8051 Microcontroller.   **4**
     ii. Mention the various registers present in 8051 microcontroller and   **6**
          explain their functionality in detail.
OR   iii. With neat sketch explain the architecture/block diagram of 8051   **6**
          microcontroller.

Q.6 i.   What is PIC18 microcontroller?   **3**
     ii. Explain the PIC microcontroller's architecture with a neat diagram.   **7**
OR   iii. Explain in detail the memory organization of the PIC microcontroller.   **7**

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Marking Scheme

Microprocesors & Microcontrollers (T)- EE3CO53(T)

Q.1 i) The intel 8086 microprocessor is a _____ processor **1**
  (b) 16 bit

ii) The CF is known as _____ **1**

  (a) carry flag

iii) The BIU prefetches the instruction from memory and store them **1**

  in _____
  (a) queue

iv) The result of MOV AL, 65 is to store **1**
  (d) store 0100 0001 in AL

v) In 8255, BSR mode is _____. **1**
  (d) used to set/reset port C pins

vi) DSR in USART 8251 has the meaning of- **1**
  (a) Data set ready

vii) 8051 Microcontroller _____timer. **1**
  (b) Two

viii) 8051 has _____ Bytes of internal ROM. **1**
  (b) 4K

ix) In PIC 18 micro controller , PIC stands for _____ **1**
  (c) Peripheral Interface Controller

x) PIC 18 microcontroller supports _____architecture **1**
  (a) Harvard

Q.2 i. List the features of 80286 microprocessor. **3**

  Atleast 3 features of 80286 microprocessor- 1 Mark each

ii. Define microprocessor. Explain the brief history of evolution of **7**
  microprocessor.
  Define microprocessor - 3 Marks
  history of evolution   - 4 Marks

OR iii. With the help of neat block diagram, describe the functionality of **7**
  Bus interface unit and Execution unit of 8086 microprocessor.
  block diagram -- 3 Marks
  functionality of Bus interface unit -- 2 Marks

functionality of Execution unit-- 2 Marks

Q.3 i. What are the differences between maximum mode and minimum **4**
  mode?
  At least 4 difference- 1 Mark each

ii. List the various addressing modes of 8086 microprocessor and **6**
  explain any 4 addressing modes with suitable example.
  List the various addressing modes -- 2 Marks
  any 4 addressing modes - 1 Mark each

OR iii. Explain the functions of **6**
  a) HLDA - 1 Mark
  b) RQ/GT0 - 1 Mark
  c) DEN - 1 Mark
  d) ALE- 1 Mark
  e) HOLD- 1 Mark
  f) RESET- 1 Mark

Q.4 i. Draw the block diagram of DMA controller (8257). **3**
  block diagram -- 3 Marks

ii. Explain how D/A and D/A interfacing is done with 8086 with an **7**
  application.
  Explanation of D/A and D/A interfacing -- 5 Marks
  application-- 2 Marks

OR iii. Draw and explain the architecture of 8255 PPI. List the operating **7**
  modes of 8255 PPI.
  Diagram -- 3 Marks
  Explanation -- 3 Marks
  modes of 8255 PPI -- 1 Mark

Q.5 i. List any 4 applications of 8051 Microcontroller. **4**
  any 4 applications - 1 Mark each

ii. Mention the various registers present in 8051 microcontroller and **6**
  explain their functionality in detail.
  various registers present in 8051- Diagram -- 2 Marks
  Explanation -- 4 Marks

OR iii. With neat sketch explain the architecture/block diagram of 8051 **6**
  microcontroller.
  Diagram -- 3 Marks
  Explanation -- 3 Marks

Q.6   i.   What is PIC18 microcontroller?   **3**
            Explanation -- 3 Marks

       ii.   Explain the PIC microcontroller's architecture with a neat diagram.   **7**
            Diagram -- 3 Marks
            Explanation -- 4 Marks

       iii. Explain in detail the memory organization of the PIC   **7**
            microcontroller.
            Diagram -- 3 Marks
            Explanation -- 4 Marks

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