R10   **Set No: 1**

Code No: R32044

III B.Tech. II Semester Regular/Supplementary Examinations, May/June -2014
MICRO PROCESSORS AND MICRO CONTROLLERS
(Comm to Electronics and Communication Engineering and Electronics and Computer
Engineering and Biomedical Engineering and Electronics and Instrumentation Engineering)

Time: 3 Hours   **Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1. a) Explain the function of QS_0 and Qs_1 signals of 8086.
    b) Present the architectural differences between 8086 and 8088.
    c) Draw and discuss read cycle timing diagram of 8086 in minimum mode.   (3+6+6)

2. a) Write an ALP to authenticate the given password .
    b) Draw and discuss interrupt structure of 8086 in detail.
    c) Describe the procedure to code intersegment jump and intrasegment jump.   (6+6+4)

3. a) Write the salient features of strobed I/O mode of operation of 8255. Also present the
    input and output control signal definitions.
    b) Design an interface between 8086 CPU and two chips of 16K X 8 EPROM and two
    chips of 32K X 8 RAM. Select the starting address of EPROM suitably. The RAM
    address must start at 00000H.   (7+8)

4. a) Draw and explain the internal architecture of 8257.
    b) Explain the initialization sequence of 8259A using a flow chart.
    c) Explain the FIFO status word of 8279.   (6+5+4)

5. a) Draw and discuss the register set of 80386 and explain the function of each of the
    registers in brief.   (9+6)
    b) Explain the different additional addressing modes supported by 80386 over 80286.

6. a) Draw the 8051 connection diagram and explain.   (5+10)
    b) Explain different addressing modes of 8051 using relevant example instructions.

7. a) Explain the function of each bit of STATUS register in PIC 16F8XX.
    b) Write the features of I/O ports of PIC 16F877.   (6+9)

8. Discuss in detail ARM architecture and organization.   (15)
*****

Code No: R32044   **R10**   **Set No: 2**

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Time: 3 Hours   **Max Marks: 75**

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

1. a) Explain the function of $\overline{BHE}$ and $\overline{DEN}$ signals of 8086.
    b) Write the advantages of segmentation in a microprocessor environment.
    Explain segmentation using overlapped and non-overlapped segments.
    c) Draw and discuss write cycle timing diagram of 8086 in minimum mode.   (3+6+6)

2. a) Write an ALP to perform one byte BCD addition.
    b) Draw and discuss the interrupt acknowledge sequence of 8086.
    c) Explain the term nested interrupt.   (6+5+4)

3. a) Write the salient features of strobed bidirectional I/O mode of operation of 8255.
    Also present the input and output control signal definitions.
    b) Interface two 4K X 8 EPROMS and two 4K X 8 RAM chips with 8086. Select
    suitable maps.   (8+7)

4. a) Draw the internal architecture of 8237 and explain its register organization.
    b) Explain different keyboard modes of operation of 8279.   (8+7)

5. a) Discuss the paging mechanism of 80386 in detail.
    b) Explain the physical address formation in real mode of 80386.
    c) Draw and discuss the flag register of 80386.   (8+3+4)

6. a) Explain the memory organization of 8051 microcontroller.
    b) Explain different program branching instructions supported by 8051.   (6+9)

7. a) Discuss bit wise operations and increment, decrement operations of PIC 16C6X/7X.
    b) Discuss the timer 0, 1 and 2 operations and write the steps to initialize them stating
    appropriate control words in the associated SFRs.   (5+10)

8. Discuss in detail ARM architecture and organization.   (15)
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Code No: R32044

R10

Set No: 3

III B.Tech. II Semester Regular/Supplementary Examinations, May/June -2014
MICRO PROCESSORS AND MICRO CONTROLLERS
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Time: 3 Hours   **Max Marks: 75**

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

1. a) Explain the function of REQUEST /GRANT pins of 8086.
   b) Draw the flag register. Classify the flags and explain the function of each flag using an example
   c) Draw and discuss read cycle timing diagram of 8086 in maximum mode. (3+6+6)

2. a) Write an ALP to convert an 8 bit binary number into its equivalent gray code.
   b) Explain the structure of stack of 8086 and write the instructions to exchange the contents of a register pair using PUSH and POP instructions.
   c) Explain the transfer of control during the execution of an ISR.   (6+5+4)

3. a) Explain the salient features of BSR mode and Mode 0 of 8255.
   b) Interface DAC AD7253 with an 8086 CPU running at 8 MHz and write an ALP to generate a sawtooth waveform of period 2 ms with V_{max}=5V.   (7+8)

4. a) Draw the architectural block diagram of 8251A and write its signal descriptions.
   b) Explain the complete operational sequence of DMA using a state diagram.   (8+7)

5. a) Explain the structure of an 80386 descriptor and discuss different descriptor types supported by 80386.
   b) What are the different exceptions generated by 80386?
   c) Write the advantages and disadvantages of paging?   (7+4+4)

6. a) Draw different 8051 port structures and explain. Also specify the features of different parallel I/o Ports available with 8051 microcontroller.
   b) Explain all rotate instructions supported by 8051.   (7+8)

7. a) Discuss the interrupt structure in PIC microcontrollers. Also list the various interrupt sources in PIC 1671.   (8+7)
   b) Represent the contents of STATUS register of 16C6X/7X and explain each field in it.

8. Discuss in detail ARM architecture and organization.   (15)
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Code No: R32044   **R10**   **Set No: 4**

III B.Tech. II Semester Regular/Supplementary Examinations, May/June -2014
MICRO PROCESSORS AND MICRO CONTROLLERS
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Time: 3 Hours   **Max Marks: 75**

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

1. a) Explain the function of $\overline{TEST}$ and HOLD signals of 8086.
    b) Draw the register organization of 8086 and explain typical applications of each register.
    c) Draw and discuss write cycle timing diagram of 8086 in maximum mode. (3+6+6)

2. a) Write an ALP to convert a BCD number in to its equivalent binary number. (6+5+4)
    b) Explain the interrupt response sequence of 8086.
    c) Write the role of stack in calling a subroutine and returning from a subroutine.

3. a) Draw and explain the internal architecture of 8255.
    b) Design a stepper motor controller and write an ALP to rotate shaft of a 4-phase stepper motor i) in clock wise 4 rotations ii) in anticlockwise 4 rotations. The 8255 port A address is 0740H. The stepper motor has 200 rotor teeth . The port A bit PA_0, PA_1, PA_2, PA_3 drives different windings a, b, c, d respectively. The stepper motor has an inertial delay of 10 ms and assume delay routine is available. (7+8)

4. a) Draw the architectural block diagram of 8259A and write its signal descriptions.
    b) Explain asynchronous mode of operation of 8251A. (8+7)

5. a) Write the differences between logical address, linear address and physical address. Also explain the procedure of converting a linear address into a physical address.
    b) Write a short note on virtual 8086 mode of 80386. (8+7)

6. a) Draw the pin configuration of 8051 microcontroller and give the pin description.
    b) Explain any five Boolean variable mapping instructions. (10+5)

7. a) Discuss the following CPU registers of PIC 16CX/7X i) FSR ii) INDF iii) PCLATH
    b) Write the features of 16F8XX flash microcontrollers. (8+7)

8. Discuss in detail ARM architecture and organization. (15)
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