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Question Paper Code : 31252

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2010.

Fourth Semester

Mechanical Engineering

EC 1264 — ELECTRONICS AND MICROPROCESSORS

(Common to Automobile Engineering and Production Engineering)

(Regulation 2004)

(Common to B.E. (Part-Time) Mechanical Engineering – Third Semester
– Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Voltage Regulation.
2. Define Zener effect.
3. Define Biasing.
4. What are feed back amplifiers?
5. Explain an X-OR gate.
6. What are Registers?
7. What are the different addressing modes of 8085?
8. Classify the Instruction set of 8085.
9. Define Interfacing.
10. Write any two applications of Microprocessors.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain in detail about the working of Half-wave and Full wave rectifiers in detail and discuss the merits and demerits also. (10)
(ii) Explain the energy band theory. (6)

Or

- (b) (i) Briefly explain the characteristics and working of zener diode as a Voltage Regulator. (8)
(ii) Describe the characteristics of PN junction diode. (8)
12. (a) Explain the working of common base, common emitter and common collector in detail. (16)

Or

- (b) Explain the characteristics and working of
(i) Diac
(ii) Triac
(iii) SCR. (16)
13. (a) (i) Design an full adder circuit and full subtractor circuit. (8)
(ii) Explain the working of JK and RS flip flops. (8)

Or

- (b) Explain the working of an A/D convertor and discuss the various types in detail. (16)
14. (a) Neatly draw the Block diagram of the Micro-Processor 8085 and discuss each module in detail. (16)

Or

- (b) Write a program in Assembly language of 8085 to sort 20 elements in Ascending order. (16)
15. (a) Explain the working of microprocessor based temperature controller. (16)

Or

- (b) Explain how microprocessor is used as a traffic light controller. (16)

Reg. No. :

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Question Paper Code : 11411

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2011

Fourth Semester

Mechanical Engineering

ME 2255 — ELECTRONICS AND MICROPROCESSORS

(Common to Production Engineering and Automobile Engineering)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions

PART A — (10 × 2 = 20 marks)

1. What is diffusion current?
2. Draw the circuit of Bridge rectifier with input and output wave forms.
3. Define stability factor for BJTs.
4. Write the equation governing intrinsic stand-off ratio.
5. Simplify the Boolean expression.

$$F = (A + \bar{B} + \bar{C})(A + \bar{B} + C).$$

6. Draw the circuit of transparent latch.
7. Name the address partitioning techniques used in 8085.

8. What is the output at port 1 when the following instructions are executed?

```
MVI A, 8FH
ADI 72H
JC LOOP
OUT PORT 1
HLT
LOOP : XRA A
      OUT PORT 1
      HLT
```

9. What is the role of tri state buffer in interfacing of peripherals with CPU?
10. Write the use of ALE signal in 8085.

PART B — (5 × 16 = 80 marks)

11. (a) Design a Zener voltage regulator for the output voltage of 5V and output current of 200 mA. Support your answer with the Zener characteristics and relevant circuit diagram. (16)

Or

- (b) Explain the operation of open circuited PN junction using the energy band structure. (16)
12. (a) If the various parameters of a CE amplifier which uses the self bias method are (16)

$V_{CC} = 12\text{ V}$, $R_1 = 10\text{ K}\Omega$, $R_2 = 5\text{ K}\Omega$, $R_C = 1\text{ K}\Omega$, $R_E = 2\text{ K}\Omega$ and $\beta = 100$, find

- (i) the coordinates of the operating point
(ii) the stability factor

assuming the transistor to be silicon.

Or

- (b) Why do we prefix negative feed back system? Explain the operation of voltage – shunt feed back with required diagrams. (16)

13. (a) With the logic diagram, explain the working of Ring Counter. Also draw the timing diagrams. (16)

Or

- (b) Reduce the following function and implement using universal gates : (16)

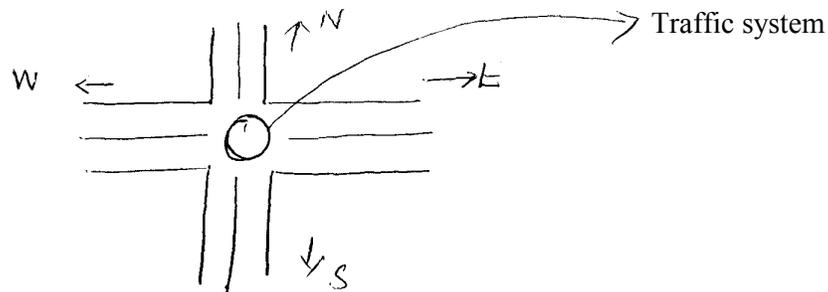
$$F = \bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}C + \bar{A}BC + A\bar{B}\bar{C} + A\bar{B}C + ABC.$$

14. (a) The following block of data is stored in the memory locations from 4000H to 4005H. Transfer the data to the locations 5000H to 5005H in the reverse order. Write an ALP in 8085 to perform the block transfer. (16)
22H, A5H, B2H, 99H, 7FH, 37H.

Or

- (b) Explain the interrupt structure of 8085 CPU with the required diagrams. (16)

15. (a) Design an 8085 CPU based traffic monitoring and control system to control the traffic at 4 corner junction. (16)



Or

- (b) Suggest the methods to vary the speed of shaft of a machine using stepper motor. Design the microprocessor based system interface to control the speed of stepper motor. (16)

Question Paper Code : 10415

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Fourth Semester

Mechanical Engineering

ME 2255/147406/ME 46/EC 1265/10122 ME 406/080120019 — ELECTRONICS
AND MICROPROCESSORS

(Common to Automobile Engineering and Production Engineering)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Rectification.
2. Define Voltage Regulation.
3. What is the need for transistor biasing?
4. Draw the transfer characteristics of FET.
5. What are Flip flops?
6. Draw a Half adder circuit.
7. List the various instruction types in 8085.
8. What are the various addressing modes in 8085?
9. What do you mean by interfacing?
10. List out some applications of the microprocessors.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw and explain the circuit of a full wave rectifier. (8)
(ii) Discuss about intrinsic and extrinsic semiconductors. (8)

Or

- (b) (i) What do you mean by zener effect? Explain the characteristics of zener diode. (6)
(ii) Explain how zener diode is used as a voltage regulator. (10)

12. (a) (i) Draw and explain the circuit of a Class B Pushpull power amplifier. (10)
- (ii) What do you mean by negative feedback? List the characteristics and advantages of a negative feed back amplifier. (6)

Or

- (b) Draw and explain the Characteristic of a FET amplifier and discuss its merits and applications. (16)
13. (a) (i) Design a Full adder. (10)
- (ii) Discuss the operation of RS flip flop and D flip flop. (6)

Or

- (b) Draw and explain the operation of A/D and D/A Converters. (16)
14. (a) Sketch the architecture of 8085 and explain the modules in detail. (16)

Or

- (b) With examples, explain the Data transfer instructions and arithmetic instructions of 8085. (16)
15. (a) Draw and explain the block diagram and operation of temperature controlling system with a microprocessor. (16)

Or

- (b) Draw and explain the block diagram and operation of Traffic light controller with a microprocessor. (16)

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Question Paper Code : 11526

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2012.

Fourth Semester

Mechanical Engineering

ME 2255/147406/ME 46/EC 1265/10122 ME 406/080120019 — ELECTRONICS
AND MICROPROCESSORS

(Common to Automobile Engineering, Production Engineering,
Mechanical and Automation Engineering)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define breakdown voltage.
2. Write about the reverse bias characteristics of Zener diode.
3. Write the advantages of using transistors.
4. What is meant by current amplification factor?
5. Draw the truth table for AND gate.
6. Draw the truth table for D-flipflop.
7. List the types of instructions in 8085 microprocessor according to word size.
8. Write the function of 32nd pin of 8085 microprocessor.
9. State the merit of interfacing.
10. What are the important parts of 8255 functional block diagram?

PART B — (5 × 16 = 80 marks)

11. (a) With circuit diagrams and VI characteristics explain the forward bias and reverse bias of PN junction diode. (16)

Or

- (b) With circuit diagrams and necessary equations describe the working of half wave rectifier and full wave rectifier. (16)

12. (a) With suitable diagrams explain the working of NPN transistor and PNP transistor. (16)

Or

- (b) With circuit diagrams and characteristics explain the working of Class A and Class B amplifiers. (16)

13. (a) Draw the symbol, IEC sign and truth table for NOT gate, NAND gate, OR gate, NOR gate and EX-OR gate. (16)

Or

- (b) Explain the working of half adder and full adder with logic diagrams and truth tables. (16)

14. (a) Explain the elements of 8085 microprocessor with architectural diagram. (16)

Or

- (b) With examples explain the five types of addressing modes of 8085 microprocessor. (16)

15. (a) Describe the suitable application of micro processor with excitation table, interfacing diagram and assembly language program for a stepper motor. (16)

Or

- (b) With suitable assembly language program explain the application of microprocessor in temperature control. (16)

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Question Paper Code : 21566

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Fourth Semester

Mechanical Engineering

ME 2255/ME 46/EC 1265/10122 ME 406/080120019 — ELECTRONICS AND
MICROPROCESSORS

(Common to Automobile Engineering, Production Engineering and Mechanical and
Automation Engineering)

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between P-type and N-type semiconductors.
2. Define Voltage regulation.
3. In a Common-Base configuration, current gain of a transistor is 0.965. If the emitter current is 10 mA, what is the value of base current?
4. Draw the circuit symbol of TRIAC.
5. Why NAND and NOR gates are called as universal gates?
6. Write a short note on counters.
7. Give the instruction formats for 8085 microprocessor.
8. What are the steps involved in programming?
9. What is meant by I/O data transfer?
10. What is the use of ALE signal?

PART B — (5 × 16 = 80 marks)

11. (a) Explain in detail about Intrinsic and Extrinsic semiconductors with neat diagram. (16)
- Or
- (b) Explain the construction and V-I characteristics of PN junction diode and Zener diode. (16)
12. (a) Explain various characteristics of BJT in Common Collector configuration with neat diagram. (16)
- Or
- (b) Explain the working of SCR with the help of its two transistor equivalent circuits. Draw its forward and reverse characteristics. (16)
13. (a) Design and implement the half adder and full adder using logic gates. (16)
- Or
- (b) Explain working principle of D/A and A/D converters. (16)
14. (a) Explain the architecture of 8085 microprocessor with a neat functional block diagram. Give the salient features of 8085 microprocessor. (16)
- Or
- (b) Write an 8085 assembly language program to add and subtract two 16-bit numbers. (16)
15. (a) Explain in detail about the Input and Output Interfacing techniques of 8085 microprocessor. (16)
- Or
- (b) Draw and explain in detail about stepper motor interface. (16)

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Question Paper Code : 51636

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Fourth Semester

Mechanical Engineering

ME 2255/ME 46/EC 1265/080120019/10122 ME 406 — ELECTRONICS AND
MICROPROCESSORS

(Common to Automobile Engineering, Production Engineering and Third Semester
Mechanical and Automation Engineering)

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Draw energy band diagram of insulator.
2. What is intrinsic semiconductor?
3. Draw input characteristic of the CE configuration transistor.
4. Draw input characteristic of triac.
5. Draw the symbol and truth table for exclusive OR gate.
6. Draw the circuit and truth table for half adder.
7. Define micro computer.
8. List various arithmetic operations used in 8085.
9. What is the basic interfacing concepts?
10. What is the need for an interfacing?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw and explain Zener diode characteristic. (8)
(ii) Describe energy band structure of an open circuited P-N junction. (8)

Or

- (b) (i) With circuit explain principle of operation of full wave rectifier. (10)
(ii) Describe conduction in P-type and N-type semiconductor. (6)
12. (a) (i) Explain configuration and characteristics of CB BJT. (8)
(ii) How FET can be used an amplifier. (8)

Or

- (b) With diagram describe configuration and characteristics of SCR.
13. (a) (i) Draw and describe Logic diagram and truth table of full adder. (10)
(ii) With truth table explain the functions of logic gates. (6)

Or

- (b) With circuit and waveform explain the principle of operation of S-R flip-flop.
14. (a) With diagram explain architecture of 8085. (16)

Or

- (b) Describe various addressing modes used in 8085.
15. (a) With block diagram explain interfacing of input devices. (16)

Or

- (b) Describe microprocessor application to traffic light control.