EC 6464 ELECTRONICS AND MICROPROCESSORS

UNIT – I: SEMICONDUCTORS AND RECTIFIERS

PART - A (2 Marks)

1. Draw energy band diagram of insulator? (AUC May/June 2014)
2. What is Intrinsic semiconductor? (AUC May/june 2014)
3. Distinguish between P-Type and N-Type Semiconductors? (AUC May/June 2013)
4. Define breakdown voltage? (AUC Nov/Dec 2012)
5. Write about the reverse bias characteristics of zener diode? (AUC Nov/Dec 2012)
6. Define rectification (AUC May/June 2012)
7. Define Voltage Regulation (AUC May/June 2012)
8. Define PN junction. (AUC Nov/Dec 2012)
9. What is a rectifier? What are its types? (AUC Nov/Dec 2012)
10. What is diffusion current? (AUC Apr/May 2011)
11. Draw the circuit of Bridge rectifier with input and output waveforms? (AUC Apr/May 2011)
12. Define Zener effect? (AUC Nov/Dec 2010)
13. Draw the circuit of zener voltage regulator. (AUC Nov/Dec 2010)
14. Define cutin voltage. Specify the cutin voltage for Ge and si diodes? (AUC Apr/May 2009)
15. How do you classify the solids based on the energy band diagram? (AUC Apr/May 2009)

PART –B (16 Marks)

1. (i) With circuit explain principle of operation of full wave rectifier.(10)
   (ii) Describe conduction in P-type and N-Type Semiconductor. (6). (AUC May/june 2014)
2. Explain in detail about intrinsic and Extrinsic semiconductor with neat diagram. (16) (AUC May/june 2014)
3. Explain the construction and V-I characteristics of PN junction diode and zener diode(16).(AUC May/June 2013)
4. With circuit diagrams and necessary equations describe the working of half wave rectifier and full wave Rectifier (16) (AUC Nov/Dec 2012)
5. (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) (AUC May/june 2012)

6. Explain the operation of open circuited PN junction using the energy band structure.(AUC Apr/May 2011)
7. Make a detailed classification of solid based on energy band theory?

UNIT – II: TRANSISTORS AND AMPLIFIERS

PART - A (2 Marks)

1. Write the advantages of using transistor? (AUC Nov/Dec 2012)
2. Draw input characteristics of the CE Configuration transistor? (AUC May/june 2014)
3. Draw input characteristics of triac? (AUC May/June 2014)
4. Draw the circuit symbol of TRIAC? (AUC May/June 2013)
5. In a common base configuration ,current gain of a transistor is 0.965. If the emitter current is 10mA, what is a value of base current? (AUC May/June 2013)
6. What is meant by current amplification factor? (AUC Nov/Dec 2012)
7. What is the need for transistor biasing? (AUC May/june 2012)
8. Draw the transfer characteristics of FET. (AUC May/June 2012)
9. Compare BJT and FET. (AUC Nov/Dec 2011)
10. Define Avalanche breakdown. (AUC Nov/Dec 2011)
11. Define stability factor of BJTs. (AUC Apr/May 2011)
12. Write the equation governing intrinsic standoff ratio. (AUC Apr/May 2011)
13. What is early effect in BJTs? (AUC Apr/May 2010)
14. Define voltage safety factor of thyristor? (AUC Apr/May 2010)

PART –B (16 Marks)

1. (i) Explain configuration and Characteristics of CB BJT (8)
   (ii) How FET can be used an amplifier (8) (AUC May/June 2014)
2. With diagram describe configuration and characteristics of SCR. (16) (AUC may/june 2014)
3. Explain the working of SCR with help of its two transistor equivalent circuits. Draw its forward and reverse characteristics.(16) (AUC May/June 2013)
4. Explain various characteristics of BJT in CC Configuration with neat diagram. (16) (AUC May/June 2013)

5. With circuit diagrams and characteristics explain the working of Class A and Class B amplifiers. (16) (AUC Nov/Dec 2012)
6. (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 feedback amplifier. (6) (AUC May/June 2012)
7. Draw and explain the characteristic of a FET amplifier and discuss its merits and applications. (16) (AUC May/june 2012,Nov/Dec 2011)
8. Sketch the input and output characteristics of common emitter configuration and explain how these are obtained? (16) (AUC Nov/Dec 2011)
9. If the various parameters of a CE amplifier which uses the self bias method are Vcc = 12 V, R_1 = 10 k Ω, R_2 = 5 k Ω, Rc = 1 k Ω, R_E = 2 k Ω and β = 100, find
   (i) The coordinates of the operating point (ii) The stability factor, assuming the transistor to be silicon. (16) (AUC April/May 2011)
10. Why do we prefer negative feedback system? Explain the operation of voltage – shunt feedback with required diagrams. (16) (AUC April/May 2011)
11. With neat circuit diagrams, explain the methods of transistor biasing. (AUC April/May 2009)
12. Write in detail about the operation of JFET under various biasing conditions.(AUC April/May 2010)

UNIT – III: DIGITAL ELECTRONICS

PART - A (2 Marks)

1. Draw the symbol and truth table for exclusive OR gate. (AUC May/June 2014)
2. Draw the circuit and truth table for half adder (AUC May/June 2014)
3. Why NAND and NOR gates is called universal gates? (AUC May/June 2013)
4. Write a short note on counter? (AUC May/June 2013)
5. Draw the truth table for AND gate? (AUC Nov/Dec 2012)
6. Draw the truth table for D-flipflop? (AUC Nov/Dec 2012)
7. What are Flipflops? (AUC May/June 2012)
8. Draw a half adder circuit? (AUC May/June 2012)
9. What are universal gates? (AUC Nov/Dec 2011)
10. State Demorgans theorem? (AUC Nov/Dec 2011)

11. Simplify the Boolean expression. F = (A + B' + C')(A + B' + C) (AUC April/May 2011)
12. Draw the circuit of transparent latch. (AUC April/May 2011)
13. Using Boolean laws, prove that $X \oplus Y + Y = X + Y$ (AUC April/may 2010)
14. Draw the symbol and write truth table of EXOR gate? (AUC April/May 2009)

PART –B (16 Marks)

1. (i) Draw and describe logic diagram and truth table of full adder?(10)
   (ii) Which truth table explain the functions of logic gates? (6) (AUC May/june 2014, May/june 2012)
2. With circuit and waveform explain the principle of operation of S-R flip-flop? (16) (AUC May/June 2014, May/June 2012)
3. Design and implement the half adder and full adder using logic gates (16) (AUC May/June 2013,Nov/Dec 2011, April/May 2010,Nov/Dec 2012)
4. Explain working principle of D/A and A/D converters ? (16) (AUC May/June 2013,May/June 2012)
5. Draw the symbol and truth table for NOT gate, NAND gate, OR gate, Not gate and EX-OR gate? (16) (AUC Nov/Dec 2012)
6. With the help of neat circuit diagram explain the function of a Ripple counter? (AUC Nov/Dec 2011)
7. With the logic diagram, explain the working of Ring counter.Also draw the timing diagrams? (AUC April/May 2011)
8. Reduce the following function and implement using universal gates.
   F = A'B'C' + A'B'C + A'BC + A'BC' + AB'C + ABC (AUC April/May 2011)
9. Design a four bit binary parallel counter. Support your answer with circuit diagram and truth table. (AUC April/May 2010)

UNIT – IV: 8085 MICROPROCESSOR

PART - A (2 Marks)

1. Define micro computer (AUC May/June 2014)
2. List various arithmetic operations used in 8085 (AUC May/June 2014)
3. Give the instruction formats for 8085 microprocessor? (AUC May/June 2013, Nov/Dec 2012)
4. What are the steps involved in programming? (AUC May/June 2013)
5. Write the function of 32nd pin of 8085 microprocessor? (AUC Nov/Dec 2012)
6. List the various instruction types in 8085. (AUC May/June 2012)
7. What are the various addressing modes in 8085? (AUC May/June 2012, Nov/Dec 2011)
8. What do you mean by ALU? (AUC Nov/Dec 2011)
9. Name the address partitioning technique used in 8085? (AUC April/May 2011)
10. List the interrupts and their call locations? (AUC April/May 2010)
11. Specify the output at port 1 if the following ALP is executed

```
MVI B,88H
MOV A,B
MOV C,A
MVI D,73H
OUT PORT 1
HLT
```

PART –B (16 Marks)

1. Sketch the architecture of 8085 and explain the modules in detail? (AUC May/June 2012)
2. With examples, explain the data transfer instructions and arithmetic instructions of 8085. (AUC May/June 2012, Nov/Dec 2011)

3. With a neat sketch explain the architecture of the microprocessor 8085(AUC Nov/Dec 2011)
4. 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. 22H, A5H, B2H, 99H, 7FH, 37H (AUC April/May 2011)
5. Explain the interrupt structure of 8085 CPU with the required diagrams? (AUC April/May 2011)
6. What are the addressing modes supported in 8085 CPU? Explain each of them with minimum of 2 sample instructions. (AUC April/May 2010)
7. Explain the architecture of 8085 with the required diagrams. Also write the salient features of the same? (AUC April/May 2010).

UNIT – V: INTERFACING AND APPLICATIONS OF MICROPROCESSOR

PART - A (2 Marks)

1. What is the basic interfacing concepts? (AUC May/June 2014)
2. What is the need for an interfacing? (AUC May/June 2014,May/June 2012)
3. What is meant by I/O data transfer? (AUC May/June 2013)
4. What is the use of ALE signal? (AUC May/June 2013)
5. State the merit of interfacing? (AUC Nov/Dec 2012)
6. What are the important parts of 8255 functional block diagram? (AUC Nov/Dec 2012)
7. List out some applications of the microprocessors? (AUC May/june 2012,Nov/Dec 2011)
8. Define the term step angle with reference to a stepper motor? (AUC Nov/Dec 2011)
9. What is the role of tri state buffer in interfacing of peripherals with CPU? (AUC April/May 2011)
10. Write the use of ALE signal in 8085? (AUC April/May 2011)
11. Define interfacing devices. (AUC April/May 2010)
12. What is transceiver? (AUC April/May 2010)

PART –B (16 Marks)

1. Draw and explain the block diagram and operation of temperature controlling system with a microprocessor? (AUC May/June 2012, Nov/Dec 2012)
2. Draw and explain the block diagram and operation of Traffic light controller with a microprocessor? (AUC May/June 2012, May/June 2014)
3. Write short notes on keyboard interfacing? (AUC Nov/Dec 2011)
4. Explain the operation of microprocessor based traffic light controller ? (AUC Nov/Dec 2011)
5. With block diagram explain interfacing of input devices? (16) (AUC May/June 2014)
6. Draw and explain in detail about stepper motor interface? (16) (AUC May/June 2013, Nov/Dec 2012)
7. Explain in detail about the input and output interfacing techniques of 8085 microprocessor? (16) (May/june 2013)