

B.E. DEGREE EXAMINATIONS: NOVEMBER 2009

Fourth Semester

MECHANICAL ENGINEERING

U07EC407: Electronics and Microprocessors

Time: Three Hours**Maximum Marks: 100****Answer ALL the Questions:-****PART A (10 x 1 = 10 Marks)**

1. The important application of Zener diode is
 - a) Amplifier
 - b) Attenuator
 - c) Regulator
 - d) Converter.
2. The majority and minority carrier in P-type semiconductor is
 - a) Electrons, holes
 - b) holes, electrons
 - c) holes, hole
 - d) none of these.
3. If $I_B = 50\mu\text{A}$ and $\beta = 120$. The collector current I_c is
 - a) 5mA
 - b) 6 μA
 - c) 6mA
 - d) 5 μA
4. FET is
 - a) Current controlled device
 - b) Voltage controlled device
 - c) Power controlled device
 - d) Energy controlled device.
5. Flip-Flops are controlled by
 - a) Enable signal
 - b) Clock signal
 - c) Control signal
 - d) Input signal.
6. The universal gates are
 - a) NAND and AND 0
 - b) OR and NOR
 - c) AND and OR
 - d) NAND and NOR.
7. Identify the correct register pair in 8085
 - a) A-B pair
 - b) C-D pair
 - c) C-E pair
 - d) B-C pair.
8. Identify the branch instruction group in 8085
 - a) HLT
 - b) CALL
 - c) PUSH
 - d) CMP.
9. Which mode is considered for Square wave generator operations using in 8253
 - a) Mode 0
 - b) Mode 1
 - c) Mode 4
 - d) Mode 3.
10. The 8279 is a _____
 - a) Asynchronous serial interface
 - b) Programmable keyboard/display interface
 - c) DMA controller
 - d) USART

PART B (10 x 2 = 20 Marks)

11. Distinguish between Avalanche and Zener breakdown.
12. Define drift current and diffusion current.
13. What is the reason for CE mode widely used transistor configuration?
14. What are the advantages of negative feed back?

15. Compare Combination and Sequential circuits.
16. Reduce the following Boolean expression $Y=AB+AC+ABC$
17. What is mean by Polling?
18. What are the types of interrupts in 8085?
19. What are basic concepts in memory interfacing?
20. What is the purpose of I/O instruction IN and OUT?

PART C (5 x 14 = 70 Marks)

21. a) i) Discuss the temperature effect on PN junction diode operation. [10]
- ii) Explain the characteristics of Zener diode. [4]

[OR]

- b) i) Explain how the electrons and holes are generated in intrinsic semiconductor. How do they move? [7]
- ii) Explain full wave rectifiers. [7]

22. a) i) What TRIAC? Sketch the characteristics and describe its operation? [7]
- ii) Explain CB configuration of a transistor and give its input and output characteristics. [7]

[OR]

- b) i) Draw the VI characteristics of SCR and explain its operation. [7]
- ii) With the help of equivalent circuit and emitter characteristics, explain the operation of UJT. [7]

23. a) i) Design full adder circuit. [7]
- ii) Design mod 10 synchronous counter. [7]

[OR]

- b) i) Explain PISO and SIPO shift registers. [7]
- ii) Explain any two types of Analog to Digital converter. [7]

24. a) Explain the detailed architecture of 8085 microprocessor.

[OR]

- b) i) Explain different types of addressing modes. [8]
- ii) Write a program to implement 16 bit addition using 8085 microprocessor. [6]

25. a) Write short notes on DMA controller. Explain functional block diagram of Keyboard and display controller.

[OR]

- b) Explain traffic light controller. Write a program using 8085 microprocessor.
