Register Number: ……………………..

B.E DEGREE EXAMINATIONS: JUNE/JULY 2013

Fifth Semester

MECHANICAL ENGINEERING

ECE281: Electronics and Microprocessors

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions

PART A (10 x 1 = 10 Marks)

1. Doping the process of addition of impurities to pure semi-conductor improves

   a) Resistance   b) Capacitance

   c) Conductance   d) Barrier Potential

2. Input to a half-wave rectifier is a sine wave of frequency f, Hz. The frequency of the output waveform is

   a) f   b) 2f

   c) 4f   d) 0.5f

3. The maximum theoretical efficiency of class B amplifier is

   a) 50.5   b) 78.5

   c) 90   d) 98.5

4. CMRR is

   a) Current Mode Ripple ratio   b) Current Mode Rejection Ratio

   c) Common Mode Rejection Ratio   d) Common Mode Ripple Ratio

5. One of the following is a universal gate -

   a) NOT   b) Ex-OR

   c) Ex-NOR   d) NAND

6. The resolution of a 8-bit ADC is

   a) $1/8^{th}$ LSB   b) $1/2^8$ MSB

   c) Equal to LSB   d) Equal to MSB

7. The number of multiplexed address bus in 8085 is

   a) 16   b) 8

   c) 24   d) 10

8. The action of the instruction MOV A, M is

   a) A ← M   b) A ←(H)(L)

   c) A ←((H)(L))   d) (H)(L) ← A

9. DMA transfers in 8085 CPU is controlled by one of the following pair of control lines -

a) INTR/INTA   b) HOLD/HLDA

c) IO/M   d) RD/WR

10. The peripheral used for parallel I/O is

a) 8251   b) 8259

c) 8255   d) 8253

PART B (10 x 2 = 20 Marks)

11. Compare intrinsic and extrinsic semi-conductors.

12. What are the drawbacks of the full wave rectifier that uses two diodes?

13. What is the type of biasing required at the input and output for a BJT amplifier in CE configuration?

14. What are the main characteristics of UJT? Give an application of UJT.

15. State DeMorgan's laws.

16. Draw the truth table of a half-adder.

17. What is an addressing mode? Give an example.

18. What is stack? What is the size of stack pointer in 8085CPU?

19. What is programmed I/O?

20. List two devices that use stepper motor.

PART C (5 x 14 = 70 Marks)

21. a) i)   What is meant by forward bias of a diode? Explain with respect to majority and minority carrier flow. (7)

    ii) Draw and explain reverse bias characteristics of Zener diode. (7)

(OR)

    b) i)   Using schematic diagram and waveforms, explain the working of a full wave rectifier. (10)

    ii) Compare half wave and full wave rectifiers in terms of construction and performance. (4)

22. a) i)   What are the different configurations of BJT? Describe the input characteristics of **any one** of the configurations with neat schematics. (10)

    ii) Compare BJT and FET. (4)

(OR)

    b) i)   Describe the construction of SCR with a neat sketch. Also, draw the forward characteristics and identify important voltage and current points. (7)

	ii)	Explain the working of Op-amp based summing amplifier. Also, derive an expression for the output.	(7)

23. a) i) Using Truth-Table and Boolean Laws, construct a full adder and obtain expressions for outputs.

(OR)

   b) i) Draw the Truth-Table for a NAND gate based flip-flop. Explain the working of the same. (4)

     ii) Draw and explain the working of a 3-bit binary ripple counter using timing diagrams. (10)

24. a) i) Discuss the classification of instruction in 8085. Give an example of each. (10)

     ii) List the special purpose registers in 8085 with their word length. (4)

(OR)

   b) i) What are addressing modes that are supported by 8085 CPU? Give an example of each. (10)

     ii) List the general purpose registers in 8085. Also, explain how they could be combined. (4)

25. a) i) Using a neat diagram and flow chart, describe an algorithm for implementing Temperature controller interface with 8085 CPU.

(OR)

   b) i) How a stepper motor could be interfaced to 8085 CPU? Explain with a neat circuit diagram and flow chart and algorithm.

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