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SARDAR PATEL UNIVERSITY

S.Y.B.Sc. Electronics Examination III Semester

Friday

Date 11-11-2011

Session : Morning

Time : 10:30 to 1:30

Sub./Course Code : USO3CELE01

Subject / Course Title : Electronic Devices

Total Marks (70)

Q.1 Each question gives a multiple choice at of answers, choose the most appropriate one. (10)

- 1) Pure Semiconductor material is known as...
 (a) Intrinsic (b) Extrinsic (c) Resistive (d) Capacitive
- 2) Doped Semiconductor material is known as...
 (a) Intrinsic (b) Extrinsic (c) Resistive (d) Capacitive
- 3) Unit of Resistance is
 (a) Ohm (b) Henry (c) Faraday (d) Resistance
- 4) Metal Film resistor is made from...
 (a) Nickel (b) Carbon (c) Silver (d) Germanium
- 5) Unit of Capacitance is...
 (a) Ohm (b) Henry (c) Faraday (d) ROM
- 6) Capacitor is made of a two parallel plate separated by a...
 (a) Dielectric Medium (b) Photo Electric (c) Electric (d) Thermo Electric
- 7) The other name of tunnel Diode is;-----
 (a) Easaki diode (b) led (c) Varactor -diode (d) Zener- diode.
- 8) Full-wave rectifier converts
 a) ac to ac (b) dc to dc (c) ac to dc (d) dc to ac
- 9) Thermistor has temperature Coefficient.
 a) positive (b) negative (c) neutral (d) zero
- 10) Schottky - diode is a
 a) PN diode (b) metal - metal diode
 c) metal -semiconductor-*diode* (d) metal - insulator diode

Q.2 Answer any Six short questions of following (each question carries 2 marks) (12)

- 1) Write a note on P-Type Semiconductor.
- 2) Write a note on N-Type Semiconductor.
- 3) List different types of fixed inductor coil and explain any one.
- 4) Explain variable inductor.

- 5) Write a note on variable resistor.
- 6) Write a note on variable capacitor.
- 7) Explain in brief Amplitude-Demodulation.
- 8) Write a note on PN-Junction diode.
- Q.3 Derive an expression for step response of an RL Circuit. (8)
OR
- Q.3 Derive an expression for step response of an RC Circuit. (8)
- Q.4 List different types of fixed resistor and explain any 2 in detail. (8)
OR
- Q.4 List different types of fixed capacitor and explain any 2 in detail. (8)
- Q.5 Explain in detail Forward Biased PN Junction Diode (8)
OR
- Q.5 Explain in detailed Reverse Biased PN Junction Diode (8)
- Q.6 a) Explain Amplitude - modulation drawing wave form. (3)
b) Derrive expression for modulation index for modulated carrier wave. (5)
OR
- Q.6 a) Draw a neat circuit of full wave rectifier and explain it's working in detail. (4)
b) Explain square law diode modulation in detail. (4)
- Q.7 Give an account of voltage variable capacitor diode. (8)
OR
- Q.7 a) Explain working of forward bias Tunnel diode. (4)
b) Explain working of Reverse bias Tunnel diode. (4)
- Q.8 a) Draw equivalent circuit of UJT and Explain its characteristics. (4)
b) Explain UJT relaxation Oscillator. (4)
OR
- Q.8 a) Explain construction of charge coupled device. (4)
b) Explain input or output arrangement of charge coupled device. (4)

SARDAR PATEL UNIVERSITY
S. Y. B.Sc. Examination, III Semester
Monday Date: 14/11/2011
Session: Morning Time: 10:30 to 1:30

Course Code:

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Subject Title: Instrumentation and Digital Electronics

Total Marks: 70

Q-1 Multiple Choice questions:

10

1. Demorgan's theorem is break the line.
 - 1) Change the number
 - ✓ 2) Change the sign
 - 3) None of above
2. Sensitivity is the ratio of out signal or response of the instrument to a change of
 - ✓ 1) Input signal
 - 2) Output signal
 - 3) Intermediate signal
3. Error is defined as deviation from
 - 1) True value of measured variable
 - ✓ 2) Average value of measured variable
 - 3) Absolute value of measured variable
4. The format for data in Hamming code is
 - 1) $D_7D_6D_5D_4P_3P_2P_1$
 - ✓ 2) $D_7D_6D_5P_4D_3P_2P_1$
 - 3) $D_7D_6D_5P_4P_3D_2P_1$
5. In positive logic
 - ✓ 1) 0V is low state and 5V is high state
 - 2) 0V is high state and 5V is low state
 - 3) None of above
6. The fluorescence effect produced by P_{11} Material is
 - 1) Yellow green
 - 2) White
 - 3) Blue
7. The delay time for delayline of CRO is
 - 1) 500 ns
 - 2) 200 ns
 - 3) 300 ns
8. In 8421 code ,illegal code is
 - 1) = 1001

2) > 1001

3) < 1001

9. The expression for -20 in 2's complement system is

1) 1111 1100

2) 1110 1100

✓ 3) 1011 1100

10. The negative value represented by 1001 1011 is

1) -100

2) -101

3) -110

Q-2 Answer any six questions in brief.

12

1. Define accuracy and precision.

2. What is the function of Delay line? List the types of delay line.

✓ 3. Convert binary 1011110 to Gray code and

Gray Code 1110101 to Binary.

✓ 4. Multiply 2AB5 by AA

✓ 5. Add 3 and 5 in XS3 code.

6. What are universal building blocks? Why they are named so?

7. Construct AND, OR and NOT gate using NAND gate.

8. State utilities of Demorgan's Theorem.

Q-3 A. Give short note on Systematic error.

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B. Ten measurements of the resistance of a resistor gave 101.2Ω , 101.7Ω , 101.3Ω , 101.0Ω , 101.5Ω , 101.3Ω , 101.2Ω , 101.4Ω , 101.3Ω and 101.1Ω . Assume that the random error are present. Calculate

a. The arithmetic mean,

b. The standard deviation of the readings,

c. The probable error

OR

Q-3 A. What is error? Describe any one type of error in detail.

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✓ B. The following value were obtained from the measurement of the value of resistor: 4

147.2Ω , 147.4Ω , 147.9Ω , 148.1Ω , 147.1Ω , 147.5Ω , 147.6Ω , 147.4Ω

, 147.6Ω and 147.5Ω . Calculate

a. The arithmetic mean,

b. The average deviation

c. the standard deviation

d. Probable error of the average of the ten readings.

Q-4. Prove that path of electron is parabola in CRO.

8

Or

②

- Q-4 Draw block diagram of CRO and explain its basic operation. 5
- Q-5 A. Multiply 1100 by 1001 using computer method 5
 B. Add -17 to -30 using 2's compliment. 3
- Or
- Q-5 A. Convert 72905_{10} to Hexadecimal and Convert $EB4A_{16}$ to decimal. 3
 B. Divide 101011 by 110 using computer method. 5
- Q-6 A. Encode 1011 and 1110 into seven bit even parity Hamming code and
 Detect and correct binary words into seven bit even parity Hamming code
 (1) 1011011 (2) 1010011 4
 B. Add 9468 to 7586 using BCD (8421) code. 4
- Or
- Q-6 A. Define Sequential and Reflective codes with examples. 4
 B. Add 6954 to 8327 using BCD (8421) code. 4
- Q-7 A. Draw circuit diagram of transistorized AND gate and explain working
 for any two input conditions. 5
 B. Draw circuit diagram of NAND gate. 3
- Or
- Q-7 A. Draw circuit diagram of transistorized OR gate and explain working
 for any two input conditions. 5
 B. Draw circuit diagram of NOR gate. 3
- Q-8 A. Reduce the Boolean Expression using Boolean Laws 3
 $\overline{AB} + ABC + A(B + \overline{AB})$
- B. Find SOP and POS minimization for $F = \sum m(0, 4, 10, 11, 14, 15)$ and find
 out which is cheap. 5
- Or
- Q-8 A. Reduce the Boolean Expression using Boolean Laws $\overline{ABC} + A\overline{B} + BC$ 3
 B. Minimize using SOP method and implement into NAND logic. 5
 $F = \sum m(2, 4, 8, 9, 11, 12, 13)$

$$x = x = x$$

(3)

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Sardar Patel University
S.Y. B. Sc. Semester - III
US03EELE 01 – Fundamentals Of Computer Hardware

Date:16-11-2011

Time 10.30 TO 12.30pm

Total Marks: 70

- Q.1 Give the answer for following [10]
1. Computer language converted into Human language by _____.
 (a) Control Unit (b) CPU (c) Output interface (d) ALU
 2. Execution of the instruction takes place in _____.
 (a) Input unit (b) Output unit (c) ALU (d) Storage unit
 3. _____ is example of magnetic storage device.
 (a) DVD Rom (b) Flash memory (c) CD - Memory (d) Hard disk
 4. Diskettes spin at about _____ RPM.
 (a) 300 (b) 3 (c) 30 (d) 3000
 5. The process of mapping a magnetic disk surface is called _____.
 (a) Scanning (b) Formatting (c) Accessing (d) Charging
 6. Intelligent smart card contains their own _____.
 (a) Microprocessor (b) Flash (c) Head (d) head
 7. _____ is not modifier key.
 (a) Shift (b) Ctrl (c) Backspace (d) ALT
 8. Racing game controller is a variation of _____.
 (a) Mouse (b) Joystick (c) Game pad (d) Trackball
 9. 640 X 480 pixels is the specification of _____.
 (a) Resolution (b) Size (c) Refresh rate (d) Dot pitch
 10. Back of the CRT monitor screen is coated with _____.
 (a) Electrons (b) Neon's (c) Phosphors (d) Non

- Q.2 Write short answer of any ten [20]
1. Define RAM & ROM
 2. State five basic operations performed by any computer system.
 3. Define Sequential and random access devices.
 4. Define sequential and random access devices. Give example of each storage device,
 5. Explain flash memory.

6. Explain smart card.
7. Explain mechanical mouse.
8. Write a note on digital camera.
9. Write a note on digital barcode reader.
10. Explain monitor,
11. Write short note on Dye sublimation printer.
12. Explain thermal wax printer.

Q.3 Draw the block diagram and explain function of various units of basic organization of computer system. 10

OR

Q.3 Name computers that are designed for organization. Explain any three in brief. 10

Q.4 [a] In brief explain diskettes. 5

[b] Write notes on DVD –ROM. 5

OR

Q.4 [a] State advantages of magnetic tape. 6

[b] Define seek time and latency time for disk storage, 4

Q.5 What is mouse? Explain it in brief. 10

OR

Q.5 [a] Name input devices for hand and explain each in detail. 06

[b] State characteristics of keyboard. 04

Q.6 [a] Write a note on Laser printer. 04

[b] State printer's criteria and explain each. 06

OR

Q.6 In brief explain CRT monitors. 10

X=X=X

(2)