

M.B.Patel Science College
C.E.Society, Anand
Internal Test
Electronics Devices
Course Code : USO3CELE01
S.Y.B.Sc (Electronics)

Total Marks [60]
Time : 2:00 pm to 5:00 pm

Date : 21/09/2011
Wednesday

Q1 Multiples Choice Questions (Attempt any Twelve out of Fifteen) [12]

- 1) The relative sizes of all fixed resistors change with the _____ rating .
(a) Voltage (b) Current (c) Wattage
- 2) A capacitor consist of two conducting plates separated by an insulating material called _____
(a) wood (b) rubber (c) dielectric
- 3) The most common variable capacitor is the _____ capacitor
(a) electrolytic (b) mica (c) air gap
- 4) The barrier potential assists the flow of _____ carrier across the junction.
(a) majority (b) minority (c) positively charge
- 5) The width of the depletion region is dependent on the _____ density.
(a) current (b) doping (c) voltage
- 6) The voltage clampers are used in _____ circuits.
(a) television (b) radio (c) stabilizer
- 7) The _____ circuit converts alternating quantity to unidirectional quantity
(a) rectifier (b) inverter (c) clamper
- 8) The process of recovering the _____ wave from the carrier is called detection .
(a) modulating (b) sinusoidal (c) high frequency
- 9) Diagonal clipping occurs when the time constant RC is excessively _____
(a) small (b) large (c) wide
- 10) The voltage variable capacitor diodes are used as tuning _____ to adjust the frequency of the resonance circuits.
(a) capacitors (b) resistors (c) transistors
- 11) Thermistors are widely used for _____ compensation.
(a) temperature (b) voltage (c) resistance
- 12) A tunnel diode is a two terminal _____ resistance device.
(a) negative (b) positive (c) variable
- 13) In a charge coupled device all the metal electrodes are maintained at the same fixed _____ voltage.
(a) positive (b) negative (c) zero
- 14) In a schottky diode the doping density is very _____ at the metal contact and diminishes towards the semiconductor .
(a) light (b) heavy (c) narrow
- 15) The uni junction transistor is also known as double base _____
(a) diode (b) transistor (c) resistor

Q2 Attempt any Six out of Ten

[12]

- 1) What is a Capacitor ? States the uses of Capacitors.
- 2) Write a note on system of colour coding used in resistors.
- 3) Write a short note on reverse bias PN junction.
- 4) Draw the circuit of a voltage doubler and briefly explain its working.
- 5) What is Modulation ? What is application of modulation ?
- 6) Draw the frequency spectrum of an amplitude modulated voltage and briefly explain it
- 7) What is a thermistor ? What is the use of thermistor ?
- 8) Draw the energy band diagram of unbiased tunnel diode.
- 9) What is a charge coupled device ?
- 10) What is Uni junction transistor ?

Attempt any Four out of Five

[36]

- Q3 (a) What is a resistor ? Discuss in detail the fixed resistors. [05]
(b) Discuss in detail the variable resistors . [04]

OR

- Q3 (a) What is a Capacitor ? What are the uses of Capacitors ? Discuss in detail the mica and ceramic capacitors. [05]
(b) Discuss in detail the electrolytic capacitors. [04]

- Q4 (a) Discuss in detail the reverse biased PN junction. [05]
(b) Discuss in detail the forward biased PN junction. [04]

OR

- Q4 (a) Draw the circuit of a voltage doubler and explain its working giving necessary waveforms. [05]
(b) Draw the circuit of diode clamper and explain its working giving necessary waveforms. [04]

- Q5 (a) Write a note on peak rectifier . [04]
(b) Draw the circuit of a Full wave rectifier .With the help of necessary figure explain capacitor filtering of full wave rectifier [05]

Or

- Q5 (a) Discuss in detail the amplitude modulated amplifiers using base Injection and collector injection. [04]
(b) Discuss in detail the amplitude demodulation using diode. [05]

- Q6 (a) Discuss in detail the voltage variable capacitor diode. [05]
(b) Discuss in detail the Thermistor. [04]

OR

- Q6 (a) Explain the reverse biased tunnel diode. [04]
(b) Explain the forward biased tunnel diode. [05]

- Q7 (a) With the help of necessary diagram explain the construction of
A charge coupled device (CCD). [04]
(b) With the help of necessary diagrams explain the transfer of
Charge in a CCD. [05]

OR

- Q7 (a) With the help of necessary diagram explain the storage
of charge in a CCD. [04]
(b) Write a note on
(i) Input and Output arrangement of a CCD. [03]
(ii) Schottky diode [02]

-----Best of Luck-----

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M.B.Patel Science College
C.E.Society, Anand
Internal Test
Instrumentation & Digital Electronics
Course Code : USO3CELE02

Date : 22/09/2011
Thursday

[S.Y.B.Sc]
[Electronics]

Total Marks [60]
Time : 2:00 pm to 5:00 pm

Q1 Multiple Choice Questions (Attempt any Twelve out of Fifteen) [12]

- 1) Radix (base) for hexadecimal number system is _____
(a) 8 (b) 10 (c) 16
- 2) 1's complement of 0101 is _____
(a) 1010 (b) 0001 (c) 0101
- 3) The equivalent binary number for 4 is _____
(a) 0100 (b) 1000 (c) 0001
- 4) Non Weighted binary codes are _____
(a) 8424 & 2421 (b) 5211 & BCD Codes (c) XS3 & Gray Codes
- 5) The Full Form of BCD is _____
(a) Bit coded decimal (b) Byte coded decimal (c) Binary coded decimal
- 6) The Sequential codes are _____
(a) 8421 (b) XS3 (c) Both a & b
- 7) Boolean Algebra is _____
(a) Binary logic (b) Binary Algebra (c) Mathematical Logic
- 8) Logic operator for AND gate is _____
(a) \cdot (b) + (c) *
- 9) Universal building blocks are _____
(a) AND (b) NOT (c) NAND & NOR
- 10) $A+BC =$ _____
(a) $(A+B)(A+C)$ (b) $(A+B)$ (c) $(A+C)$
- 11) The deviation from the true value of the measured variable is _____
(a) Accuracy (b) Precision (c) Error
- 12) The ratio of the output signal or response of the instrument to a change of input or measured variable is _____
(a) Resolution (b) Precision (c) Sensitivity
- 13) De Morgan's theorem states that _____
(a) Break the sign and change the line
(b) Complements the Variables
(c) Break the line change the sign
- 14) Add 110_2 and 101_2 _____
(a) 1100 (b) 1011 (c) 0001
- 15) Subtract 1 from 100 _____
(a) 010 (b) 011 (c) 101

Q2 [Attempt any Six out of Ten] [12]

- 1) Name four positional weighted number systems.
- 2) What are the three methods of obtaining the 2's complement of a given binary Numbers?

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[P.T.O]

- 3) What do you mean by sequential code ? Name two sequential codes.
- 4) How BCD addition is performed ?
- 5) What is positive logic system and negative logic system ?
- 6) What is NOT Gates ?
- 7) How do you De Morganize a Boolean expression ?
- 8) Which gates are Universal gates ?
- 9) Define Accuracy and Precision
- 10) List three sources of possible errors in instruments?

[Attempt any four out of Five]

- Q3 (a) Convert $2AB_{16}$ to Decimal [02]
 (b) Add 11.11_2 to 10.11_2 [01]
 (c) Add $2ABC_{16}$ with $3ACD_{16}$ [02]
 (d) Convert 21.6_{10} to Binary [02]
 (e) Convert 247_8 to Binary [02]
- OR
- Q3 (a) Multiply 1101_2 by 1100_2 using computer method [04]
 (b) Divide 43_{10} by 6_{10} using computer method [05]
- Q4 (a) Explain weighted and non weighted binary codes. [07]
 (b) Add 5 and 2 in XS3 form. [02]
- OR
- Q4 (a) Explain Binary to Gray and Gray to Binary conversion methods [06]
 (b) Subtract 175 from 267 in XS3 code. [03]
- Q5 (a) Explain two inputs AND gate using transistors and resistors. [05]
 (b) Explain NOT gate using transistor. [04]
- OR
- Q5 (a) Explain two inputs NOR gate using discrete components [05]
 (b) Explain two inputs OR gates using diode. [04]
- Q6 (a) List the Boolean Laws. [05]
 (b) Reduce the expression $AB + \overline{AC} + \overline{ABC}(AB+C)$ [04]
- OR
- Q6 (a) Find the SOP and POS form of
 $Y = \sum m(0,1,2,3,10,11,12,13,14,15)$ [05]
 (b) Map the expression
 $F = \overline{ABC} + \overline{ABC} + \overline{ABC} + \overline{ABC} + \overline{ABC}$ [02]
 (c) Map the expression
 $F = (A+B+C)(\overline{A}+\overline{B}+\overline{C})(\overline{A}+\overline{B}+\overline{C})(A+\overline{B}+\overline{C})$ [02]
- Q7 Explain types of errors in detail [09]
 OR
- Q7 Ten measurements of the resistance of a resistor gave 101.2 ohm, [09]
 101.7 ohm, 101.3 ohm, 101.0 ohm, 101.5 ohm, 101.3 ohm, 101.2 ohm
 101.4ohm , 101.3 ohm and 101.1 ohm. Assume that only random
 errors are present. Calculate Arithmetic mean, Standard Deviation of the
 reading and Probable Error

* -----Best of Luck -----*

M.B.Patel Science College
C.E.Society, Anand
Internal Test
Fundamentals of Computer Hardware
Course Code : US03 EELE01

S.Y.B.Sc

Total Marks [60]

Date : 24/09/2011

Time : 2:00 pm to 5:00 pm

Saturday

Q1 Multiple Choice Questions (Attempt any Twelve out of Sixteen) [12]

- 1) Which type of computer will you most likely encounter at the department of motor vehicles.
(a) Smart phone (b) Main frame (c) Super computer
- 2) These are often used for taking notes but not for entering large amount of text.
(a) Touch screen (b) Pen based computer (c) Optical scanners
- 3) _____ unit act as central nervous system of computer.
(a) Control unit (b) Arithmetic and logic unit (c) Storage unit
- 4) The register which holds the address of the next instruction to be executed is known as _____
(a) Memory Buffer Register (b) Program control register
(c) memory address register
- 5) _____ computer is also called stylus or digital pen.
(a) Desktop Computer (b) Notebook Computer (c) Tablet Computer
- 6) Which one is the sequential access secondary storage devices
(a) Magnetic tape (b) Magnetic disk (c) Magnetic drum
- 7) The magnetic disk rotates at the speed of _____ revolutions per minutes.
(a) 2300 rpm (b) 2400 rpm (c) 2200 rpm
- 8) Which type of disk can store upto 17 gigabyte of data.
(a) Compact disc (b) Optical disc (c) Digital Video disc
- 9) Network servers are sometimes setup in groups that may be called _____ or server farms.
(a) Units (b) Workgroups (c) Clusters
- 10) The process of converting analog sound into code a computer can use is called _____
(a) Sound recognition (b) Scanning (c) Digitizing
- 11) When you press a key this device notifies the system software.
(a) Key board (b) Key board buffer (c) Key board controller
- 12) _____ is used to identify a product and provide information about it, such as its price.
(a) Price check (b) Bar code (c) light sensitive detector
- 13) The back of the a CRT monitor's screen is coated with these _____
(a) Phosphors (b) electrons (c) elements
- 14) An LCD monitor uses crystals that become opaque when _____ is applied.
(a) pressure (b) force (c) electricity
- 15) A laser printer works like this device .
(a) Scanner (b) dot matrix printer (c) photocopier
- 16) Which printer's speed is not measured in pages per minute ?
(a) ink jet (b) dot matrix (c) laser

Q2 Attempt any Six out of Twelve

[12]

- 1) List six types of computers that are designed for use by single person.
- 2) Why are main frame system usually limited in the number of tasks they perform.
- 3) Differentiate between RAM and ROM.
- 4) Explain, how information is recorded on a magnetic tape.
- 5) What factor determine the storage capacity of disks?
- 6) Describe the function of land and pits on the surface of compact disc.
- 7) Describe the two benefit of using a mouse.
- 8) What dose the image scanner do ?
- 9) What two capabilities does speech recognition software give you ?
- ✓10) What are the two disadvantage of LCD monitors, compared to CRT monitors ?
- ✓11) What is Dot Pitch ?
- ✓12) Describe some specific advantage of some new photo printers.

Attempt any Three out of Four

[36]

Q3 (a) Draw the block diagram of basic computer system and explain the function of different block. [08]

(b) Write a note on Cache memory. [04]

OR

Q3 (a) Discuss in detail different types of computer for individual user. [08]

(b) Write a note on fixed and variable word length of primary storage unit. [04]

Q4 (a) Distinguish between a sequential access and direct access secondary Storage device and give example of each. [04]

(b) Write a advantage and limitation of magnetic tape. [04]

(c) Why is the Hard disk called a random access storage devices. [04]

OR

Q4 (a) Name two types of solid state storage devices and explain it. [07]

(b) Write a short note on Recordable optical technologies. [05]

Q5 (a) What happen when you press a key on the computer key board ? [04]

(b) In what way can you use the pen in a pen based computing system. [04]

(c) Explain how bar code reader reads a bar code and what it does with the Information from a bar code. [04]

OR

Q5 (a) How does OCR software translate scanned text into text that you can edit. [04]

(b) What can you do with video capture card. [04]

(c) How do most touch screen system work ? [04]

Q6 (a) How does color CRT monitor produce images on the screen ? [05]

(b) What four factor should you consider when evaluating printers ? Explain them. [07]

OR

Q6 (a) How does laser printer create an image on paper ? [04]

(b) List the four factors you should consider when comparing monitors. [04]

(c) How does a dot matrix printer create an image on paper [04]

----- All The Best -----