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BEE-042

DIPLOMA IN ELECTRICAL AND MECHANICAL ENGINEERING

Term-End Examination

June, 2013 01392

BEE - 042 : ELECTRONICS

Time : 2 hours *Maximum Marks : 70*

Note : *(i) Question No. 1 is **compulsory**.*

*(ii) Attempt **any four** questions of the remaining questions numbered **2 to 8**.*

*(iii) Use of calculater is **permitted**.*

*(iv) Each question carries **equal** marks.*

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1. (a) State True or false for the given statements : 7x1=7

(i) Peak inverse voltage of half wave rectifier is given by 2Vm.

(ii) Output impedance of emitter follower is very high.

(iii) The transistor acts as an switch in cut - off and saturation region.

(iv) Fan out of TTL logic is 40.

(v) Universal logic gates are NAND and NOR.

(vi) Bourdon tube is a device which used to measure the specific gravity.

(vii) Television has 626 scanning lines.

(b) Select the correct answer from the given four alternatives : **7x1=7**

(i) Transformer utilization factor of full wave rectifier is _____.

(A) 0.287

(B) 0.693

(C) 0.21

(D) 0.89

(ii) The outermost electrons of an atom are called _____ electrons.

(A) valence

(B) conduction

(C) free

(D) bound

(iii) BJT acts as an amplifier in _____ region.

(A) active region

(B) saturation region

(C) cutoff region

(D) none of these

(iv) MSI means _____ .

(A) less than 12 basic gates per chip

(B) 100 - 999

(C) 12 - 100 gates per chip

(D) 1000-9999 gates per chip

(v) CRT is also know as :

(A) willium tube

(B) electron tube

(C) crookes tube

(D) none of the above

(vi) To obtain Lissajous figure two sinusoidal voltages of equal frequency are applied :

(A) horizontal and vertical

(B) vertical

(C) horizontal

(D) none of the above

(vii) AND gate gives output 'high' when :

(A) both input low

(B) both input high

(C) one input low and one input high

(D) none of the above

2. (a) An ac supply of 230 volt is applied to the primary of a transformer. The transfarmer has turn ratio of 10 : 1. neglect the diode resistance and transformer resistance. Calculate : 7

(i) V_{dc}

(ii) PIV in a bridge rectifier

(b) Explain V-I characteristics of zener diode and how zener diode can be used as voltage regulator. 7

3. (a) Compare CB, CE, and CC configurations of BJT. 7

(b) Explain the functioning of a transistor as an amplifier with a circuit diagram. 7

4. (a) Explain the working of SCR and sketch typical SCR forward and reverse characteristic. 7

(b) What is scanning in TV ? How it is done ? 7

5. (a) Convert the following : 7

(i) $(111100)_2 = (?)_{10}$

(ii) $(19)_{10} = (?)_2$

(iii) $(B7A)_{16} = (?)_{10}$

(iv) $(2570)_{10} = (?)_{16}$

(v) $(317)_{10} = (?)_8$

(vi) $(28.30)_{10} = (?)_2$

(vii) $(3A)_{16} = (?)_8$

(b) Realize a full subtractor using two half subtractor and write the truth table. 7

6. (a) What is principle on which thermo couple works ? List their advantages and disadvantages. 7

(b) Draw the schematic diagram of LVDT and explain briefly its characteristics. 7

7. (a) With the help of neat sketch explain the working of CRO. What are the application of a CRO ? 7

(b) With the help of block diagram explain the construction and working of digital frequency meter. 7

8. Write short notes on ***any four*** of the following ? **4x3½=14**

(a) Doping in semiconductor

(b) Biasing of Transistor

(c) Universal gates

(d) UJT as a relaxation oscillater

(e) RVDT

(f) Advantage of bridge rectifier

(g) Generalised measuring system