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Total Number of Pages :2

B.TECH. DEGREE EXAMINATION-NOV-DEC.2018
End Semester Examination –I Semester
BESES1041-Basics of Electronics
(Regulations 2017, Common to CHEM, CIVIL, EE, EEE, MECH)
(Regulations 2018, Common to CSE and Mechanical Branches)

Time : 3 Hours

Maximum : 100 Marks

Question Code:61512

Answer ALL Questions

PART A - (10 X 2 = 20 Marks)

1. (a) The dc current through each diode in a bridge rectifier equals: [CO1][PO1]
a) the load current b) half the dc load current c) twice the dc load current
b) one-fourth the dc load current
- (b) A pn junction allows current flow when [CO1][PO1]
a) the p-type material is more positive than the n-type material
b) the n-type material is more positive than the p-type material
c) the n-type material is more positive than the p-type material
d) there is no potential on the n-type or p-type materials
- (c) A JFET is a.....driven device [CO2][PO1]
a) Current, b) Voltage, c) both current and voltage, d) none of these
- (d) Junction Field Effect Transistors (JFET) contain how many diodes? [CO2][PO1]
a) 4, b)3, c) 2 , d) 1
- (e) How will electrons flow through a p-channel JFET? [CO2][PO1]
a) from source to drain c) from source to gate
b) from drain to gate, d)from drain to source
- (f) The process of recovering information signal from received carrier is known as [CO3][PO1]
a) Modulation b)Sampling, c) Demodulation, d) Multiplexing
- (g) CRO is used for measurement of..... [CO3][PO1]
a) AC as well as DC current, b)AC current only, c) DC current only
d) AC power only
- (h) What is the role of CRT? [CO3][PO1]
a) to emit electrons b) to emit protons, c) to emit neutrons, d)to emit alpha particles
- (i) The decimal number 188 is equal to the binary number [CO4][PO2]
a) 10111100 b) 0111000 c) 1100011 d) 1111000
- (j) How many AND, OR and EXOR gates are required for the configuration of full adder [CO4][PO3]
a) 2, 1, 2 b) 1, 2, 2 c) 3, 1, 2 d) 4, 0, 1

PART B - (10 X 2 = 20 Marks)

2. (a) State and explain about zener diode ? [CO1][PO1]
- (b) what is the basic difference between p-type and n-type semiconductor? [CO1][PO1]
- (c) What is the basic difference between BJT and FET [CO2][PO1]
- (d) Draw the symbol of N -channel and P-channel Enhancement MOSFET. [CO2][PO3]
- (e) Define pinch off voltage? [CO2][PO1]
- (f) Explain with suitable diagram about the function of Signal generator ? [CO3][PO1]
- (g) Give two reasons of using modulation. [CO3][PO1]
- (h) State De Morgan's theorem. [CO4][PO2]
- (i) What is a combinational logic circuit and give two examples of it? [CO4][PO2]
- (j) Convert $\Sigma(1,3, 5, 6, 7)$ in to canonical POS. [CO4][PO2]

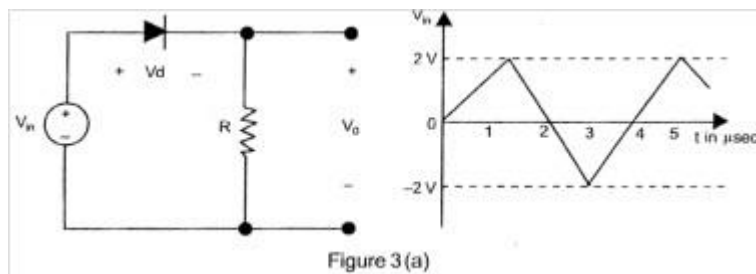


PART C - (4 X 15 = 60 Marks)

3. (a) (i) Write short notes on Diode clamper circuits. [5][CO1][PO1]
 (ii) What is a semiconductor diode and Explain with suitable diagram about biasing of p-n Junction? [10][CO1][PO2]

(or)

- (b) (i) A silicon diode having 20Ω internal resistance is used as half wave rectifier. If the applied input voltage is $50 \sin 1007\pi t$ and load resistance is 800Ω , then find [10][CO1][PO3]
 (a) I_m , I_{dc} and I_{rms} .
 (b) Output frequency and ripple factor. (c) AC input and output power and efficiency.
 (ii) Consider the half-wave rectifier circuit shown in Figure 3 (a) below. If V_{in} is a triangle wave with a peak voltage of 2 V, and the diode has $V_d = 0.5$ V, sketch V_o as a function of time on the plot of V_{in} shown in Figure 3 (a) below. Label the peak voltage of V_{out} . [5][CO1][PO2]



4. (a) (i) What is active, saturation and cut-off region of a transistor? Explain with necessary diagram. [5][CO2][PO1]
 (ii) Explain the comparison of CB, CC and CE transistor amplifiers. [10][CO2][PO2]
 (or)

- (b) (i) Explain the working of P-channel Enhancement MOSFET? [5][CO2][PO1]
 (ii) Draw the input and output V-I characteristics of CB, CE configuration? [10][CO2][PO2]

5. (a) (i) Explain the basic communication system with a neat block diagram. [5][CO3][PO1]
 (ii) Explain the basic block diagram of communication system. [10][CO3][PO1]
 (or)

- (b) (i) Explain the functional block diagram of AF sine and square wave generator. [8][CO3][PO1]
 (ii) Explain the block diagram of Function generators. [7][CO3][PO1]

6. (a) (i) Simplify the following Boolean expression and draw its logic circuit:
 $A'BC + AB'C' + A'B'C' + AB'C + ABC$. [5][CO4][PO1]

- (ii) Design a combinational logic circuit which adds three binary bits and implement using NAND gates. [10][CO4][PO2]
 (or)

- (b) (i) What are the limitations of half adder and Construct a full adder using half adder and OR gate? [5][CO4][PO3]
 (ii) Simplify the following Boolean expressions? [10][CO4][PO2]

(i) $Y = (A + C)(AD + AD) + AC + C$,
 (ii) $Y = (A)(A + B) + (B + A)(A + B)$

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