(Roll No. to be filled by candidate)

1	2	3	4	5	6	7	8	9	10	11	12	13

B. TECH.
Even SEMESTER THEORY EXAMINATION, 2022-23
BEC-201
FUNDAMENTALS OF ELECTRONICS ENGINEERING

Time: 03 Hours **Max. Marks: 70**

Note:

- Attempt all questions. All questions carry equal marks.
- Assume missing data suitably.

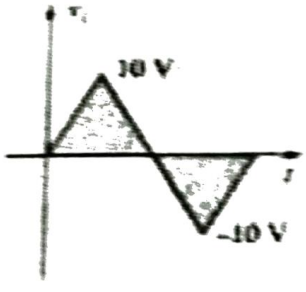
1. Attempt any ***FOUR*** parts of the following: 4×3.5=14 CO

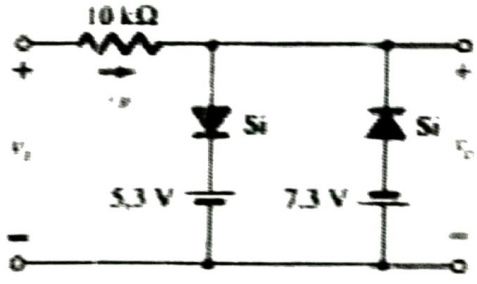
a. Draw and explain the characteristics of PN junction diode. CO1

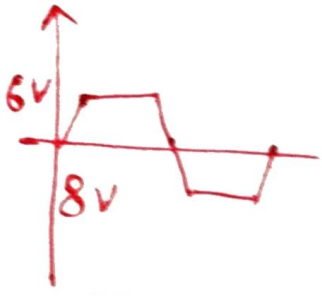
b. Draw and explain Full wave bridge rectifier. Explain the advantages and disadvantage over center tapped full rectifier. CO1

c. What is voltage multiplier? Draw the circuit diagram of Halfwave voltage doubler. CO1

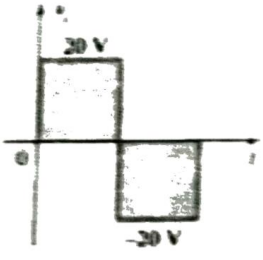
d. Draw the output voltage waveform CO1

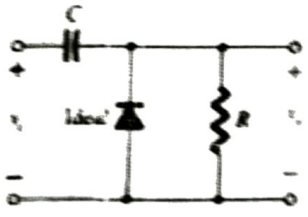






e. Draw the output waveform for the given circuit CO1

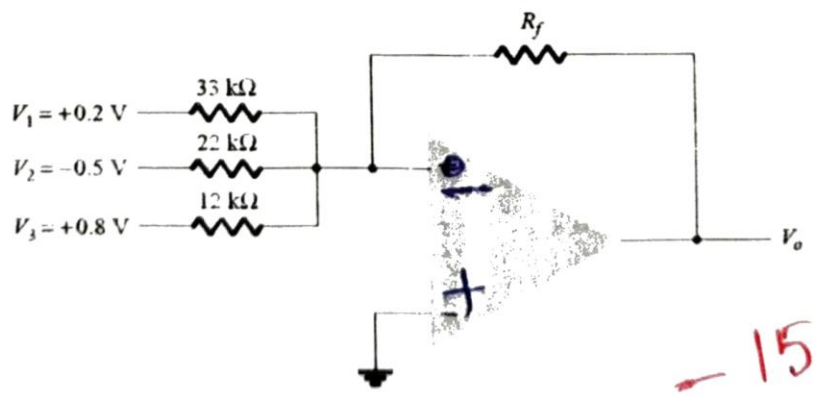




f. Write short notes on the following: CO1
   (i) LED
   (ii) Zener Diode.

2. Attempt any **FOUR** parts of the following: 4×3.5=14 CO
   a. Sketch the characteristics of a JFET and explain its behavior before and after Pinch-off. CO2
   b. Explain the different type of configurations of BJT. CO2
   c. Explain the Enhancement type MOSFET and its transfer characteristics. CO2
   d. What are the advantages of MOSFET over BJT? CO2
   e. Determine the relation between α and β for BJT CO2
   f. Explain the BJT as an amplifier with suitable circuit diagram. CO2

3. Attempt any **TWO** parts of the following: 2×7=14 CO
   a. Draw the circuit diagram of integrator and differentiator. Also determine the equation of output voltage. CO3
   b. Explain the characteristics of OP-AMP. Also explain CMRR, Slew Rate and Input offset voltage of OP-AMP CO3
   c. Calculate the output voltage developed by the circuit of Figure below for R_f=330 kΩ. CO3



−15·18 V

4. Attempt any **TWO** parts of the following: 2×7=14 CO

a. Determine the following values: CO4

i. $(736)_{10} = (?)_2$ ii. $(1A5B)_{16} = (?)_8$ iii. $(78.43)_{10} = (?)_6$

iv. $(CD421)_{16}=(?)_{10}$ v. $(211)_x=(152)_8$

b. Implement using K-Map CO4

i. Find the simplified Boolean SOP using K-map.
$F(A,B,C,D) = \sum m\ (0,2,4,5,7,9,14)$

ii. Simplify $F(A,B,C) = \sum m(0,1,2,4)$ using K-map and draw the minimized using only 2-input NAND gates

c. i. Add and subtract the following two numbers $(7571)_8$ and $(4176)_8$. CO4

ii. Derive the logic gate diagram of given expression using only NOR gate.

$Y= ABC+AD.$

5. Attempt any **TWO** parts of the following: 2×7=14 CO

a. What is communication system? Explain the modulation and needs of modulation in details. CO5

b. What are the different modulation Techniques? Draw and explain the amplitude modulation technique. CO5

c. Write short notes on any two : CO5

i. GSM

ii. Radar

iii. Satellite communication.