PAPER ID-411187

Subject Code: KOE048

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM IV) THEORY EXAMINATION 2023-24
ELECTRONICS ENGINEERING

TIME: 3 HRS **M.MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q no.	Question	Marks	CO
a.	List and define the various capacitances of diode.	02	1
b.	Differentiate between n type and p type semiconductors.	02	1
c.	Define voltage regulators.	02	2
d.	List the applications of tunnel diode.	02	2
e.	State the reason of choosing voltage divider biasing as best suitable choice.	02	3
f.	Differentiate between AC and DC analysis of a circuit.	02	3
g.	List the properties of an ideal operational amplifier.	02	4
h.	Define CMRR and input offset voltage.	02	4
i.	Define sweep voltage.	02	5
j.	List the applications of digital multimeter.	02	5

SECTION B

2. Attempt any *three* of the following: **3 x 10 = 30**

Q no.	Question	Marks	CO
a.	Explain the p-n junction working with no bias, forward bias and reverse bias.	10	1
b.	Discuss the voltage multiplier circuit using diodes in detail.	10	2
c.	Derive the input impedance, output impedance and voltage gain of common emitter amplifier without emitter resistance through AC analysis of it.	10	3
d.	Discuss the following circuits using operational amplifier using relevant mathematical expressions: 1. Differentiator 2. Integrator 3. Summing amplifier 4. Difference amplifier	10	4
e.	Discuss the working the CRO using the block diagram. Also explain the frequency and phase measurement using CRO.	10	5

SECTION C

3. Attempt any *one* part of the following: **1 x 10 = 10**

Q no.	Question	Marks	CO
a.	Discuss and differentiate between Zener breakdown mechanism and avalanche breakdown mechanism.	10	1
b.	Define doping. Also explain the process of making an intrinsic semiconductor to extrinsic semiconductor along with the differentiation between intrinsic and extrinsic semiconductor.	10	1

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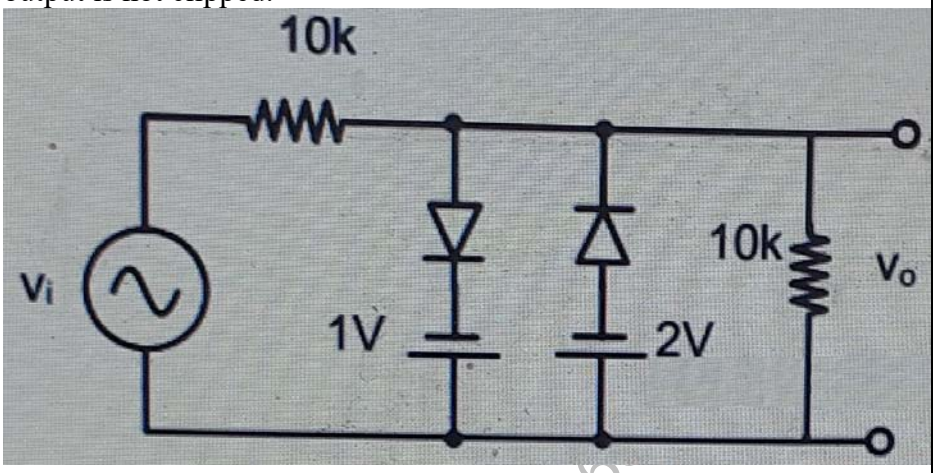
4. Attempt any *one* part of the following: 1 x 10 = 10

Q no.	Question	Marks	CO
a.	Assume the diodes to be ideal. Find the range of input for which the output is not clipped. 	10	2
b.	Discuss the followings: 1. Light emitting diodes 2. Varactor diodes	10	2

5. Attempt any *one* part of the following: 1 x 10 = 10

Q no.	Question	Marks	CO
a.	Discuss the construction and working of depletion type and enhancement type MOSFET with their input, output and transfer characteristics.	10	3
b.	Discuss the various biasing schemes used for BJT.	10	3

6. Attempt any *one* part of the following: 1 x 10 = 10

Q no.	Question	Marks	CO
a.	Explain the block diagram of operational amplifier and hence differentiate between ideal and practical operational amplifiers.	10	4
b.	Design the following circuits using operational amplifier: 1. Unity gain amplifier 2. Non inverting amplifier having gain of **11** 3. Inverting amplifier having gain **10**	10	4

7. Attempt any *one* part of the following: 1 x 10 = 10

Q no.	Question	Marks	CO
a.	Using suitable diagram explain the basic principle of digital multimeter.	10	5
b.	Compare between digital storage oscilloscope and analog oscilloscope.	10	5