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**BTECH**  
**(SEM III) THEORY EXAMINATION 2021-22**  
**ELECTRONICS ENGINEERING**

**Time: 3 Hours****Total 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.	What you mean by Doping. Describe its need.	2	CO-1
b.	Why Si is preferred as compared to Ge in Semiconductor Electronics.	2	CO-1
c.	Differentiate between Clipper and Clamper circuit.	2	CO-2
d.	Compare LED and photo diode.	2	CO-2
e.	State two Difference between BJT and FET.	2	CO-3
f.	Define Threshold Voltage for an E-MOSFET. Also define $V_{th}$ for an JFET.	2	CO-3
g.	What is unity gain amplifier(buffer)?	2	CO-4
h.	What is SLEW RATE explain briefly?	2	CO-4
i.	Compare analog and digital instruments.	2	CO-5
j.	Write the applications of CRO.	2	CO-5

**SECTION B****2. Attempt any three of the following:**

Q no.	Question	Marks	CO
a.	Explain Avalanche and Zener Breakdown Mechanism.	10	CO-1
b.	Write a short note on Tunnel and Varactor Diode.	10	CO-2
c.	Draw the basic structure of Common Base BJT and explain its principle of operation with neat diagram with its input and output characteristics.	10	CO-3
d.	Define Op-Amp with the help of block diagram. List the ideal characteristics of an Op-Amp. Explain working of Op-Amp as a Adder.	10	CO-4
e.	Draw and explain the block diagram of Digital Storage Oscilloscope (DSO) also compare it with analog oscilloscope.	10	CO-5

**SECTION C****3. Attempt any one part of the following:**

Q no.	Question	Marks	CO
a.	Draw the V-I characteristics of an ideal & practical diode and explain. Also write the diode equation in support of your answer	10	CO-1
b.	What do you mean by diode resistances? Draw and explain the characteristics of transition and diffusion capacitance v/s applied voltage.	10	CO-1



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**4. Attempt any one part of the following:**

Q no.	Question	Marks	CO
a.	<p>Determine <math>I_Z</math>, <math>I_L</math>, <math>I_R</math> and <math>V_L</math> for the network shown in given fig.</p>	10	CO-2
b.	<p>Determine the output waveform for a given input waveform</p>	10	CO-3

**5. Attempt any one part of the following:**

Q no.	Question	Marks	CO
a.	Distinguish between enhancement type and depletion type MOSFETs. Draw the cross-section of N-channel enhancement MOSFET. Explain and draw the transfer characteristics.	10	CO-4
b.	Describe the construction of a NPN transistor. Define $\alpha$ and $\beta$ with respect to BJT and derive the relationship between them.	10	CO-4

**6. Attempt any one part of the following:**

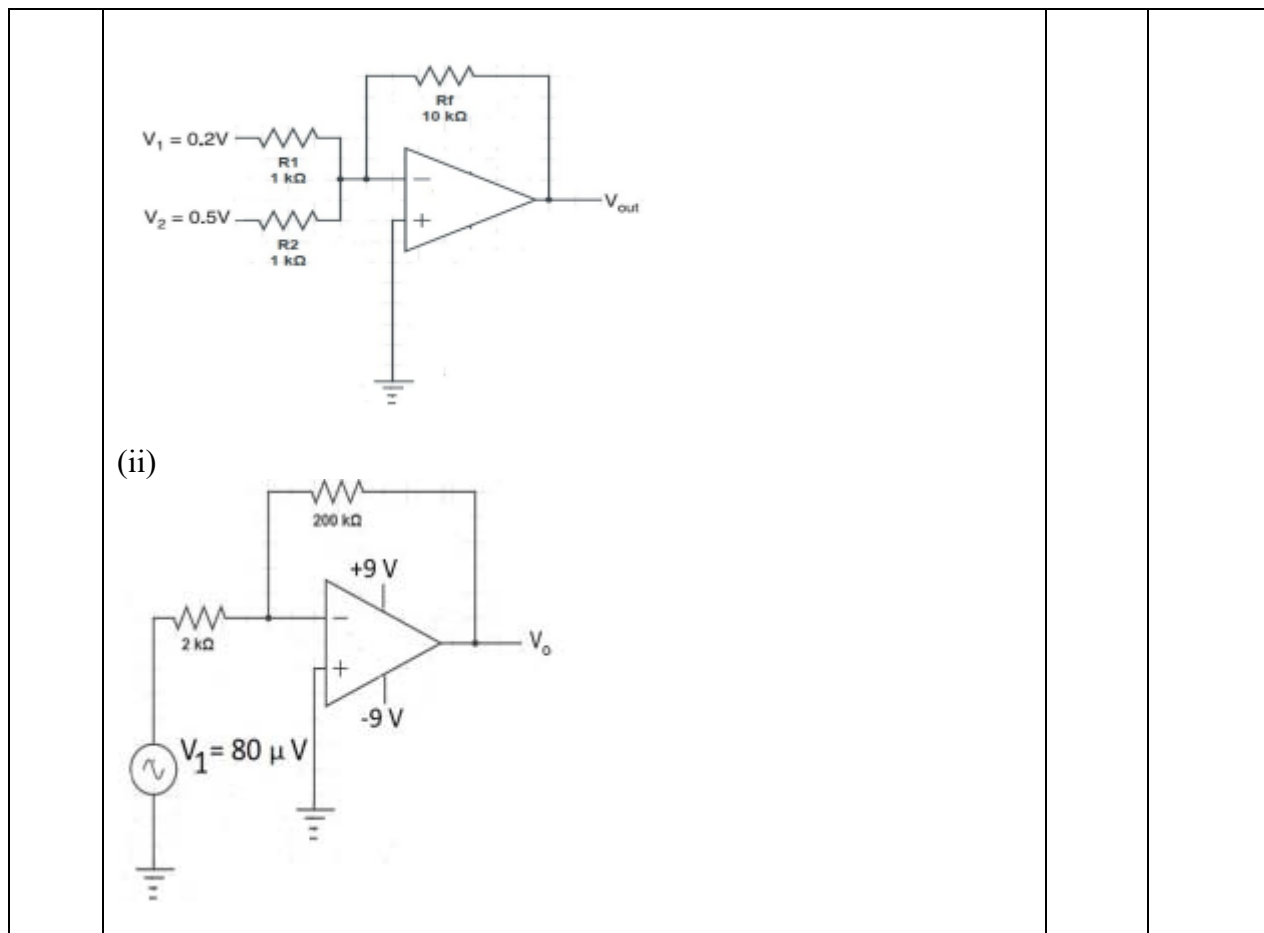
Q no.	Question	Marks	CO
a.	Explain the concept of Virtual ground. Explain working of Op-Amp as a differentiator.	10	CO-5
b.	Determine the output of following Circuits  (i)	10	CO-5



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7. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Describe measurement of Voltage, Frequency & Phase using CRO.	10	CO-1
b.	Describe the working of Digital Multimeter with their block diagram.	10	CO-1