

Time: 2 hour 30 minutes

Max. Marks: 80

DATE: 15/6/2022

QP CODE: 90784

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Bipolar Junction Transistor
Option A:	Voltage controlled device
Option B:	Current controlled device
Option C:	Very high input impedance device
Option D:	None of the above
2.	The MOSFET stands for
Option A:	Metal oxidized selenium FET
Option B:	Metal oxide surface FET
Option C:	Metal oxide semiconductor FET
Option D:	Metal of surface FET
3.	An ideal operational amplifier has
Option A:	infinite output impedance
Option B:	zero input impedance
Option C:	infinite bandwidth
Option D:	All of the above
4.	What is the purpose of differential amplifier stage in internal circuit of Op-amp?
Option A:	Low gain to differential mode signal
Option B:	Cancel difference mode signal
Option C:	Low gain to common mode signal
Option D:	Cancel common mode signal
5.	Zener diodes are also known as
Option A:	Voltage regulators
Option B:	Forward bias diode
Option C:	Breakdown diode
Option D:	None of the mentioned
6.	For common emitter configuration, which of the following is not the correct relation?
Option A:	$I_C < I_E$
Option B:	$I_C = \beta I_B$
Option C:	$I_C = \alpha I_E$
Option D:	$I_C = I_E$
7.	Which is not considered as a linear voltage regulator?
Option A:	Fixed output voltage regulator
Option B:	Adjustable output voltage regulator
Option C:	Switching regulator
Option D:	Special regulator
8.	An ideal op-amp requires infinite bandwidth because

Option A:	Signals can be amplified without attenuation
Option B:	Output common-mode noise voltage is zero
Option C:	Output voltage occurs simultaneously with input voltage changes
Option D:	Output can drive infinite number of device
9.	Which is not the internal circuit of operational amplifier?
Option A:	Differential amplifier
Option B:	Level translator
Option C:	Output driver
Option D:	Clamper
10.	How a perfect integration is achieved in op-amp?
Option A:	Infinite gain
Option B:	Low input impedance
Option C:	Low output impedance
Option D:	High CMRR

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<b>Q2. (20 Marks Each)</b>	<b>Solve any Four out of Six</b>	<b>5 marks each</b>
A	Draw output characteristics of BJT in CE configuration.	
B	Explain Zener diode as a voltage regulator.	
C	What is early effect in BJT?	
D	List out the ideal characteristics of OPAMP?	
E	Write down advantages of MOSFET.	
F	What happens when pn junction diode is made forward bias, explain considering any suitable application	

<b>Q3. (20 Marks Each)</b>	<b>Solve any Two Questions out of Three</b>	<b>10 marks each</b>
A	What is DC load line ? Derive equation for DC load line and show Q-point on DC load line	
B	Design a variable voltage regulator using LM 317 to produce output voltage of 10 volts.	
C	What is a 555 IC draw and explain the functional block diagram?	

<b>Q4. (20 Marks Each)</b>		
A	<b>Solve any Two</b>	<b>5 marks each</b>
i.	Explain concept of virtual ground.	
ii.	Explain Schottky diode.	
iii.	Explain op-amp as window comparator.	
B	<b>Solve any One</b>	<b>10 marks each</b>
i.	Draw and explain Op-amp as inverting summing amplifier.	
ii.	Explain Types of biasing circuits of MOSFET.	