

University of Mumbai
Examination First Half 2022

Program: Electronics and Computer Science

Curriculum Scheme: Rev2019

Examination: SE Semester IV

Course Code: ECC 402 and Course Name: Electronic Circuits

Time: 2hour 30 minutes

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	The voltage gain is practically expressed in...
Option A:	dB
Option B:	volts
Option C:	Ohm
Option D:	Ampere
2.	In differential amplifier, active load is used to ...
Option A:	Increase bandwidth
Option B:	Increase voltage gain
Option C:	increase current gain
Option D:	Increase input resistance
3.	When a multistage amplifier is to amplify d.c. signal, then one must use
	Coupling
Option A:	RC
Option B:	Transformer
Option C:	Direct
Option D:	Capacitor
4.	In OP-AMP pins used for offset null are
Option A:	1 and 5
Option B:	2 and 3
Option C:	5 and 6
Option D:	1 and 2
5.	If a four-stage amplifier has individual stage gains of 10 db, 5 db and 12 db, 2dB then total gain in db is
Option A:	600 dB
Option B:	24 dB
Option C:	14 dB
Option D:	29 db
6.	1. For a differential amplifier, CMRR = $10e(5)$, differential gain = $10e(5)$ what is the common mode gain of an amplifier?
Option A:	$10e(10)$
Option B:	$2 \times 10e(10)$
Option C:	20
Option D:	1
7.	Hysteresis occurs in

Option A:	Schmitt Trigger
Option B:	Oscillator
Option C:	Filter
Option D:	Differential Amplifier
8.	If $C=0.01\mu\text{F}$ and $R=1.6\text{ k}$ what is the value of signal frequency generated by wein bridge oscillator?
Option A:	10kHz
Option B:	100kHz
Option C:	1kHz
Option D:	0.1kHz
9.	In RC phase shift oscillator amplifier gain A is greater than
Option A:	29
Option B:	30
Option C:	10
Option D:	11
10.	In Astable multivibrator, if $C=1\mu\text{F}$, $R_B=1.45\text{K}$, $R_A= 1\text{ K}$ what will be T_{off} ?
Option A:	1sec
Option B:	0.1sec
Option C:	10sec
Option D:	100sec

Q2	
A	Solve any Two 5 marks each
i.	<i>Explain the necessity of multistage amplifier</i>
ii.	<i>Define A_d, ACM and $CMRR$. Also write their ideal values</i>
iii.	<i>Define the terms slew rate, $PSRR$, differential input resistance, input bias current and output offset voltage of OP AMP</i>
B	Solve any One 10 marks each
i.	<i>Derive equation for A_d, A_{cm} and $CMRR$ for dual input balanced output differential amplifier.</i>
ii.	<i>Draw and explain block diagram of OP AMP</i>

Q3	
A	Solve any Two 5 marks each
i.	<i>Draw and explain Schmitt trigger</i>
ii.	<i>Design one shot(monostable)multivibrator using IC 555 for the pulse width of $10\mu\text{s}$.</i>
iii.	<i>Draw and explain RC phase shift oscillator.</i>
B	Solve any One 10 marks each
i.	<i>Explain in detail integrator and derive the output voltage equation</i>
ii.	<i>Explain block diagram of transducer instrumentation amplifier in detail. Write advantages of instrumentation amplifier</i>

Q4.	
A	Solve any Two 5 marks each
i.	<i>Draw and explain square wave generator using OP AMP</i>
ii.	<i>Explain in detail zero crossing detector</i>
iii.	<i>Explain in detail I to V converter</i>
B	Solve any One 10 marks each
i.	<i>Design astable multivibrator which will flash the electric bulb such that its ON time will be 3 sec and off time will be 1 sec</i>
ii.	<i>Explain in detail ADC0808 and interface it with microcontroller.</i>