University of Mumbai
Examination 2020

Program: Electronics and Telecommunication Engineering
Curriculum Scheme: Rev 2012
Examination: Third Year Semester V
Course Code: ETC505 and Course Name: Integrated Circuits
Time: 1 hour Max. Marks: 50

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For the students:- All the Questions are compulsory and carry equal marks .

Q1.	Which among the following is ideal for consumer applications?
Option A:	NE5018
Option B:	LM380
Option C:	MC1408
Option D:	SE5018
Q2.	Find the input voltage of an ideal op-amp. It's one of the inputs and output voltages are 2v and 12 V. (Gain=3)
Option A:	8 V
Option B:	4 V
Option C:	-4 V
Option D:	-2 V
Q3.	What happen if any positive input signal is applied to open-loop configuration?
Option A:	Output reaches saturation level
Option B:	Output voltage swing's peak to peak
Option C:	Output will be a sine waveform
Option D:	Output will be a non-sinusoidal waveform
Q4.	The ideal opamp has the following characteristics
Option A:	$R_i = \infty, A = \infty, R_0 = 0$
Option B:	$R_i = 0, A = \infty, R_0 = 0$
Option C:	$R_i = \infty, A = \infty, R_0 = \infty$
Option D:	$R_i = 0, A = \infty, R_0 = \infty$
Q5.	An op-amp has a slew rate of 5 V/μs. The largest sine wave output voltage possible at a frequency of 1 MHz is
Option A:	10 V
Option B:	5 V
Option C:	2.5 V
Option D:	7.5 V
Q6.	Hysteresis is desirable in Schmitt trigger because
Option A:	Energy is to be stored/discharged in parasitic capacitances
Option B:	Effects of temperature would be compensated
Option C:	Devices in the circuit should be allowed time for saturation and desaturation
Option D:	It would prevent noise from causing false triggering
Q7.	Which amplifier provides twice output swing as that of LM380 amplifier?

Option A:	Hybrid power amplifier
Option B:	Bridge power audio amplifier
Option C:	Monolithic power audio amplifier
Option D:	Dual power amplifier
Q8.	A certain inverting amplifier has closed loop voltage gain of 25. The op-amp has an open loop voltage gain of 100000. If an op-amp with a open loop voltage gain of 200000 is substituted in the arrangement, the closed loop gain
Option A:	Doubles
Option B:	Drops to 12.5
Option C:	Remains at 25
Option D:	Increases slightly
Q9.	The closed loop voltage gain of an inverting amplifier is equal to
Option A:	Ratio of input resistance to feedback resistance
Option B:	Open loop voltage gain
Option C:	Feedback resistance divided by input resistance
Option D:	Input resistance
Q10.	The approximate input impedance of the opamp circuit which has R_i = 10 kΩ, R_f = 100 kΩ and R_L = 10 kΩ is
Option A:	Infinity
Option B:	120 kΩ
Option C:	110 kΩ
Option D:	10 kΩ
Q11.	A LM380 power amplifier is used in a intercom system with amplifier gain = 50 and the transformer turns ratio is given as 35.Find the overall gain of the circuit.
Option A:	1880
Option B:	1750
Option C:	1370
Option D:	1580
Q12.	A certain op-amp has a bias current of 50 µA. The input offset current is
Option A:	700 nA
Option B:	99.3 µA
Option C:	49.7 µA
Option D:	68.2 µA
Q13.	How many control lines are present in analog to digital converter in addition to reference voltage?
Option A:	Three
Option B:	Two
Option C:	One
Option D:	Four
Q14.	The flash type A/D converters are called as
Option A:	Parallel non-inverting A/D converter

Option B:	Parallel counter A/D converter
Option C:	Parallel inverting A/D converter
Option D:	Parallel comparator A/D converter
Q15.	A dual slope has the following specifications: 16bit counter; Clock rate =4 MHz; Input voltage=12 V; Output voltage =-7 V and Capacitor=0.47µF. If the counters have cycled through 2n counts, determine the value of resistor in the integrator.
Option A:	60 kΩ
Option B:	50kΩ
Option C:	120kΩ
Option D:	100kΩ
Q16.	How many natural states will there be in a 4-bit ripple counter?
Option A:	4
Option B:	8
Option C:	16
Option D:	32
Q17.	A 741 op-amp has a gain bandwidth product of 1 MHz. a non inverting amplifier using this op-amp and having a voltage gain of 20 dB will exhibit -3 dB bandwidth of
Option A:	50KHz
Option B:	100KHz
Option C:	200KHz
Option D:	5KHz
Q18.	Hysteresis is desirable in Schmitt trigger because
Option A:	Energy is to be stored/discharged in parasitic capacitances
Option B:	Effects of temperature would be compensated
Option C:	Devices in the circuit should be allowed time for saturation and desaturation
Option D:	It would prevent noise from causing false triggering
Q19.	One of the major drawbacks to the use of asynchronous counters is that
Option A:	Low-frequency applications are limited because of internal propagation delays
Option B:	High-frequency applications are limited because of internal propagation delays
Option C:	Asynchronous counters do not have major drawbacks and are suitable for use in high
Option D:	Asynchronous counters do not have propagation delays, which limits their use in high
Q20.	Determine the time period of a monostable 555 multivibrator.
Option A:	T = 0.33RC
Option B:	T = 1.1RC
Option C:	T = 3RC
Option D:	T = RC
Q21.	A monostable multivibrator has R = 120kΩ and the time delay T = 1000ms, calculate the value of C?

Option A:	0.9µF
Option B:	1.32µF
Option C:	7.5µF
Option D:	2.49µF
Q22.	How can a monostable multivibrator be modified into a linear ramp generator?
Option A:	Connect a constant current source to trigger input
Option B:	Connect a constant current source to trigger output
Option C:	Replace resistor by constant current source
Option D:	Replace capacitor by constant current source
Q23.	How to achieve 50% duty cycle in adjustable rectangular wave generator? (Assume R1 – Resistor connected between supply and discharge and R2 – Resistor connected between discharge and trigger input.)
Option A:	R1 < R2
Option B:	R1 > R2
Option C:	R1 = R2
Option D:	R1 ≥ R2
Q24.	What is the function of low pass filter in phase-locked loop?
Option A:	Improves low frequency noise
Option B:	Removes high frequency noise
Option C:	Tracks the voltage changes
Option D:	Changes the input frequency
Q25.	If ADM = 3500 and ACM = 0.35, The CMRR is
Option A:	1225
Option B:	10000
Option C:	80 dB
Option D:	Both 1 and 3