University of Mumbai
Examination 2020 under cluster 4_PCE

Program: TE Electronics and Telecommunication
Curriculum Scheme: Rev2012
Examination: Third Year Semester V
Course Code: ETC505 and Course Name: Integrated Circuits.

Time: 1 hour   Max. Marks: 50

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

Q1.	Depending on the value of input and reference voltage a comparator can be named as_____
Option A:	Digital to analog converter
Option B:	Schmitt trigger
Option C:	Voltage level detector
Option D:	Voltage follower
Q2.	During which period the op-amps output of sample and hold circuits is processed?
Option A:	Delay period
Option B:	Sample and hold period
Option C:	Sample period
Option D:	Hold period
Q3.	What is the alternate method to measure the values of non-sinusoidal waveform other than ac voltmeter?
Option A:	Clipper
Option B:	Clamper
Option C:	Peak detector
Option D:	Comparator
Q4.	For a half wave or full wave rectifier the Peak Inverse Voltage of the rectifier is always_____
Option A:	Greater than the input voltage
Option B:	Smaller than the input voltage
Option C:	Equal to the input voltage
Option D:	Greater than the input voltage for full wave rectifier and smaller for the half wave rectifier
Q5.	How a triangular wave generator is derived from square wave generator?

Option A:	Connect oscillator at the output
Option B:	Connect Voltage follower at the output
Option C:	Connect differential at the output
Option D:	Connect integrator at the output
Q6.	Triangular wave form has _____
Option A:	Rise time < fall time
Option B:	Rise time = fall time
Option C:	Rise time ≥ fall time
Option D:	Rise time >fall time
Q7.	At what range the PLL can maintain the lock in the circuit?
Option A:	Lock in range
Option B:	Input range
Option C:	Feedback loop range
Option D:	Fixed range
Q8.	The standard 555 package includes
Option A:	2 transistors
Option B:	25 transistors
Option C:	05transistors
Option D:	10 transistors
Q9.	Calculate the value of external timing capacitor, if no modulating input signal is applied to VCO. Consider fo=25 kHz and RT=5 kΩ.
Option A:	6nF
Option B:	100µF
Option C:	2nF
Option D:	10nF
Q10.	What is internally generated Vref. voltage in IC 723
Option A:	21 V
Option B:	14 V
Option C:	7 V
Option D:	1 V
Q11.	Which Voltage Regulator has more efficiency
Option A:	Fixed output voltage regulator
Option B:	Switching
Option C:	Adjustable output voltage
Option D:	Special regulator
Q12.	The number of logic or arithmetic operations with ALU 1C 74181 can carry out is
Option A:	32
Option B:	16

Option C:	4
Option D:	8
Q13.	The 'heart' of the processor which performs many different operations_____
Option A:	Arithmetic and logic unit
Option B:	Motherboard
Option C:	Control Unit
Option D:	Memory
Q14.	The expression of output voltage of Basic log amplifier is
Option A:	$V_{out} = -\eta V_T log_e(\frac{V_{in}}{V_{ref}})$
Option B:	$V_{out} = log_e(\frac{V_{in}}{V_{ref}})$
Option C:	$V_{out} = -V_T log_e(\frac{V_{in}}{2})$
Option D:	$V_{out} = -\eta log_e(V_{in})$
Q15.	For three OP-AMP Instrumentation Amplifier , the expression of overall gain is given by
Option A:	$(1 + \frac{2R_1}{R_2}) \times \frac{R_4}{R_3}$
Option B:	$(1 + \frac{2R_1}{R_2})$
Option C:	$(1 + \frac{R_1}{R_2}) \times \frac{3R_4}{2R_3}$
Option D:	$(1 + \frac{2R_1}{R_2}) \times \frac{R_4}{\sqrt{3}R_3}$
Q16.	Why zener diode is used at the output terminal of square wave generator?
Option A:	To reduce output voltage swing
Option B:	To reduce input voltage swing

Option C:	To reduce both output and capacitor voltage swing
Option D:	To reduce capacitor voltage swing
Q17.	What is supply voltage range of LM380
Option A:	2v to 7 v
Option B:	5v to 22v
Option C:	3v to 10v
Option D:	2v to 37v
Q18.	At which state the phase-locked loop tracks any change in input frequency?
Option A:	Free running state
Option B:	Capture state
Option C:	Phase locked state
Option D:	High state
Q19.	Generally Capacitor is connected at the output of Three terminal Voltage Regulator IC to improve
Option A:	Frequency Response
Option B:	Current capacity
Option C:	Transient Response
Option D:	Voltage capacity
Q20.	UP-DOWN counter is also known as _____
Option A:	Dual counter
Option B:	Multi counter
Option C:	Multimode counter
Option D:	Two Counter
Q21.	Select the incorrect option about the difference amplifier circuit
Option A:	It is one of the basic building block used in instrumentation amplifiers
Option B:	Should respond only to differential mode component
Option C:	Should respond only to common mode component
Option D:	It is used when we want output proportional to the subtraction of the two input voltages
Q22.	Find the frequency of oscillation of Wien Bridge Oscillator if R = 1.592 KΩ , C = 0.05 µF
Option A:	2kHz
Option B:	4kHz
Option C:	12.56 kHz
Option D:	816 Hz
Q23.	Find the frequency of oscillation of RC Phase Shift Oscillator if Ro = 8.2KΩ and Co = 0.01µF
Option A:	10 kHz
Option B:	12.19 kHz
Option C:	1.94 kHz
Option D:	792.4 Hz

Q24.	A simple diode rectifier has 'ripples' in the output wave which makes it unsuitable as a DC source. To overcome this one can use
Option A:	A capacitor in series with a load resistance
Option B:	A capacitor in parallel to the load resistance
Option C:	A resistor in parallel with a capacitance
Option D:	A resistor in parallel to the capacitor
Q25.	Astable multivibrator operating at 150Hz has a discharge time of 2.5ms. Find the duty cycle of the circuit.
Option A:	50%
Option B:	75%
Option C:	95.99%
Option D:	37.50%

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	C
Q2.	D
Q3.	C
Q4	B
Q5	D
Q6	B
Q7	A
Q8.	C
Q9.	C
Q10.	C
Q11.	B
Q12.	B
Q13.	A
Q14.	A
Q15.	A
Q16.	A
Q17.	B
Q18.	D
Q19.	C
Q20.	C
Q21.	C
Q22.	A
Q23.	D
Q24.	B
Q25.	D