

Program: BE Biomedical Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Code: BMC 503 and Course Name: Analog and Digital Circuits Design

Time: 1 hour

Max. Marks: 50

=====

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

Q1.	Which characteristic of PLL is defined as the range of frequencies over which PLL can acquire lock with the input signal?
Option A:	Free-running state
Option B:	Pull-in time
Option C:	Lock-in range
Option D:	Capture range
Q2.	The _____ is defined as the time the output is active divided by the total period of the output signal.
Option A:	on time
Option B:	off time
Option C:	duty cycle
Option D:	active ratio
Q3.	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
Q4.	Output of 555 is tapped from pin no
Option A:	4
Option B:	6
Option C:	3
Option D:	10
Q5.	Write the equation for time period of VCO?
Option A:	$(2 \times V_{cc} \times C_T) / i$
Option B:	$(V_{cc} \times C_T) / (2 \times i)$
Option C:	$(V_{cc} \times C_T \times i) / 2$
Option D:	$(2 \times V_{cc}) / (i \times C_T)$
Q6.	555 internally has which of the following Flipflop

Option A:	J-K Flipflop
Option B:	R-S Flipflop
Option C:	D Flipflop
Option D:	Z Flipflop
Q7.	A device which only amplifies the difference between the two input lines while ignoring any common-mode noise they both carry is known as
Option A:	Differential amplifier
Option B:	Instrumentation amplifier
Option C:	common mode amplifier
Option D:	Current amplifier
Q8.	Gain of instrumentation amplifier with feedback resistor 50Kohms, and resistors $R_g = 1\text{Kohms}$, R_1 and R_2 as 10Komhs is
Option A:	101
Option B:	100
Option C:	2
Option D:	3
Q9.	Properties of Instrumentation Amplifier are
Option A:	Low CMRR, Low input impedance
Option B:	high gain, large CMRR, and very high input impedance
Option C:	low gain, low input impedance
Option D:	high rejection ratio and low CMRR
Q10.	In Optocouplers, light detector can be
Option A:	photodarlington
Option B:	mirror
Option C:	voltage multiplier
Option D:	capacitor
Q11.	Find the complex equation for the gain of the first order low pass Butterworth filter as a function of frequency
Option A:	$AF/[1+j(f/f_H)]$
Option B:	$AF/\sqrt{1+j(f/f_H)^2}$
Option C:	$AF \times [1+j(f/f_H)]$
Option D:	$AF + [1+j(f/f_H)]$
Q12.	The problem of passive filters is overcome by using
Option A:	Analog filter
Option B:	Active filter
Option C:	LC filter
Option D:	A combination of analog and digital filters
Q13.	Which among the following has the best stop band response?
Option A:	Butterworth filter

Option B:	Chebyshev filter
Option C:	Cauer filter
Option D:	Band-reject filter
Q14.	Find out the incorrect statement about active and passive filters.
Option A:	Gain is not attenuated in active filter
Option B:	Passive filters are less expensive
Option C:	Active filter does not cause loading of source
Option D:	Passive filters are difficult to tune or adjust
Q15.	A diac has semiconductor layers
Option A:	Three
Option B:	Two
Option C:	Four
Option D:	Five
Q16.	The normal way to turn on a diac is by
Option A:	Gate current
Option B:	Gate voltage
Option C:	Breakover voltage
Option D:	It gets turned-on, on its own
Q17.	A diac has pn junctions
Option A:	Four
Option B:	Two
Option C:	Three
Option D:	Zero
Q18.	Switching regulators are series type regulators, which has
Option A:	Low CMRR
Option B:	reduced power dissipation & increased efficiency
Option C:	increased power dissipation
Option D:	reduced efficiency
Q19.	In a linear IC voltage regulator, series pass transistor always operates in
Option A:	Saturation region
Option B:	Cut-off region
Option C:	Active region
Option D:	Passive region
Q20.	Which among the following is regarded as three-pin voltage regulator ICs?
Option A:	Thermal isolator
Option B:	Optical Isolator
Option C:	Fixed voltage regulators
Option D:	Fixed Current regulator

Q21.	Linear type of voltage regulator is also known as
Option A:	switching type regulator
Option B:	dissipative type regulator
Option C:	in-line regulator
Option D:	offset regulator
Q22.	A stepper motor may be considered as a B320
Option A:	dc to dc converter
Option B:	ac to ac converter
Option C:	dc to ac converter
Option D:	digital-to-analogue converter
Q23.	One of the basic requirements of a servomotor is that it must produce high torque at all
Option A:	Loads
Option B:	Frequencies
Option C:	Speeds
Option D:	Voltages.
Q24.	If a hybrid stepper motor has a rotor pitch of 36° and a step angle of 9° , the number of its phases must be
Option A:	4
Option B:	2
Option C:	3
Option D:	6
Q25.	Which of the following phase switching sequence represents half-step operation of a VR stepper motor?
Option A:	A, B, C, A
Option B:	A, C, B, A
Option C:	AB, BC, CA, AB
Option D:	A, AB, B, BC

Program: BE Biomedical Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Code: BMC 503 and Course Name: Analog and Digital Circuits Design

Time: 1 hour

Max. Marks: 50

Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	C
Q3.	C
Q4	C
Q5	B
Q6	B
Q7	B
Q8.	A
Q9.	B
Q10.	A
Q11.	A
Q12.	B
Q13.	C
Q14.	B
Q15.	A
Q16.	C

Q17.	B
Q18.	B
Q19.	C
Q20.	C
Q21.	B
Q22.	D
Q23.	C
Q24.	A
Q25.	D