University of Mumbai
Examination 2020

Program: Electronics and Telecommunication Engineering
Curriculum Scheme: Rev 2012
Examination: Third Year Semester V
Course Code: ETC501 and Course Name: Microcontrollers and Applications

Time: 1 hour Max. Marks: 50

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

Q1.	Which of the following is not a microcontroller-based system?
Option A:	Washing machine
Option B:	Traffic light system
Option C:	Air conditioner
Option D:	Laptop
Q2.	In 8051, which of the following pair of ports is used to put valid addresses bit to access external memory?
Option A:	Port 0 & Port 1
Option B:	Port 1 & Port 2
Option C:	Port 2 & Port 3
Option D:	Port 0 & Port 2
Q3.	In 8051, on Reset the SP gets the value:
Option A:	2FH
Option B:	0FH
Option C:	07H
Option D:	F0H
Q4.	How many timers are available in 8051?
Option A:	2, 16 bit
Option B:	2, 8 bit
Option C:	1, 8 bit
Option D:	1, 16 bit
Q5.	Which mode of timer TMOD is used during serial communication of 8051?
Option A:	Mode-0
Option B:	Mode-1
Option C:	Mode-2
Option D:	Mode-3
Q6.	What is most popular and efficient baud rate for an efficient operation of serial port devices in 8051 microcontroller?
Option A:	1200 kbps
Option B:	2400 kbps
Option C:	9600 kbps

Option D:	9600 bps
Q7.	In 8051, what is meaning of instruction POP 3 ?
Option A:	Popping content of stack three times
Option B:	Popping content of stack into R3 register
Option C:	Popping content of three stacks into register
Option D:	Popping content of stacks into three registers
Q8.	In 8051, which register bank of PSW will be selected with following two instructions SETB PSW.4 SETB PSW.3
Option A:	BANK 1
Option B:	BANK 2
Option C:	BANK 0
Option D:	BANK 3
Q9.	In 8051, " LCALL addr16 " instruction the symbol, ‘addr16’ represents the 16-bit address which is used by the instructions to specify the___________
Option A:	destination address of CALL
Option B:	destination address of JUMP
Option C:	Source address of JUMP
Option D:	Source address of CALL
Q10.	In 8051, what value must A have in order for the following instruction not to jump? CJNE A, #53,OVER
Option A:	52
Option B:	53
Option C:	50
Option D:	54
Q11.	When the 8051 receives 8-bit data serially via RxD lines, it raises which flag to indicate that byte has been received?
Option A:	TI
Option B:	RI
Option C:	REN
Option D:	RB8
Q12.	Half stepping stepper motor has ____________steps sequence
Option A:	4
Option B:	8
Option C:	16
Option D:	2

Q13.	Why we need a ULN2803 in driving a relay?
Option A:	To increase current driving capacity
Option B:	For switching
Option C:	To decrease current driving capacity
Option D:	To decrease power in relay
Q14.	A Stepper motor with a step angle of 5 degree has ___________steps per revolution.
Option A:	72
Option B:	48
Option C:	24
Option D:	144
Q15.	Which statement is correct in case of Common cathode seven segment display interfacing with Port P2 of 8051?
Option A:	Anode of LEDs are connected to Port2 pins & cathode are commonly connected to ground
Option B:	Anodes & Cathode of LED's commonly connected to ground
Option C:	Cathode of LED's commonly connected to Port 2 pins
Option D:	Anodes & Cathode of LED's commonly connected to VCC
Q16.	Which processor architecture is used in ARM7?
Option A:	8-bit CISC
Option B:	8-bit RISC
Option C:	32-bit RISC
Option D:	32-bit CISC
Q17.	How many registers are there in arm7?
Option A:	16
Option B:	32
Option C:	37
Option D:	64
Q18.	In an ARM7 instruction, how many bits are required to specify the Register operands?
Option A:	32 bits
Option B:	16 bits
Option C:	4 bits
Option D:	2 bits
Q19.	ARM7 has how many pipeline stages?
Option A:	2
Option B:	3

Option C:	4
Option D:	5
Q20.	Which series of ARM processor is generally used in an embedded system?
Option A:	Cortex A
Option B:	Cortex R
Option C:	Cortex M
Option D:	Cortex Embedded
Q21.	BX instruction in ARM7 is used for performing
Option A:	Branching operation
Option B:	Branch and exchange operation
Option C:	Branch and data transfer operation
Option D:	Branch with link operation
Q22.	In ARM, after execution of the ADD r3, r1, r2 instruction, result will be stored in
Option A:	r1 register
Option B:	r2 register
Option C:	r3 register
Option D:	Accumulator register
Q23.	In ARM, SBC r0, r1, r2 instruction will perform following operation.
Option A:	r0:=r1–r2+!C
Option B:	r0:=r1–r2-!C
Option C:	r0:=r1+r2+C
Option D:	r0:=r1–r2-C
Q24.	The register required to control the function of Port 0 pins P0.16 to P0.31 of LPC2148 is
Option A:	PINSEL0
Option B:	PINSEL1
Option C:	PINSEL2
Option D:	PINSEL3
Q25.	Choose the correct sequence for embedded system design process 1) Requirement specifications 2) Hardware and software design 3) System design 4) Hardware and Firmware Integration
Option A:	1-2-3-4
Option B:	1-3-2-4
Option C:	1-4-2-3
Option D:	1-4-3-2

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

University of Mumbai
Examination 2020

Program: Electronics and Telecommunication Engineering

Curriculum Scheme: Rev2012

Examination: Third Year Semester: V

Course Code: ETC502 and Course Name: Analog Communication

Time: 1hour Max. Marks: 50

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

Q1.	Which is the type of Internal Noise?
Option A:	Atmospheric Noise
Option B:	Thermal Noise
Option C:	Man-Made Noise
Option D:	Extraterrestrial Noise
Q2.	A receiver connected to an antenna whose resistance is 75 Ohm has an equivalent noise resistance of 40 Ohm. Calculate the receiver noise figure.
Option A:	1.533
Option B:	2.5
Option C:	2
Option D:	2.3
Q3.	In AM, modulating signal frequency is10 KHz and carrier frequency is 1MHz. Calculate the upper sideband frequency.
Option A:	990 KHz
Option B:	1 MHz
Option C:	1.1 MHZ
Option D:	1010 KHz
Q4.	The higher percentage of modulation is preferred for strong received signal, because higher percentage of modulation means_value of modulation index, m.
Option A:	Higher
Option B:	Moderate
Option C:	Lower
Option D:	Zero
Q5.	A transmitter transmits 10KW of power without modulation and 12KW after modulation. What is the modulation index?
Option A:	0.8
Option B:	0.44
Option C:	0.24
Option D:	1
Q6.	The envelope detector is
Option A:	Synchronous detector
Option B:	Asynchronous detector
Option C:	Product demodulator
Option D:	Coherent detector

Q7.	Determine the Nyquist rate for a continuous time signal, $x(t)=6\cos 50\pi t+20\sin 300\pi t$
Option A:	25Hz
Option B:	175Hz
Option C:	300Hz
Option D:	150Hz
Q8.	The maximum deviation allowed in an FM broadcast system is 75KHz. If the modulating signal is a single tone sinusoid of 8KHz, determine the bandwidth of FM signal.
Option A:	83KHz
Option B:	67KHz
Option C:	100KHz
Option D:	166KHz
Q9.	Which of the following methods is not used for FM generation?
Option A:	Diode Ring Modulator
Option B:	Reactance modulator using FET
Option C:	Varactor diode modulator
Option D:	Transistor reactance modulator
Q10.	The frequency of the input signal of a receiver is 1000 KHz. The local oscillator frequency required to tune this signal is
Option A:	1450KHz
Option B:	570KHz
Option C:	550KHz
Option D:	530KHz
Q11.	The noise immunity of PAM signal is
Option A:	Better than PWM
Option B:	Better than PPM
Option C:	Better than PWM but worse than PPM
Option D:	Poorer than PWM as well as PPM
Q12.	The type of audio amplifier used to drive the loud speaker is
Option A:	Class A Push Pull Amplifier
Option B:	Class B Push Pull Amplifier
Option C:	Class AB Amplifier
Option D:	Class C Amplifier
Q13.	In FM receivers, the demodulators are primarily used for
Option A:	Converting phase changes into amplitude changes
Option B:	Converting frequency changes into amplitude changes
Option C:	Suppressing the amplitude variations
Option D:	Suppressing the frequency variations
Q14.	The frequency bands for the operation of TV are

Option A:	MW and VLF
Option B:	SW and VHF
Option C:	VLF and VHF
Option D:	MW and SW
Q15.	The double spotting can be used for
Option A:	Calculating the sensitivity of a receiver
Option B:	Calculating the stability of a receiver
Option C:	Calculating the selectivity of a receiver
Option D:	Calculating the IF of a receiver
Q16.	The spectrum of ideally sampled signal consists of
Option A:	The spectrum of the original signal only
Option B:	The spectrum of the original signal and its infinite replicas centered about the sampling frequency and its harmonics.
Option C:	The sampling frequency
Option D:	The sampling frequency and its harmonics only
Q17.	The AGC voltage is obtained at
Option A:	Input of the IF amplifier
Option B:	Output of the IF amplifier
Option C:	Input of the detector
Option D:	Output of the detector
Q18.	In FM, if the deviation is 10KHz and modulating frequency is 1 KHz and if the peak modulating voltage is 2V, then the modulation index is
Option A:	20
Option B:	10
Option C:	5
Option D:	0.5
Q19.	Amplitude of PM wave
Option A:	remains constant
Option B:	changes in proportion with the modulating voltage
Option C:	changes in proportion with the modulating frequency
Option D:	changes in proportion with carrier voltage
Q20.	Identify the false statement
Option A:	TDM is generally preferred for the digital signals.
Option B:	The basic group of FDM consists of 12 voice channels.
Option C:	Generally, SSB techniques is preferred for FDM.
Option D:	FDM is preferred for multiplexing of digital signals.
Q21.	The SSBSC is used for the following application:
Option A:	Radio Broadcasting
Option B:	Point to Point mobile communication
Option C:	Telegraphy and Telephony
Option D:	TV transmission

Q22.	In a phase shift method of SSB generation, one sideband is cancelled out due to
Option A:	Carrier Suppression
Option B:	Phase Inversion
Option C:	Carrier Inversion
Option D:	Sharp selectivity
Q23.	Find the false statement
Option A:	PWM need synchronization between the transmitter and receiver.
Option B:	The PWM pulses have variable power content.
Option C:	The bandwidth requirement of PWM is higher than that of a PAM signal.
Option D:	PPM pulses need higher bandwidth as compared to PAM.
Q24.	The bandwidth of a TV signal transmitted using the VSB system is
Option A:	5.5 MHz
Option B:	5 MHz
Option C:	6.5 MHz
Option D:	7 MHz
Q25.	Find the correct option. S1: The antialiasing filter is basically a bandpass filter used for band limiting S2: The antialiasing filter is basically a low pass filter used as band limiting filter.
Option A:	S2 is correct.
Option B:	S1 and S2 are correct
Option C:	S1 and S2 are incorrect.
Option D:	S1 is correct.

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Program: Electronics and Telecommunication Engineering
Curriculum Scheme: Rev2012
Examination: Third Year Semester: V
Course Code: ETC502 and Course Name: Analog Communication

Time: 1hour Max. Marks: 50

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

University of Mumbai
Examination 2020

Program: Electronics & Telecommunication Engineering
Curriculum Scheme: Rev 2012
Examination: Third Year Semester III
Course Code: ETC503 and Course Name: Random Signal Analysis

Time: 1 hour Max. Marks: 50

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

Q1.	If P(A) =1, then A is called as a
Option A:	Impossible Event
Option B:	Certain event
Option C:	Union Event
Option D:	Probable Event
Q2.	Two unbiased coins are tossed. What is the probability of getting at only one head?
Option A:	1/2
Option B:	1/4
Option C:	1
Option D:	3/4
Q3.	Suppose that in a certain region the daily rainfall (in inches) is a continuous random variable X with p.d.f f(x) given by $f(x) = 2x - x^2 \quad for\, 0 < x < 3\, and\, f(x) = 0\, elsewhere$. Find the probability that on a given day in this region, the rainfall is between 1 and 2 inches.
Option A:	2/3
Option B:	1/3
Option C:	3/4
Option D:	2/5
Q4.	If a random variable X is exponential distributed with density function as $f(x) = \lambda e^{-\lambda x}$ then mean is
Option A:	1
Option B:	$1/\lambda$
Option C:	$1/\lambda^2$
Option D:	0
Q5.	E(X) = np is for which distribution?
Option A:	Bernoulli's
Option B:	Poisson
Option C:	Binomial
Option D:	Normal
Q6.	The probability distribution of X is: Determine the mean

X	-1	0	1	2	3
$P(X=x)$	0.2	0.2	0.1	0.3	0.2

Option A:	1
Option B:	0.7
Option C:	1.1
Option D:	1.5
Q7.	A continuous random variable has probability density function as $f(x) = 6(x-x^2)$; $0<x<1$, and mean is 0.5, then what is variance
Option A:	1/15
Option B:	1/5
Option C:	1/10
Option D:	1/20
Q8.	If X is a non-negative random variable then any positive constant a, $P(X \geq a) \leq e^{-at} M(t)$, where M(t) is the MGF of X stated by.
Option A:	Chernoff Bond
Option B:	Bayes Bond
Option C:	Statistics Bond
Option D:	Inequality Bond
Q9.	The maximum magnitude of a characteristic function is
Option A:	0
Option B:	-1
Option C:	1
Option D:	0.5
Q10.	Find the value of k if $f(x, y) = k(1-x)(1-y)$ for $0 < x, y < 1$ is to be joint density function.
Option A:	10
Option B:	5
Option C:	2
Option D:	4
Q11.	If joint pdf of (X,Y) is given by $f(x,y)= e^{-(x+y)}$; $x\geq0$, $y\geq0$ Find E(XY)
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q12.	Two random variables are said to be orthogonal if
Option A:	$R_{XY} = 1$
Option B:	$R_{XY} = 0$
Option C:	$R_{XY} = -1$
Option D:	$R_{XY} = \infty$
Q13.	Find the marginal density of Y if the joint density function of (X, Y) is given by $f_{XY}(x,y) = 8xy,\ 0 \leq x \leq y \leq 1$
Option A:	$f(y) = y^3$,$0 \leq y \leq 1$
Option B:	$f(y) = 8y^3$,$0 \leq y \leq 1$

Option C:	$f(y) = 4y^3$, $0 \le y \le 1$
Option D:	$f(y) = 4y^2$, $0 \le y \le 1$
Q14.	Central limit theorem states that the sampling distribution of the sample mean follows normal distribution provided
Option A:	sample size is large
Option B:	the standard error of sampling distribution is small
Option C:	sample size is small
Option D:	the standard error of sampling distribution is large
Q15.	Auto correlation function is
Option A:	an odd function of τ
Option B:	may be an even or odd function of τ
Option C:	is both an odd and even function of τ
Option D:	an even function of τ
Q16.	Any random variable which is a function of time is called
Option A:	Mean
Option B:	Random process
Option C:	Random variable
Option D:	Variance
Q17.	A random process X(t) = A sin (ωt + Φ), where A and ω are constants and Φ is uniformly distributed random variable between 0 to 2π. Then mean of X(t) is
Option A:	0
Option B:	1
Option C:	2
Option D:	0.5
Q18.	Find the average power of a stationary random process whose autocorrelation function is $R(\tau) = e^{-2\|\tau\|}$
Option A:	5
Option B:	2
Option C:	1
Option D:	0
Q19.	Which formula states that average number of customers in the system is the product of average arrival rate and the average time spent in the system.
Option A:	Littles Formula
Option B:	Strong Formula
Option C:	Weak Formula
Option D:	Big Formula
Q20.	A random process X(t) = A sin (ωt + Φ), where A and ω are constants and Φ is uniformly distributed random variable between 0 to 2π. If mean of X(t) is constant and by analyzing autocorrelation, then X(t) is

Option A:	Random variable
Option B:	Not random process
Option C:	Not WSS Process
Option D:	WSS process
Q21.	Probability distribution of chain is $\pi = [\ \pi 0\ ,\ \pi 1\ ,\ \pi 2\ ]$ then
Option A:	$\pi 0 + \pi 1 + \pi 2 = -1$
Option B:	$\pi 0 + \pi 1 + \pi 2 = 2$
Option C:	$\pi 0 + \pi 1 + \pi 2 = 1$
Option D:	$\pi 0 + \pi 1 + \pi 2 = 0$
Q22.	Chapman Kolmogorov Equation for a discrete Markov chain is
Option A:	$P^{mn}(i,j) = \sum_{K} P^{m}(i,k)\, P^{n}(k,j)$
Option B:	$P^{m+n}(i,j) = \sum_{K} P^{m}(i,k)\, P^{n}(k,j)$
Option C:	$P^{m+n}(i,j) = \sum_{K} P^{n}(i,k)\, P^{n}(k,j)$
Option D:	$P^{m+n}(i,j) = \sum_{K} P^{m}(i,k)\, P^{n}(k,j) = -1$
Q23.	Consider a Markov chain with 2 state transition probability matrix as $P = \begin{vmatrix} 3/4 & 1/4 \\ 1/2 & 1/2 \end{vmatrix}$ then find stationary probabilities of the chain are
Option A:	$\Pi = (2/3\ ,\ 2/3)$
Option B:	$\Pi = (1/3\ ,\ 1/3)$
Option C:	$\Pi = (2/3\ ,\ 1/3)$
Option D:	$\Pi = (1/4\ ,\ 1/3)$
Q24.	A mathematical approach of analysing the congestions and delays of waiting in line is called
Option A:	Gaussian Process
Option B:	Queuing Theory
Option C:	Markov Chain
Option D:	Poisson process
Q25.	11A medical representative visits only three cities A, B, C but he never visits the same city on successive days. If he visits city A today then he visits city B tomorrow without fail. However if he visits either city B or C today ,then he is twice as likely to visit city A as the other city.In what proportion does he visit the cities A,B,C in steady state.
Option A:	40%, 45%, 15%
Option B:	50%, 25%, 25%
Option C:	45%, 45%, 10%
Option D:	35%, 40%, 25%

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

Program: BE Electronics & Telecommunication Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Code: ETC504 and Course Name: RF Modeling and Antennas

Time: 1 hour Max. Marks: 50

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

Q1.	What are the elements considered while representing the resistor at high frequency?
Option A:	Resistance, inductance of leads and parasitic capacitance across resistor
Option B:	Only resistance
Option C:	Inductance and Capacitance in parallel
Option D:	Resistor breaks down at high frequency
Q2.	The _____ of the wire is specified in terms of AWG (American Wire Gauge) system
Option A:	Length
Option B:	Diameter
Option C:	Resistance
Option D:	Conductance
Q3.	What is the need of m-derived filters in filter designing?
Option A:	To provide undistorted filtering
Option B:	It provides slow attenuation rate
Option C:	It provides sharp attenuation at cut off frequency
Option D:	For network matching
Q4.	With respect to K-β diagram, K refers to _____ and β refers to _____
Option A:	Propagation Constant, Propagation constant of unloaded line
Option B:	Attenuation Constant, Propagation constant
Option C:	Propagation constant, Attenuation constant
Option D:	Propagation constant of unloaded line, Attenuation constant
Q5.	Using Richard's Transformation, Inductor can be replaced by ____ and Capacitor can be replaced by _____ at high frequencies
Option A:	Open circuited stub, Short circuited stub
Option B:	Short circuit stub, Open circuit stub
Option C:	Open circuited stub, Open circuited stub
Option D:	Short circuited stub, Short circuited stub
Q6.	What is a filter?
Option A:	Frequency selective circuit

Option B:	Frequency modulation circuit
Option C:	Frequency damping circuit
Option D:	Amplitude damping circuit
Q7.	Butterworth filter design using insertion loss method is also known as_____
Option A:	Maximally high
Option B:	Maximally flat
Option C:	Chebyshev
Option D:	Minimally flat
Q8.	Select the appropriate sequence for designing composite filters
Option A:	Constant K filter---Matching section---m-derived filters
Option B:	Matching section---constant k filter---m derived filter---matching section
Option C:	Matching section---low pass filter
Option D:	m-derived filter---constant k filter---m-derived filter
Q9.	Transmitting antenna converts ______ into ______
Option A:	Electrical signal , Electromagnetic waves
Option B:	Electromagnetic waves, Electrical signal
Option C:	Analog signal, Digital signal
Option D:	Digital signal, analog signal
Q10.	Which of the equations is correct if directivity to be calculated in terms of effective aperture?
Option A:	$D = l_e^2 z\pi/\gamma$
Option B:	$D = \frac{4\pi A_e}{\lambda^2}$
Option C:	$D = \frac{4\pi A_e}{2R}$
Option D:	$D = A_e^2 z\pi$
Q11.	Angular width in degrees measured on major lobe of radiation pattern between point where radiation pattern has fallen to half of its maximum, is called as ______
Option A:	First null beam width
Option B:	Front null beam width
Option C:	Half power beam width
Option D:	Half null beam width
Q12.	In antenna equivalent circuit antenna impedance is given by $Z_A = (R_L+R_R) + j X_A$ Where R_R = ?
Option A:	R_R= Ratio resistance
Option B:	R_R= Radiation resistance
Option C:	R_R= Relative resistance
Option D:	R_R= Relation resistance

Q13.	If P_T & P_R are power of transmitter & receiver respectively G_T & G_R are gain of transmitter & receiver respectively R is distance between transmitter & receiver λ is the wavelength then FRIIS transmission equation given by _____
Option A:	$P_R = P_T * G_T * G_R (\lambda / 4\pi * R)^2$
Option B:	$P_R = P_T * G_T * G_R$
Option C:	$P_T = P_R * G_T * G_R$
Option D:	$P_R = P_T * G_T * G_R (4\pi * R / \lambda)^2$
Q14.	What is the boundary for a reactive near field?
Option A:	$R < 0.62 \sqrt{D^3 / \lambda}$
Option B:	$R > 0.62 \sqrt{\frac{D^3}{\lambda}}$
Option C:	$R < 0.63$
Option D:	$R > 0.63$
Q15.	For infinitesimal dipole antenna, length of the dipole is _____
Option A:	$l >> \lambda$
Option B:	$l << \lambda$
Option C:	$l = \lambda$
Option D:	$l = \lambda/2$
Q16.	Monopole antenna can be defined as ____
Option A:	A loop conductor feed with external source
Option B:	A dipole conductor ,feed at center
Option C:	Straight rod conductor perpendicular to conductive surface
Option D:	Number of antenna elements in array
Q17.	Identify, which of the below antenna types is not a wire antenna?
Option A:	Monopole
Option B:	Helix
Option C:	Loop
Option D:	Parabolic reflector
Q18.	The antenna over a perfect ground is studied very easily using _____ theory
Option A:	Image
Option B:	Mode
Option C:	Ray
Option D:	Quantum
Q19.	Where is the feed point for the folded dipole antenna located?
Option A:	At the top of an antenna
Option B:	At the bottom of an antenna
Option C:	At the center of one conductor

Option D:	No need of external feed for folded dipole
Q20.	High directivity required in RADAR communication is satisfied using ______ type of antennas
Option A:	Wide band antennas
Option B:	Antenna arrays
Option C:	Slot antennas
Option D:	Patch antennas
Q21.	What is the advantage of implementing an antenna array?
Option A:	Wide radiation and low directivity
Option B:	High gain and high directivity
Option C:	Low cost and low gain
Option D:	Large dimension of antenna requires more space for implementation
Q22.	Cassegrain feed parabolic antenna design has ______ reflectors
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q23.	Pyramidal horn is designed by flaring ______
Option A:	Only E-Arm
Option B:	Only H-Arm
Option C:	E & H Arm equally
Option D:	E & H Arm unequally
Q24.	Which one is not the form of polarization of an antenna?
Option A:	Linearly polarized
Option B:	Circularly polarized
Option C:	Rectangularly polarized
Option D:	Elliptically polarized
Q25.	What are the advantages of using microstrip antennas?
Option A:	Easy to design
Option B:	Highly directional
Option C:	Narrow frequency bandwidth
Option D:	Light weight and low cost

Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Code: ETC504 and Course Name: RF Modeling and Antennas

Time: 1 hour Max. Marks: 50

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Question	Correct Option
Q1.	A
Q2.	B
Q3.	C
Q4	A
Q5	B
Q6	A
Q7	B
Q8.	B
Q9.	A
Q10.	B
Q11.	C
Q12.	B
Q13.	A
Q14.	A
Q15.	B
Q16.	C
Q17.	D

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

Program: BE Electronics & Telecommunication Engineering
Curriculum Scheme: Revised 2012
Examination: Third Year Semester V
Course Code: ETC505 and Course Name: INTEGRATED CIRCUITS

Time: 1hour Max. Marks: 50

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

Q1.	The input stage of an Op-amp is usually a ……….
Option A:	differential amplifier
Option B:	class B push-pull amplifier
Option C:	CE amplifier
Option D:	swamped amplifier
Q2.	The input offset current is equals to
Option A:	difference between two base currents
Option B:	average of two base currents
Option C:	collector current divided by current gain
Option D:	base current divided by current gain
Q3.	Which factor determines the output voltage of an op-amp?
Option A:	Positive saturation voltage
Option B:	Negative saturation voltage
Option C:	Both positive and negative saturation voltage
Option D:	Supply voltage
Q4.	If an op-amp has one input grounded and the other input has a signal feed to it, then it is operating as what?
Option A:	Common-mode
Option B:	Single-ended
Option C:	Double-ended
Option D:	Noninverting mode

Q5.	Which is not the ideal characteristic of an op-amp?
Option A:	Input Resistance ($R_i=\infty$)
Option B:	Output impedance ($R_O= 0$)
Option C:	Bandwidth ($BW= 0$)
Option D:	Open loop voltage gain ($A_{OL}=\infty$)
Q6.	For a phase shift oscillator, the three RC cascaded networks in the feedback circuit have values of their resistances R = 3.3 kΩ and capacitances C = 0.1 μF,
Option A:	Its frequency of oscillation is ≈ 1 kHz
Option B:	Its frequency of oscillation is ≈ 3.030 kHz
Option C:	Its frequency of oscillation is ≈ 3.3 kHz
Option D:	Its frequency of oscillation is ≈ 200 Hz
Q7.	The gain in a current amplifier is the ratio of
Option A:	Output voltage to Input current
Option B:	Output current to Input voltage
Option C:	Output current to Input current
Option D:	Output voltage to Input voltage
Q8.	The total phase shift of the loop gain in a sine wave oscillator is
Option A:	90°
Option B:	180°
Option C:	270°
Option D:	360°
Q9.	The output voltage of a frequency to voltage converter is related to the input frequency by the equation
Option A:	$V_O = (Vref \times Cref \times Rint) \times Fin$
Option B:	$V_O = (Vref / (Cref \times Rint)) \times Fin$

Option C:	V_O = ((Vref × Cref) / Rint) × Fin
Option D:	V_O = ((Vref × Rint) / Cref) × Fin
Q10.	Find the input voltage of an ideal op-amp. It's one of the inputs and output voltages are 2 V and 12 V. (Gain=3)
Option A:	8 V
Option B:	4 V
Option C:	- 4 V
Option D:	- 2 V
Q11.	Which circuit converts irregularly shaped waveform to regular shaped waveforms?
Option A:	Schmitt trigger
Option B:	Voltage limiter
Option C:	Regulator
Option D:	Peak detector
Q12.	Zero crossing detectors is also called as
Option A:	Square to sine wave generator
Option B:	Sine to square wave generator
Option C:	Sine to triangular wave generator
Option D:	Sine to ramp wave generator
Q13.	Ripple counters are also called ______________
Option A:	SSI counters
Option B:	Asynchronous counters
Option C:	Synchronous counters
Option D:	VLSI counters
Q14.	Determine the expression for time period of a square wave generator
Option A:	$T= 2RC \ln\times[(R_1+ R_2) / (R_2)]$

Option B:	$T = 2RC \ln \times [(2R_1 + R_2) / (R_2)]$.
Option C:	$T = 2RC \ln \times [(R_1 + 2R_2) / (R_2)]$.
Option D:	$T = 2RC \ln \times [(R_1 + R_2) / (2 R_2)]$
Q15.	In IC 555 external AC voltage can be applied to this pin to obtain Pulse width modulation. Which pin is that?
Option A:	Reset pin 4
Option B:	Control pin 5
Option C:	Threshold pin 6
Option D:	Discharge pin 7
Q16.	IC AD 534 is
Option A:	trimmed one quadrant multiplier IC
Option B:	trimmed two quadrant multiplier IC
Option C:	trimmed three quadrant multiplier IC
Option D:	trimmed four quadrant multiplier IC
Q17.	The reference voltage of lower and upper comparator used in functional block diagram of IC 555 is
Option A:	1/3 V_{CC} and 2/3 V_{CC}
Option B:	1/3 V_{CC} and 1/4 V_{CC}
Option C:	2/3 V_{CC} and 1/4 V_{CC}
Option D:	1/5 V_{CC} and 2/5 V_{CC}
Q18.	Which operations cannot be performed by ALU 74181?
Option A:	Addition
Option B:	Multiplication
Option C:	Subtraction
Option D:	Logical Shift

Q19.	What is the dropout voltage in a three terminal IC regulator?
Option A:	|Vin| ≥ |Vo|+2v
Option B:	|Vin| < |Vo|-2v
Option C:	|V in| = |Vo|
Option D:	|Vin| ≤ |Vo|
Q20.	In the sample and hold circuit, the period during which the voltage across capacitor is equal to input voltage
Option A:	Sample period
Option B:	Hold period
Option C:	Delay period
Option D:	Charging period
Q21.	All of the following are parts of a basic voltage regulator except
Option A:	Control element
Option B:	Sampling circuit
Option C:	Voltage follower
Option D:	Error detector
Q22.	The off time T_{off} for an astable multivibrator using IC 555 with R_A= 25 kilo ohms , R_B= 33 kilo ohms and C=0.5 micro farads is
Option A:	13.4 ms
Option B:	11.43 ms
Option C:	10.33 ms
Option D:	14.5 ms
Q23.	The basic difference between a series regulator and shunt regulator is
Option A:	The amount of current that can be handled
Option B:	The position of the control element
Option C:	The type of sample circuit

Option D:	The type of error detector
Q24.	What is the voltage level for logic ‘1’ in TTL IC?
Option A:	5 V
Option B:	3.3 V
Option C:	15 V
Option D:	12 V
Q25.	What is the function of 74191?
Option A:	Asynchronous reversible up/down counter
Option B:	Synchronous reversible up/down counter
Option C:	Synchronous reversible counter
Option D:	Asynchronous up/down counter

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