Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Code: EXC505 and Course Name: Digital Communication

Time: 1 hour Max. Marks: 50

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

Q1.	In digital communication system, output of the source encoder is in the form of
Option A:	analog
Option B:	digital pulse
Option C:	analog pulse
Option D:	codeword
Q2.	Mean of a random variable X is given by _____
Option A:	$E(X^2) – (E(X))^2$
Option B:	$E(X^2)$
Option C:	E(X)
Option D:	$(E(X))^2$
Q3.	Assume the 8 digit binary words are being transmitted over a noisy channel, with a per digit error probability of 0.01. Calculate mean for a random variable representing the number of errors using binomial distribution.
Option A:	0.08
Option B:	0.05
Option C:	0.04
Option D:	0.02
Q4.	Shannon's theorem negative statement states that
Option A:	R < C
Option B:	R > C
Option C:	R = C
Option D:	R ≤ C
Q5.	The capacity of a Gaussian channel for infinite bandwidth is given as ____
Option A:	1.44 S / N_o
Option B:	2.44 S / N_o
Option C:	1.44 N_o / S
Option D:	2.44 N_o / S

Q6.	Given $x_i = \{x_1, x_2, x_3\}$ with probabilities as p $(x_i) = \{0.6, 0.2, 0.2\}$ respectively. Find Average Codeword length using Huffman technique
Option A:	1.4 bits/ message
Option B:	1.8 bits/ message
Option C:	2 bits/ message
Option D:	2.5 bits/ message
Q7.	The Transmission bandwidth for a line code must be
Option A:	dependent on the signal.
Option B:	as small as possible.
Option C:	maximum
Option D:	very high
Q8.	Interference that occurs when a pulse spreads out in such a way that it interferes with adjacent pulses at the sample instant is called
Option A:	Inter Channel Interference
Option B:	Intra Symbol Interference
Option C:	Inter Symbol Interference
Option D:	Intra Channel Interference
Q9.	The polarities in NRZ format use
Option A:	Complete pulse duration.
Option B:	Half duration.
Option C:	Both positive as well as negative value.
Option D:	Each pulse is used for twice the duration.
Q10.	In precoding technique, the binary sequence is _____ with the previous precoded bit.
Option A:	And-ed
Option B:	or-ed
Option C:	xor-ed
Option D:	nor-ed
Q11.	BPSK system modulates at the rate of
Option A:	1 bit/ symbol
Option B:	2 bit/ symbol
Option C:	4 bit/ symbol
Option D:	8 bit/ symbol
Q12.	With increase in M , the bandwidth of M-ary Phase Shift Keying(M-ary PSK) _____
Option A:	Decreases
Option B:	Increases
Option C:	Remains the same always
Option D:	Bandwidth has no relation to M

Q13.	For a bit rate of NRZ data stream is 1Mbps and carrier frequency is 100 MHz . The bandwidth requirements of 16-ary PSK system
Option A:	100MHz
Option B:	500MHz
Option C:	500KHz
Option D:	1000KHz
Q14.	Minimum shift keying is
Option A:	QPSK
Option B:	Binary phase shift keying
Option C:	Binary frequency shift keying
Option D:	Continuous phase frequency shift keying
Q15.	PSD of modulated signal =_____ of PSD of baseband signal and PSD of carrier signal
Option A:	addition
Option B:	multiplication
Option C:	subtraction
Option D:	convolution
Q16.	In which system, bit stream is partitioned into even and odd stream?
Option A:	BPSK
Option B:	MSK
Option C:	QPSK
Option D:	FSK
Q17.	In which modulation technique the amplitude and phase is varied according to information in the digital signal?
Option A:	ASK
Option B:	FSK
Option C:	PSK
Option D:	QAM
Q18.	According to linearity property, what operation requires to perform on two code words in a cyclic code to create another valid code word?
Option A:	Product
Option B:	Difference
Option C:	Sum
Option D:	Division
Q19.	Which statement is not correct for error correcting codes?
Option A:	They are classified as Convolution codes and block codes
Option B:	Convolution codes need memory
Option C:	block codes need memory
Option D:	Hamming codes are linear block codes.
Q20.	In trellis diagram, the number of nodes _____ at successive branching

Option A:	Increases by 1
Option B:	Doubles
Option C:	Triples
Option D:	Quadruple
Q21.	The Generator Matrix dimensions are ___
Option A:	1 X n-k
Option B:	k X n-k
Option C:	k X n
Option D:	n-k X n
Q22.	The hamming distance between codeword 11001and 10010 is
Option A:	2
Option B:	3
Option C:	4
Option D:	1
Q23.	How error detection and correction is done?
Option A:	By passing it through equalizer
Option B:	By passing it through filter
Option C:	By passing it through amplifier
Option D:	By adding redundant bits
Q24.	In Direct Sequence Spread Spectrum, (DSSS system), to increase the bandwidth, a baseband signal is _____ with the PN sequence
Option A:	Added
Option B:	Multiplied
Option C:	Subtracted
Option D:	Divided
Q25.	The processing gain of FH systems is given by ratio of
Option A:	Hopping bandwidth and hopping period
Option B:	Total hopping bandwidth and instantaneous bandwidth
Option C:	3 dB bandwidth and bit rate
Option D:	Instantaneous bandwidth and hopping duration

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Examination 2020 under cluster Vidyavardhini's College of Engg & Tech

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012 (CBSGS)

Examination: Third Year Semester V

Course Code: EXC501 **Course Name: Microcontrollers and Applications**

Time: 1 hour **Max. Marks: 50**

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Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

Q 1.	The 8051 has _____ 16-bit counter/timers.
Option A:	2
Option B:	3
Option C:	4
Option D:	6
Q 2.	An alternate function of port pin P3.4 in the 8051 is:
Option A:	Timer 0
Option B:	Timer 1
Option C:	interrupt 0
Option D:	interrupt 1
Q 3.	The I/O port in 8051 microcontrollers that does not have a dual-purpose role is:
Option A:	port 0
Option B:	port 1
Option C:	port 2
Option D:	port 3
Q 4.	What is the maximum delay generated by the 12 MHz clock frequency in accordance to an auto-reload mode (Mode 2) operation of the 8051 timer?
Option A:	125 μ s
Option B:	250 μ s
Option C:	1200 μ s
Option D:	256 μ s

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Q 5.	Which among the below mentioned sequence of program instructions represent the correct chronological order for the generation of 2kHz square wave frequency? 1. MOV TMOD, 0000 0010 B 2. MOV TL0, # 06H 3. MOV TH0, # 06H 4. SETB TR0 5. CPL p1.0 6. ORG 0000H
Option A:	6, 5, 2, 4, 1, 3
Option B:	6, 5, 4, 3, 2, 1
Option C:	6, 1, 3, 2, 4, 5
Option D:	6, 2, 4, 5, 1, 3
Q 6.	MOV A, @ R1 instruction in 8051 microcontrollers implements
Option A:	copy R1 to the accumulator
Option B:	copy the accumulator to R1
Option C:	copy the contents of memory whose address is in R1 to the accumulator
Option D:	copy the accumulator to the contents of memory whose address is in R1
Q 7.	In direct addressing mode instructions of 8051 microcontrollers, the valid range of addressable on-chip RAM is
Option A:	(00)H to (FF)H
Option B:	(00)H to (7F)H
Option C:	(00)H to (2F)H
Option D:	(00)H to (20)H
Q 8.	Which of the following instruction is invalid for 8051 microcontrollers?
Option A:	SWAP A
Option B:	DA A
Option C:	SJMP 2000H
Option D:	CJNE A, R1, not_equal
Q 9.	Which kind of serial communication is possible in 8051 microcontrollers?
Option A:	Synchronous full duplex
Option B:	Asynchronous half duplex
Option C:	Synchronous half duplex
Option D:	Asynchronous full duplex
Q 10.	LM34 and LM35 is used for sensing
Option A:	Pressure

Option B:	Temperature
Option C:	Light
Option D:	Humidity
Q 11.	What should be done if we want to double the baud rate of serial communication in 8051 microcontrollers?
Option A:	Modifying a bit of the TMOD register
Option B:	Modifying a bit of the PCON register
Option C:	Modifying a bit of the SCON register
Option D:	Modifying a bit of the SBUF register
Q 12.	Which of the following is not a stepping sequence for running stepper motor?
Option A:	Full Stepping
Option B:	Half Stepping
Option C:	Cross Stepping
Option D:	Wave Stepping
Q 13.	Consider the following statements. Which of them is/are correct in case of program execution related to program memory? 1. When the status of EA pin is high, external program memory execution takes place from 1000H through 0FFFFH. 2. When the status of EA pin is low, external program memory execution takes place from 0000H through 0FFFH. 3. When the status of EA pin is held low, internal program memory execution occurs from 0000H through 0FFFH. 4. When EA pin is held high, internal program memory execution occurs from 0000H through 0FFFH.
Option A:	1 & 3
Option B:	2 & 4
Option C:	1 & 2
Option D:	Only 1
Q 14.	The following bit of 8051 SFR enables or disables timer 1 overflow interrupt.
Option A:	D2 bit of IE
Option B:	D3 bit of IE
Option C:	D4 bit of IE
Option D:	D5 bit of IE
Q 15.	The total number of general-purpose registers in ARM7TDMI are

Option A:	8
Option B:	16
Option C:	31
Option D:	37
Q 16.	The following unit is used to organize memory in ARM7TDMI.
Option A:	MPU
Option B:	MMU
Option C:	MCU
Option D:	MTU
Q 17.	In ARM7TDMI, D support for ____
Option A:	Debug
Option B:	Data
Option C:	Demultiplexed
Option D:	Decoded
Q 18.	ARM Processor specifically designed to reduce
Option A:	Power Consumption
Option B:	Size
Option C:	Delay
Option D:	Power consumption and size
Q 19.	The total number of exceptions supported by ARM are
Option A:	5
Option B:	6
Option C:	8
Option D:	12
Q 20.	Which of the following instruction is used to save a byte from a register?
Option A:	LDR
Option B:	STR
Option C:	LDRB
Option D:	STRB
Q 21.	Which of the following is a branching instruction?
Option A:	MOV LR, PC
Option B:	MOV PC, LR
Option C:	MOV R14, R15
Option D:	MOV R8, R2

Q 22.	Which of the following is used to make a call to an operating system?
Option A:	IRQ
Option B:	FIQ
Option C:	SWI
Option D:	MRS
Q 23.	BIC instruction falls in the following category
Option A:	Arithmetic
Option B:	Logical
Option C:	Branching
Option D:	Data Processing
Q 24.	What is the size of on-chip static RAM present in LPC2148?
Option A:	40 KB
Option B:	400 KB
Option C:	512 KB
Option D:	1 MB
Q 25.	How many inbuilt ADC Modules are there in LPC2148?
Option A:	8
Option B:	6
Option C:	4
Option D:	2

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Examination 2020 under cluster Vidyavardhini's College of Engg & Tech

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012 (CBSGS)

Examination: Third Year Semester V

Course Code: EXC502 **Course Name: Design with Linear Integrated Circuits**

Time: 1 hour **Max. Marks: 50**

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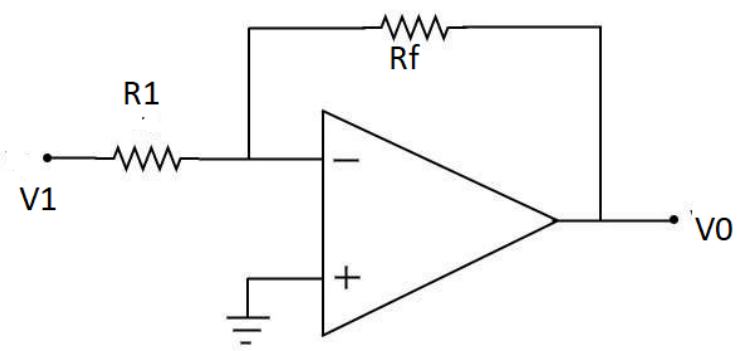
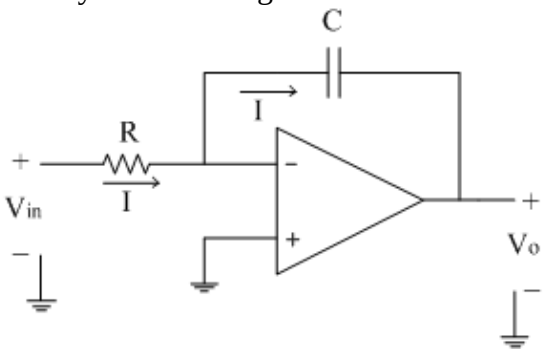
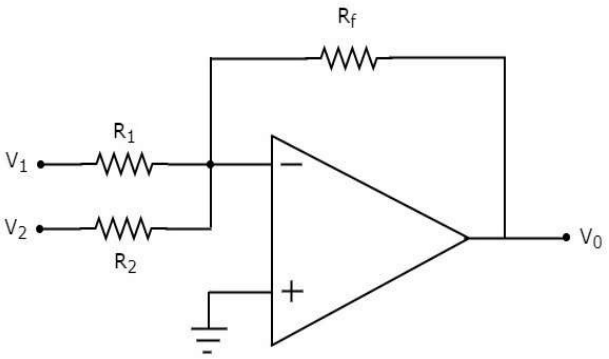
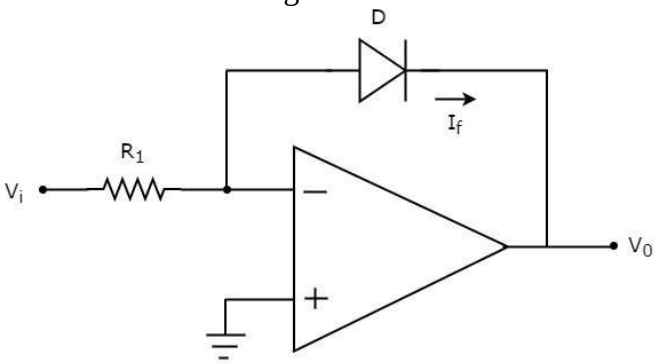
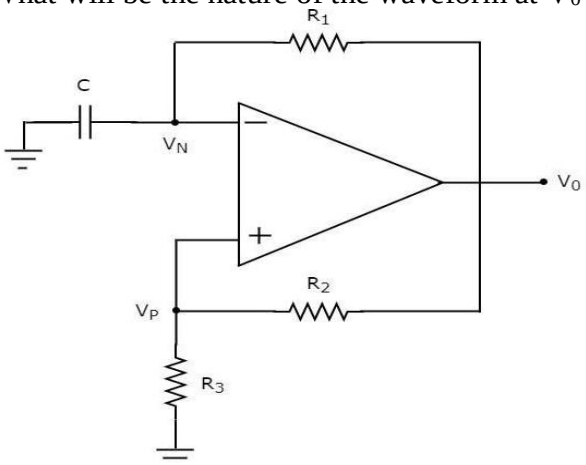
Note:

1. All Questions are compulsory and carry equal marks.

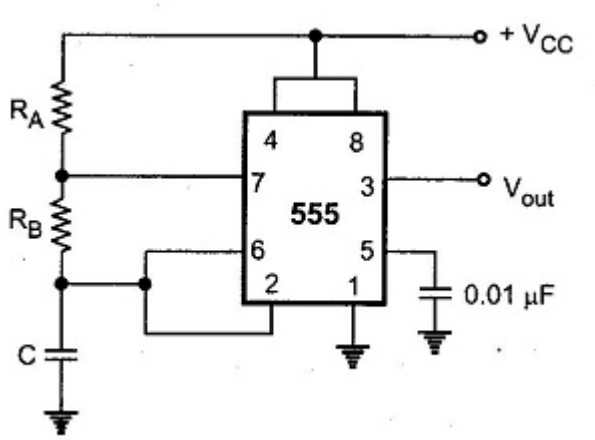
2. Assume suitable data wherever necessary.

Q1.	What makes the output voltage equals to zero in practical op-amp?
Option A:	Input offset voltage
Option B:	Output offset voltage
Option C:	Offset minimizing voltage
Option D:	Error voltage
Q2.	Which is not the ideal characteristic of an op-amp?
Option A:	Input Resistance –> 0
Option B:	Open loop voltage gain –> ∞
Option C:	Bandwidth –> ∞
Option D:	Output impedance –> 0
Q3.	Determine the order of filter used, when the gain increases at the rate of 60dB/decade on the stop band.
Option A:	Second-order low pass filter
Option B:	Third-order High pass filter
Option C:	First-order low pass filter
Option D:	Second -order High pass filter
Q4.	What is V0 of the following op-amp if V1 =100 mV & R1=10kΩ, Rf=100 kΩ 
Option A:	1 V

Option B:	-1 V
Option C:	100 mV
Option D:	-100 mV
Q5.	Which of the following is an advantage of instrumentation amplifier than standard op-amp?
Option A:	High PSRR
Option B:	High Bandwidth
Option C:	High Gain
Option D:	High CMRR
Q6.	Identify the following circuit? 
Option A:	Ideal Integrator
Option B:	Ideal Differentiator
Option C:	High Pass Filter
Option D:	Band Pass Filter
Q7.	If all resistance are equal what will be the output voltage V_0 equation? 
Option A:	$-(V_1+V_2)$
Option B:	(V_1-V_2)
Option C:	$-0.5\ (V_1-V_2)$
Option D:	$0.5\ (V_1+V_2)$
Q8.	The pass band voltage gain of a second order low pass butterworth filter is
Option A:	1.586
Option B:	8.32

Option C:	0.586
Option D:	0.707
Q9.	Sustained oscillation in wein bridge oscillator is possible when the value of ß is
Option A:	3
Option B:	1/3
Option C:	1
Option D:	1/29
Q10.	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:	Triangular to square wave generator
Q11.	Which of the following is true? 
Option A:	V_0 is antilogarithmic function of V_i
Option B:	V_0 is logarithmic function of V_i
Option C:	V_0 is linear function of V_i
Option D:	V_0 is integration of V_i
Q12.	What will be the nature of the waveform at V_0 node? 

Option A:	Triangular wave
Option B:	Sawtooth wave
Option C:	Square wave
Option D:	constant DC
Q13.	A window comparator
Option A:	Has only one usable threshold
Option B:	Uses hysteresis to speed up response
Option C:	Clamps the input positively
Option D:	Detects an input voltage between two limits
Q14.	In hysteresis width, the hysteresis voltage is equal to _____ upper & lower threshold voltages (VUT & VLT).
Option A:	sum of
Option B:	difference between
Option C:	product of
Option D:	division of
Q15.	Find the resolution of a 10-bit AD converter for an input range of 10v?
Option A:	97.7mv
Option B:	9.77mv
Option C:	0.977mv
Option D:	977mv
Q16.	What is the resolution of 8 bit ADC/DAC?
Option A:	1024
Option B:	512
Option C:	256
Option D:	128
Q17.	The main disadvantage of the dual slope ADC is
Option A:	the long conversion time
Option B:	poor noise rejection
Option C:	fast conversion time
Option D:	more linearity error
Q18.	Determine the time period of a monostable multivibrator using IC 555
Option A:	T = 0.33RC
Option B:	T = 1.1RC
Option C:	T = 3RC
Option D:	T = RC
Q19.	What is the function of low pass filter in phase-locked loop?
Option A:	Improves low frequency noise

Option B:	Removes high frequency noise and produce dc level
Option C:	Tracks the voltage changes
Option D:	Changes the input frequency
Q20.	79XX series are three terminal ,…….. voltage regulators
Option A:	Positive fixed
Option B:	Negative fixed
Option C:	Switching
Option D:	Zero
Q21.	What is charging and discharging time equation of capacitor C given in the below circuit? 
Option A:	Charging Time= 0.69 (R_A+R_B)C & Discharging Time =0.69 (R_B)C
Option B:	Charging Time= 0.69 (R_B)C & Discharging Time =0.69 (R_A+R_B)C
Option C:	Charging Time= 0.69 (R_A)C & Discharging Time =0.69 (R_A+R_B)C
Option D:	Charging Time= 0.69 (R_A+R_B)C & Discharging Time =0.69 (R_A)C
Q22.	What is regulated output voltage of IC 7805?
Option A:	10 V
Option B:	09 V
Option C:	06 V
Option D:	05 V
Q23.	What is the purpose of a fold back protection circuit in regulator IC ?
Option A:	to limit current when ground and supply voltage gets shorted
Option B:	to limit voltage when ground and supply voltage gets shorted
Option C:	to boost output voltage
Option D:	to boost output current

Q24.	In switched mode regulator, the pass transistor operated at
Option A:	Either cut off or saturated state
Option B:	Only cut off state
Option C:	Linear region
Option D:	Either cut off or linear state
Q25.	Which of the following is integrating type of ADC?
Option A:	Flash type converter
Option B:	Dual slope ADC
Option C:	Counter type converter
Option D:	Tracking converter

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Examination 2020 under cluster Vidyavardhini's College of Engg & Tech

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012 (CBSGS)

Examination: Third Year Semester V

Course Code: EXC503 **Course Name: Electromagnetic Engineering**

Time: 1 hour **Max. Marks: 50**

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Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

Q1.	Which of the following is the correct expression to find B?
Option A:	B=curl A
Option B:	B=-grad V
Option C:	Curl H=B
Option D:	B=εH
Q2.	According to Gauss's law, closed surface integral of electric flux density D will be equal to the _____.
Option A:	Total Volume enclosed by that closed surface
Option B:	Total Charge enclosed by that closed surface
Option C:	Total Current enclosed by that closed surface
Option D:	Zero
Q3.	The electric field in region 1 (x>0) is 10ax+20ay+30az V/m. Region 2 lies in x<0. Which is the normal component of the electric field in region 1?
Option A:	20ay V/m
Option B:	30az V/m
Option C:	10ax V/m
Option D:	60ax V/m
Q4.	The volume charge density ρ can be found from electric flux density D=xy ax +yz ay+xz az as
Option A:	x+y+z
Option B:	0
Option C:	xy+yz+xz
Option D:	2x
Q5.	The magnetic field lines
Option A:	Originate from a negative charge and terminate at a positive charge.
Option B:	Originate from a positive charge and terminate at a negative charge.
Option C:	Are closed loops.
Option D:	Originate from a positive charge and terminate at a positive charge.

Q6.	Which of the following laws is analogous to the Gauss's law?
Option A:	Kirchoff's voltage law
Option B:	Biot-Savart law
Option C:	Ampere's law
Option D:	Coulomb's law
Q7.	An electromagnetic wave travelling in air is normally incident on a dielectric with dielectric constant εr=4. The reflection coefficient of the wave is _____.
Option A:	- 0.333
Option B:	3
Option C:	-0.268
Option D:	0.268
Q8.	For a wave travelling in free space, the magnetic field is H=15cos(wt-βz)ax. The direction of propagation of the wave is
Option A:	x
Option B:	y
Option C:	z
Option D:	xz
Q9.	The dot product E•H=0 implies that
Option A:	E=0
Option B:	H=0
Option C:	Electric field is perpendicular to the magnetic field.
Option D:	E and H both are zero.
Q10.	The conductivity of a perfect dielectric is
Option A:	∞
Option B:	0
Option C:	1
Option D:	1000
Q11.	At Brewster angle
Option A:	Total internal reflection happens
Option B:	There is no reflection of the wave.
Option C:	Wave is partially reflected and partially transmitted
Option D:	There is no incident wave
Q12.	If the electric field of a wave is in x-direction, the magnetic field is in y-direction, the Poynting vector will be in
Option A:	x-direction
Option B:	y-direction
Option C:	z-direction
Option D:	xy-direction
Q13.	The method of moments is used to solve
Option A:	Differential equations
Option B:	Integral equations

Option C:	Both differential and integral equations
Option D:	Voltage equations
Q14.	In case of Dirichlet boundary condition
Option A:	The continuous boundary potential is specified
Option B:	The normal derivative of the potential is specified.
Option C:	Both continuous boundary potential and normal derivative of the potential are specified
Option D:	No potential value needs to be specified
Q15.	The radiation resistance of half-wave dipole antenna is
Option A:	36.5 ohm
Option B:	73 ohm
Option C:	377 ohm
Option D:	50 ohm
Q16.	If the operating frequency of an antenna, radiating in free space, is 100MHz, the length of a quarter-wave monopole antenna is
Option A:	0.75 m
Option B:	0.5 m
Option C:	1.5 m
Option D:	3 m
Q17.	The radiation resistance of a Hertzian dipole is
Option A:	$80\pi^2(dl/\lambda)^2$
Option B:	$40\pi^2(dl/\lambda)^2$
Option C:	$20\pi^2(dl/\lambda)^2$
Option D:	$120\pi^2(dl/\lambda)^2$
Q18.	If the Maximum radiation intensity of an antenna is Umax=10 W/Sr and the Average radiation intensity is Uavg=1/2 W/Sr, the directivity of the antenna is
Option A:	10
Option B:	0.5
Option C:	20
Option D:	0.05
Q19.	If the electric field of an antenna is $E(\theta)=\cos 2\theta$, the Half-Power Beam Width is
Option A:	90 degrees
Option B:	45 degrees
Option C:	180 degrees
Option D:	22.5 degrees
Q20.	The radiation efficiency of an antenna is 90%. If the radiated power is 0.3W, the input power is
Option A:	3 W
Option B:	0.33 W
Option C:	0.27 W
Option D:	0.9 W

Q21.	Which of the following statements is correct?
Option A:	The radio horizon is always greater than the optical horizon.
Option B:	The optical horizon is always greater than the radio horizon.
Option C:	The radio horizon and the optical horizon are same.
Option D:	Radio horizon is above optical horizon.
Q22.	The line of sight distance of space wave propagation is
Option A:	d= 3.57/(√ht+√hr)
Option B:	d= 3.57(√ht-√hr)
Option C:	d= 3.57(√hr-√ht)
Option D:	d= 3.57(√ht+√hr)
Q23.	The maximum possible value of frequency for which reflection takes place for a given angle of incidence is called as
Option A:	Critical frequency
Option B:	Optimum working frequency
Option C:	Ultra high frequency
Option D:	Maximum usable frequency
Q24.	For a skip distance of 1400km at a maximum usable frequency of 10 MHz and a height of 400km, the critical frequency is
Option A:	4.961 MHz
Option B:	20.155 MHz
Option C:	49.61 MHz
Option D:	2.0155 MHz
Q25.	Space wave propagation is also called
Option A:	Ground wave propagation
Option B:	Multihop propagation
Option C:	Line-of-sight propagation
Option D:	Ionospheric propagation

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Examination 2020 under cluster Vidyavardhini's College of Engg & Tech

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012 (CBSGS)

Examination: Third Year Semester V

Course Code: EXC 504 **Course Name: Signals & Systems**

Time: 1 hour **Max. Marks: 50**

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Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

Q1.	The signal which is nonzero for time t = 8 to 10 and zero otherwise is _____
Option A:	Causal
Option B:	non-causal
Option C:	anti-causal
Option D:	Even
Q2.	The power of energy signal is
Option A:	Finite
Option B:	Infinite
Option C:	Zero
Option D:	Two
Q3.	The even part of x(t) is calculated as
Option A:	0.5[x(t)+ x(-t)]
Option B:	2[x(t)+ x(-t)]
Option C:	3[x(t)+ x(-t)]
Option D:	x(t)- x(-t)
Q4.	The signal which has value one for the range $t \geq 0$ and has value zero elsewhere is
Option A:	Impulse signal
Option B:	Unit step signal
Option C:	Sinusoidal signal
Option D:	Ramp signal
Q5.	LTI system response is given by _____ of input and impulse response of the system.
Option A:	Product
Option B:	Correlation
Option C:	Convolution
Option D:	Integration

Q6.	Two discrete time systems connected in series with impulse responses h1(n) and h2(n) can be replaced by one discrete time system which will have overall impulse response as……..
Option A:	Convolution of h1(n) and h2(n)
Option B:	addition of h1(n) and h2(n)
Option C:	division of h1(n) and h2(n)
Option D:	integration of h1(n) and h2(n)
Q7.	Discrete Time Fourier Transform is periodic with the period
Option A:	2π
Option B:	π
Option C:	3π
Option D:	4π
Q8.	Z-transform of $x(n) = \{5,6\}$ is
Option A:	$X(Z) = 5 + 6z^{-1}$
Option B:	$X(Z) = 5z^2 + 6z$
Option C:	$X(Z) = 5z^3 + 6z$
Option D:	$X(Z) = 5z^4 + 6z^3$
Q9.	For a stable system the poles should lie on…….
Option A:	Right half of s-plane
Option B:	Both sides of s-plane
Option C:	Left half of s-plane
Option D:	Anywhere on s-plane
Q10.	If Laplace transform of x(t) is X(s), then Laplace transform of derivative of x(t) is
Option A:	s X(s)
Option B:	Derivative of X(s)
Option C:	X(2s)
Option D:	X(s) /s
Q11.	The Laplace transform of impulse response is known as _____ of LTI system
Option A:	Output response
Option B:	Step response
Option C:	Impulse function
Option D:	Transfer function
Q12.	The ROC of unit sample response is
Option A:	$\|z\| > 1$
Option B:	$\|z\| < 1$
Option C:	Entire z plane except $\|z\| = 1$
Option D:	Entire z plane

Q13.	What is the Z-transform of $(0.8)^n$ x(n) if Z-transform of x(n) is X(z)?
Option A:	X(0.8 z)
Option B:	X(Z / 0.8)
Option C:	0.8 X(z)
Option D:	X(z) / 0.8
Q14.	The conditions that needs to be satisfied by a signal so that it can be represented using Fourier series are known as……..
Option A:	Fourier conditions
Option B:	Gibbs conditions
Option C:	Dirichlet's conditions
Option D:	Discrete conditions
Q15.	The transfer function for the system described by the equation y(n) +8 y(n-1) = x(n)
Option A:	H(z) = $\frac{z}{z^2-2z}$
Option B:	H(z) = $\frac{z}{z^2-2z}$
Option C:	H(z) = $\frac{z}{z^2-2z}$
Option D:	H(z) = $\frac{z}{z+8}$
Q16.	Z-transform of u(n) is
Option A:	H(z) = $\frac{z}{z-1}$
Option B:	H(z) = $\frac{z}{z+1}$
Option C:	H(z) = $\frac{z}{2}$
Option D:	H(z) = $\frac{1}{z}$
Q17.	Convolution of two signals in time domain becomes _____ of those two signals in Fourier domain
Option A:	Integration
Option B:	Summation
Option C:	Division
Option D:	Multiplication
Q18.	Fourier transform of shifted signal will
Option A:	change its Phase spectrum
Option B:	change its Amplitude spectrum
Option C:	No change in original signal spectrum
Option D:	Not change its Phase spectrum
Q19.	Fourier transform of sgn(t)is
Option A:	2/jw

Option B:	jw
Option C:	2
Option D:	2jw
Q20.	Area under the unit impulse is ……
Option A:	1
Option B:	0
Option C:	-1
Option D:	Infinity
Q21.	DTFS property defined by following equation is known as…….. **DTFS[x(−n)] =** a_{-k}
Option A:	Negative property
Option B:	Time scaling
Option C:	Frequency scaling
Option D:	Time Reversal
Q22.	Energy Spectral density of a signal is
Option A:	power distribution as a function of time
Option B:	Signal distribution as a function of time
Option C:	energy distribution as a function of frequency
Option D:	Sample of energy
Q23.	Range of values of z for which Z Transform series converges is known as……
Option A:	Region of convergence
Option B:	Radius of divergence
Option C:	Radius of convergence
Option D:	Region of divergence
Q24.	Which is incorrect property of autocorrelation?
Option A:	Auto correlation exhibits conjugate symmetry
Option B:	Auto correlation function gives energy of signal at origin
Option C:	Auto correlation function is maximum at zero lag
Option D:	Auto correlation function is minimum at zero lag
Q25.	The Fourier transform is an extension of the Fourier series when the period of the signal extends to ----------.
Option A:	infinity
Option B:	zero
Option C:	Minus infinity
Option D:	-1

University of Mumbai

Examination 2020 under cluster Vidyavardhini's College of Engg & Tech

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012 (CBSGS)

Examination: Third Year Semester V

Course Code: EXC 505 **Course Name: Digital Communication**

Time: 1 hour **Max. Marks: 50**

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Note:

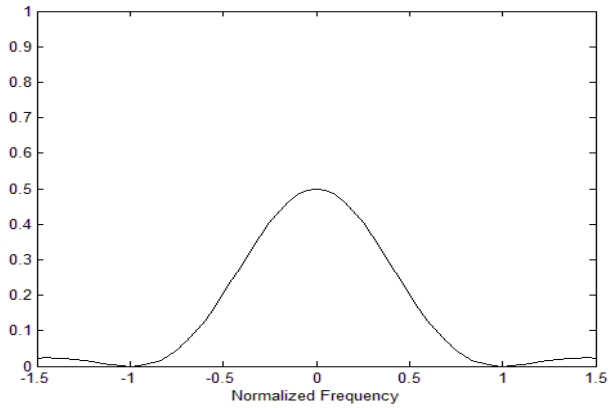
1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

Q1.	Sampler produces _____ version of input signal.
Option A:	Analog
Option B:	Digital
Option C:	Discrete
Option D:	analog and digital
Q2.	The error propagation in duobinary coding can be avoided using technique called as
Option A:	Post filtering
Option B:	Pre-coding
Option C:	Filtering
Option D:	Post coding
Q3.	As Euclidean distance d between the signals increases then-
Option A:	Probability of error decreases
Option B:	Probability of error increases
Option C:	Probability of error remains same
Option D:	No probability of error
Q4.	How many dots are there in geometrical representation of 8-ary PSK?
Option A:	16
Option B:	4
Option C:	2
Option D:	8
Q5.	For a (4,1) LBC the generator matrix is given by G= [1 1 1 1]. Find the code word generated.
Option A:	Code word 0001,1111
Option B:	Code word 0000,1111
Option C:	Code word 0000,1110
Option D:	Code word 0011,1100
Q6.	The Hamming distance between code 100 and 101 is
Option A:	1

Option B:	2
Option C:	0
Option D:	3
Q7.	The probability of the random variable having a Poisson distribution is given by _____
Option A:	$P(X = k) = [m^k . e^{-m}]/k!$
Option B:	$\sigma_x = [np]^{1/2}$
Option C:	$P(X = k) = [m^k . e^{-k}]/k!$
Option D:	$P(X = k) = [m^m . e^{-m}]/k!$
Q8.	Which parameters of a signal element are shown by a constellation diagram, particularly when we are using two carriers (one in-phase and one quadrature)?
Option A:	Amplitude and Frequency
Option B:	Amplitude and Phase
Option C:	Frequency and Phase
Option D:	Only Frequency
Q9.	Using Shannon-Hartely theorem for B=10kHz and SNR=20 dB, channel capacity is
Option A:	56.20kbps
Option B:	66.58kbps
Option C:	70.10kbps
Option D:	80kbps
Q10.	Syndrome is calculated by
Option A:	H^T/r
Option B:	rH^T
Option C:	rH
Option D:	r/H
Q11.	If the bit rate for an ASK signal is 1000 bps, the baud rate is-
Option A:	1000
Option B:	500
Option C:	2000
Option D:	4000
Q12.	In case of cyclic code, when highest degree of generator polynomial is 3 and data word is 3, what is the highest degree of codeword?
Option A:	3
Option B:	4
Option C:	8
Option D:	6
Q13.	Interference that occurs when a pulse spreads out in such a way that it interferes with adjacent pulses at the sample instant is called
Option A:	Inter Channel Interference
Option B:	Intra Symbol Interference

Option C:	Inter Symbol Interference
Option D:	Intra Channel Interference
Q14.	Huffman coding is used to
Option A:	compress data by using more bits to encode more frequently occurring characters
Option B:	expand data by using fewer bits to encode more frequently occurring characters
Option C:	compress data by using fewer bits to encode more frequently occurring characters
Option D:	compress data by using fewer bits to encode fewer frequently occurring characters
Q15.	In which modulation technique frequency of carrier signal is varied according to information in digital signal?
Option A:	BASK
Option B:	BFSK
Option C:	BPSK
Option D:	QASK
Q16.	Which modulation technique uses: square law device, bandpass filter, and frequency divider by two, for carrier recovery?
Option A:	8 ary PSK
Option B:	QPSK
Option C:	BPSK
Option D:	QASK
Q17.	Which type of demodulator is used in frequency hopping technique?
Option A:	Coherent
Option B:	Non coherent
Option C:	Resonant
Option D:	Non-resonant
Q18.	Relative frequency definition of probability is, for any event A, with nA as number of times of its occurrences of A, out of N total number of outcomes_____
Option A:	P(A) = (nA/N)
Option B:	P(A) = Lim $_{n \to \infty}$ (nA/N)
Option C:	P(A) = Lim $_{n \to 0}$ (nA/N)
Option D:	P(A) = Lim $_{n \to N}$ (nA/N)
Q19.	The order of_____ matrix is (n- k) x n
Option A:	Generator
Option B:	Parity
Option C:	Parity check matrix
Option D:	Codeword Matrix
Q20.	The toggle flip-flop generates an odd clock waveform and an even waveform in-
Option A:	BPSK Transmitter
Option B:	QPSK Transmitter
Option C:	BFSK Transmitter

Option D:	ASK Transmitter
Q21.	Chip is defined as
Option A:	Shortest uninterrupted waveform
Option B:	Largest uninterrupted waveform
Option C:	Shortest diversion
Option D:	Largest diversion
Q22.	The coding techniques in which the maximum synchronizing capability is present is called
Option A:	Huffman coding
Option B:	Hamming Coding
Option C:	Manchester Coding
Option D:	Polar RZ coding
Q23.	Power Spectral Density shown in diagram, belongs to which type of Line Coding technique? 
Option A:	Polar NRZ
Option B:	Unipolar RZ
Option C:	Bipolar NRZ
Option D:	Manchester
Q24.	Block codes are generated using
Option A:	Generator polynomial
Option B:	Generator matrix
Option C:	Generator polynomial & matrix
Option D:	Shift Registers
Q25.	Given xi = {x_1, x_2, x_3} with probabilities as p(x_i) = {0.6, 0.2, 0.2} respectively. Find Average Codeword length using Shannon-Fano coding technique
Option A:	1.4 bits/ message
Option B:	1.8 bits/ message
Option C:	2 bits/ message
Option D:	2.5 bits/ message

University of Mumbai

Examination 2020 under Cluster 06

(Lead College: Vidyavardhini's College of Engg Tech)

Examination Commencing from 07th January 2021 to 20th January 2021

Program: **Electronics Engineering**

Curriculum Scheme: Rev 2012

Examination: TE Semester V

Course Code: EXC505 and Course Name: Digital Communication

Time: 2hour Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	The term ---------- is used to signify the functional relationship by which a real number is assigned to each possible outcome of an event.
Option A:	Probability density function
Option B:	Distribution function
Option C:	Stationary pdf
Option D:	Random variable
2.	A random variable is determined by a large number of independent events that tends to have a Gaussian probability distribution. This can be described using
Option A:	Central limit theorem
Option B:	Superposition
Option C:	Convolution
Option D:	Correlation
3.	Linear combination of two Gaussian random variables results to another random variable which is ------- in nature.
Option A:	Triangular
Option B:	Uniform
Option C:	Gaussian
Option D:	Rayleigh
4.	The following is not a unit of information
Option A:	Bit
Option B:	Nat
Option C:	Decit
Option D:	Hz
5.	The maximum entropy of a binary source occurs when
Option A:	P(0)=p(1)=0
Option B:	P(0)=p(1)=1
Option C:	P(0)=p(1)=0.5
Option D:	P(0)=p(1)=0.15
6.	Using the concept of information theory, it is possible to transmit error-free information at a rate of ---------- bits per second over a channel bandlimited to B Hz.
Option A:	B

Option B:	2B
Option C:	2B $\log_2(1+S/N)$
Option D:	B $\log_2(1+S/N)$
7.	A given discrete memoryless source will have maximum entropy provided the message generated are
Option A:	Statistically independent
Option B:	Statistically dependent
Option C:	Equiprobable
Option D:	Binary
8.	Huffman codes and Shannon Fano codes are
Option A:	Similar length code
Option B:	Equiprobable code
Option C:	Variable length code
Option D:	Equidistant code
9.	A channel has a bandwidth of 1MHz. The SNR for this channel is 63. The approximate bit rate is
Option A:	1 Mbps
Option B:	2 Mbps
Option C:	4 Mbps
Option D:	6 Mbps
10.	Which of the following is the technique for creating digital database of real signals?
Option A:	Pulse amplitude modulation
Option B:	Pulse code modulation
Option C:	Pulse position modulation
Option D:	Pulse width modulation
11.	The method using which the error propagation in duobinary signaling can be avoided is
Option A:	Filtering
Option B:	Convolution
Option C:	Postcoding
Option D:	precoding
12.	The phase angle difference between symbols of QPSK modulator is
Option A:	180 degrees
Option B:	90 degrees
Option C:	45 degrees
Option D:	22.5 degrees
13.	MSK stands for
Option A:	Maximum Shift Keying
Option B:	Many Shift Keying
Option C:	Minimum Shift Keying
Option D:	Mass Switch Key

14.	How many different symbols are possible at the output of 8 ary-PSK modulator?
Option A:	8
Option B:	16
Option C:	64
Option D:	256
15.	If minimum Hamming Distance in block code is 11, then it is capable to correct ___ number of errors.
Option A:	5
Option B:	10
Option C:	3
Option D:	1
16.	The non-zero output of the product $Y.H^T$ is called
Option A:	Entropy
Option B:	Information
Option C:	Syndrome
Option D:	Rate
17.	How many bits are grouped to form a QPSK symbol?
Option A:	2 bits per symbol
Option B:	3 bits per symbol
Option C:	4 bits per symbol
Option D:	6 bits per symbol
18.	Convolution codes are graphically represented with
Option A:	Eye diagram
Option B:	Trellis diagram
Option C:	Encoder diagram
Option D:	Decoder diagram
19.	The frequency hopping system uses --------- modulation scheme.
Option A:	BASK
Option B:	BPSK
Option C:	MFSK
Option D:	MPSK
20.	Frequency hopping involves a periodic change of transmission _____
Option A:	Signal
Option B:	Frequency
Option C:	Phase
Option D:	Amplitude

Option 1

Q2. **(20 Marks)**	**Solve any Four out of Six; 5 marks each**
A	*State and explain central limit theorem*
B	*Differentiate between Source Coding and Channel Coding.*

C	*What is optimum receiver. Explain in detail.*
D	*Compare offset QPSK and non-offset QPSK.*
E	*Explain direct sequence spread spectrum system and define anti jamming characteristics of spread spectrum system.*
F	*What is Eye Pattern? Explain its significance.*

Option 2

Q3. **(20 Marks)**	**Solve any Two Questions out of Three 10 marks each**
A	*Five source messages are probable to appear as* m_1*=0.4,* m_2 *=*m_3*=*m_4*=*m_5*=0.15. Find coding efficiency for (a)Shannon-Fano coding, (b)Huffman coding.*
B	*Draw the signal constellation diagram for 16-ary-QASK (with d =2a) and for 16-PSK system. Determine Euclidian distance for both the systems and compare. Which system has better noise immunity?*
C	*What is ISI? How it is caused? Derive expression for ISI and explain method to overcome ISI.*

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Code: EXC502 and Course Name: DLIC

Time: 1hour Max. Marks: 50

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

Q1.	Ideal output impedance of op amp is
Option A:	50Ω
Option B:	0 Ω
Option C:	100 M Ω
Option D:	10K Ω
Q2.	Input offset current is basically defined as the algebraic _____ the base current of two transistors.
Option A:	sum of
Option B:	difference between
Option C:	product of
Option D:	division of
Q3.	A third-order filter will have a roll-off rate of
Option A:	–20 dB/decade.
Option B:	–40 dB/decade.
Option C:	–60 dB/decade.
Option D:	–30 dB/decade
Q4.	What is Barkhausen criterion for oscillation?
Option A:	|Aβ|>= 1
Option B:	|Aβ|<= 1
Option C:	|Aβ|=- 1
Option D:	Aβ ≠ 1
Q5.	a Schmitt trigger is

Option A:	a comparator with only one trigger point
Option B:	a comparator with hysteresis.
Option C:	a comparator with three trigger points
Option D:	not a comparator
Q6.	Opamp can be used as a comparator in _____
Option A:	Open loop configuration
Option B:	Positive feedback configuration
Option C:	Negative feedback configuration
Option D:	close loop configuration
Q7.	Which of the following represents range of frequency measured by ADC?
Option A:	Bandwidth
Option B:	Threshold frequency
Option C:	Peak frequency
Option D:	Cut off frequency
Q8.	Find out from the following integrating type analog to digital converter?
Option A:	Flash type converter
Option B:	Tracking converter
Option C:	Counter type converter
Option D:	Dual slope ADC
Q9.	The output of a Schmitt trigger is a
Option A:	pulse waveform.
Option B:	sawtooth waveform
Option C:	sinusoidal waveform.
Option D:	triangle waveform.
Q10.	The on time (Ton) of astable multivibrator using IC555 is_____
Option A:	$0.69R_AC$
Option B:	R_AC
Option C:	$5\ R_AC$
Option D:	$0.5\ R_AC$
Q11.	How many terminals does 7800 series IC regulator have?
Option A:	3
Option B:	2
Option C:	4
Option D:	5
Q12.	How many Flip Flop are present internally in IC555?
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q13.	To get a maximum output current, IC regulation are provided with_____
Option A:	Radiation source
Option B:	Heat sink
Option C:	Peak detector
Option D:	Transformer

Q14.	A certain non-inverting amplifier has Ri of 1 kΩ and Rf of 50 kΩ. The closed-loop voltage gain is ……
Option A:	100,000
Option B:	1000
Option C:	51
Option D:	-50
Q15.	RC phase shift oscillator is _____oscillator
Option A:	Low frequency
Option B:	High frequency
Option C:	Ultra high frequency
Option D:	Super high frequency
Q16.	The difference between active and passive filter is_____
Option A:	Active filters provide gain
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Option C:	Passive filters use BJT
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Q17.	With increase in pulse width, for the same period, the duty cycle
Option A:	Decreases
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Q18.	Sample and hold circuit uses _____to hold the signal value
Option A:	Inductor
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Q19.	What is the major advantage of the R/2R ladder digital-to-analog (DAC), as compared to a binary-weighted digital-to-analog DAC converter?
Option A:	It only uses two different resistor values
Option B:	It has fewer parts for the same number of inputs
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Q20.	If the gain of a closed-loop inverting amplifier is 3.9, with an input resistor value of 1.6 KΩ, what value of feedback resistor is necessary?
Option A:	6240 Ω
Option B:	2.4 KΩ
Option C:	410 Ω
Option D:	0.24 KΩ
Q21.	Choose the value of R_F and C for a 5kHz input signal to obtain good differentiation.
Option A:	RF = 1.6 KΩ, C1 = 33µF
Option B:	RF = 1.6 KΩ, C1 = 0.47µF
Option C:	RF = 1.6 KΩ, C1 = 21µF
Option D:	RF = 1.6 KΩ, C1 = 10µF

Q22.	Hysteresis prevents false triggering associated with
Option A:	sinusoidal input
Option B:	Noise voltages
Option C:	Stray capacitances
Option D:	Trip points
Q23.	Sample-and-hold circuits in analog-to digital converters (ADCs) are designed to:
Option A:	sample and hold the output of the binary counter during the conversion process
Option B:	stabilize the comparator's threshold voltage during the conversion process
Option C:	stabilize the input analog signal during the conversion process
Option D:	sample and hold the D/A converter staircase waveform during the conversion process
Q24.	For monostable multivibrator with R=90.9KΩ and C=0.01μF, the on time (Ton) is _____
Option A:	1msec
Option B:	1sec
Option C:	5msec
Option D:	20msec
Q25.	Compute the input voltage of 7805c voltage regulator with a current source that will deliver a 0.725A current to 65Ω, 10w load. (Assume reference voltage =5v)
Option A:	V_{in} = 84v
Option B:	V_{in} = 54v
Option C:	V_{in} = 34v
Option D:	V_{in} = 64v

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012

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Option D:	RF = 1.6 KΩ, C1 = 10µF

Q22.	Hysteresis prevents false triggering associated with
Option A:	sinusoidal input
Option B:	Noise voltages
Option C:	Stray capacitances
Option D:	Trip points
Q23.	Sample-and-hold circuits in analog-to digital converters (ADCs) are designed to:
Option A:	sample and hold the output of the binary counter during the conversion process
Option B:	stabilize the comparator's threshold voltage during the conversion process
Option C:	stabilize the input analog signal during the conversion process
Option D:	sample and hold the D/A converter staircase waveform during the conversion process
Q24.	For monostable multivibrator with R=90.9KΩ and C=0.01μF, the on time (Ton) is _____
Option A:	1msec
Option B:	1sec
Option C:	5msec
Option D:	20msec
Q25.	Compute the input voltage of 7805c voltage regulator with a current source that will deliver a 0.725A current to 65Ω, 10w load. (Assume reference voltage =5v)
Option A:	V_{in} = 84v
Option B:	V_{in} = 54v
Option C:	V_{in} = 34v
Option D:	V_{in} = 64v

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Code: EXC 501 and Course Name: Electromagnetics Engineering

Time: 1 hour Max. Marks: 50

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

Q1.	Find the divergence of the following function $\vec{A} = 4xya_x + 2x^2za_y + 2z^4a_z$
Option A:	2y
Option B:	$2x+3z^2$
Option C:	$3z^2$
Option D:	$4y+8z^3$
Q2.	Two point charges Q1 and Q2 are at distance R from each other, Charge Q1 exert a force F on Q2. If both the charge increased by 5 times new force will be Fnew. Which relation will be true?
Option A:	$\text{Fnew} = 3\text{F}$
Option B:	$\text{Fnew} = 6\text{F}$
Option C:	$\text{Fnew} = 16\text{F}$
Option D:	$\text{Fnew} = 25\text{F}$
Q3.	What is the minimum possible magnitude of the electrostatic force between two point charges of 2 mc each, separated by a distance of 1m in vacuum? The constant $k = 9 \times 10^9$ N-m^2/C^2.
Option A:	36000 N
Option B:	900 N
Option C:	360 mN
Option D:	9 mN
Q4.	Conduction current in dielectric will be
Option A:	$\bar{J} = \infty$
Option B:	$\bar{J} = 0$
Option C:	$\bar{J} = -\infty$
Option D:	$\bar{J} = \pm 1$
Q5.	Ampere's Circuit Law in time dependant field is
Option A:	$\bar{J} = \frac{\partial \bar{D}}{\partial t}$

Option B:	$\bar{J} = \sigma\bar{E} + \frac{\partial \bar{D}}{\partial t}$
Option C:	$\bar{J} = \sigma\bar{E}$
Option D:	$\bar{J} = \frac{\partial \bar{E}}{\partial t}$
Q6.	The flux density at a point in space is given by B = 4 xax + 2kyay + 8 az Wb/m2. The value of constant k must be equal to
Option A:	-2
Option B:	-0.5
Option C:	+0.5
Option D:	+2
Q7.	The curl of the gradient of the scalar field defined by V = 2x2y + 3y2z + 4z2x is
Option A:	4xyax + 6yzay + 8zxaz
Option B:	4ax + 6ay + 8az
Option C:	(4xy + 4z2)ax + (2x2 + 6yz)ay + (3y2 + 8zx)az
Option D:	0
Q8.	Given a vector field F = y2xax - yzay - x2az, the line integral ∫F. d 1 evaluated along a segment on the x-axis from x =1 to x = 2 is
Option A:	–2.33
Option B:	0
Option C:	2.33
Option D:	7
Q9.	A 10GHz travelling in free space has an amplitude, Ex=10ω/m, (0=8.854 x 10-12, μ=4π x 10-7). Find α.
Option A:	209.61m
Option B:	0
Option C:	29.58 m
Option D:	1
Q10.	In circular Polarization of EM Wave
Option A:	Ex=Ey
Option B:	Ex<Ey
Option C:	Ex>Ey
Option D:	Ex≠Ey
Q11.	The relation between flux density and vector potential is
Option A:	B = Curl(A)
Option B:	A = Curl(B)
Option C:	B = Div(A)
Option D:	A = Div(B)
Q12.	The value of ∫ H.dL will be

Option A:	J
Option B:	I
Option C:	B
Option D:	H
Q13.	Choose the best relation.
Option A:	A = -Div(V)
Option B:	V = Curl(A)
Option C:	H = -Grad(V)
Option D:	V = Div(E)
Q14.	Find the force experienced by an electromagnetic wave in a conductor?
Option A:	Electrostatic force
Option B:	Magneto static force
Option C:	Electro motive force
Option D:	Lorentz force
Q15.	Find the magnetic flux density when the vector potential is a position vector.
Option A:	1
Option B:	0
Option C:	-1
Option D:	∞
Q16.	Mathematical prediction of radio waves was done by
Option A:	Einstein
Option B:	Hertz
Option C:	Faraday
Option D:	Maxwell
Q17.	High-frequency long-distance propagation mostly depends on
Option A:	Ionospheric reflection
Option B:	Tropospheric reflection
Option C:	Ground reflection
Option D:	Inverted reflection
Q18.	Radio waves would strongly reflect off
Option A:	A flat insulating surface of the right size
Option B:	A flat metallic surface of the right size
Option C:	A flat dielectric surface of the right size
Option D:	A flat body of water
Q19.	Radio waves sometimes bend around the corners due to
Option A:	Reflection
Option B:	Diffusion
Option C:	Refraction
Option D:	Diffraction

Q20.	Which of the following is the phenomenon caused when Radio waves travel in two or more paths during propagation and produce slowly-changing phase differences between signals?
Option A:	Absorption
Option B:	Fading
Option C:	Baffling
Option D:	skip
Q21.	The terminal impedance of a dipole antenna is 710 Ω. The terminal impedance of the slot antenna given the intrinsic impedance of air is 377 Ω is:
Option A:	100 Ω
Option B:	50 Ω
Option C:	25 Ω
Option D:	500 Ω
Q22.	The basic requirements of transmitting antennas are
Option A:	High efficiency
Option B:	Low side lobes
Option C:	Large signal to noise ratio
Option D:	Low efficiency
Q23.	The solid area through which all the power radiated by the antenna is:
Option A:	Beam area
Option B:	Effective area
Option C:	Aperture area
Option D:	Beam efficiency
Q24.	An antenna has a field pattern E (θ) =cos θ. cos 2θ. The first null beam width of the antenna is:
Option A:	45^0
Option B:	90^0
Option C:	180^0
Option D:	120^0
Q25.	The members of the antenna family which are made of wires of certain value in terms of operating wavelength are called:
Option A:	Loop antennas
Option B:	Wire antennas
Option C:	Dipole antenna
Option D:	Slot antennas