Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: **ELX DLO5011** and Course Name: **Database Management System**

Time: 1 hour Max. Marks: 50

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

Q1.	Farmer goes to ATM center and withdraw Rs. 300.Which kind of database user is he?
Option A:	Application Programmer
Option B:	Sophisticated user
Option C:	Specialized user
Option D:	Unsophisticated user
Q2.	Collection of information stored in database at a particular moment is known as _____.
Option A:	View
Option B:	Schema
Option C:	Instance
Option D:	Record
Q3.	There are similarities between the instructor entity set and the secretary entity set in the sense that they have several attributes that are conceptually the same across the two entity sets: namely, the identifier, name, and salary attributes. What is this process?
Option A:	Commonality
Option B:	Specialization
Option C:	Generalization
Option D:	Similarity
Q4.	Which of the following is another name for a weak entity?
Option A:	Child
Option B:	Owner
Option C:	Dominant
Option D:	Entity
Q5.	Which relationship is used to represent a specialization entity?
Option A:	ISA

Option B:	AIS
Option C:	ONIS
Option D:	WHOIS
Q6.	The attribute AGE is calculated from DATE_OF_BIRTH. The attribute AGE is _.
Option A:	Simple attribute
Option B:	Composite attribute
Option C:	Multivalued attribute
Option D:	Derived attribute
Q7.	Foreign Keys implement _____ constraint in the Relational Schema.
Option A:	Not Null
Option B:	Unique
Option C:	Entity Integrity
Option D:	Referential Integrity
Q8.	Relational Algebra is a _____ query language that takes two relations as input and produces another relation as an output of the query.
Option A:	Relational
Option B:	Structural
Option C:	Procedural
Option D:	Fundamental
Q9.	Which of the following is used to denote the selection operation in relational algebra?
Option A:	Pi (Greek)
Option B:	Sigma (Greek)
Option C:	Lambda (Greek)
Option D:	Omega (Greek)
Q10.	For select operation the _____ appear in the subscript and the _____ argument appears in the parenthesis after the sigma.
Option A:	Predicates, relation
Option B:	Relation, Predicates
Option C:	Operation, Predicates
Option D:	Relation, Operation
Q11.	Which one of the following cannot be included in the CREATE TABLE command in SQL?
Option A:	Names and Data Types of the table columns
Option B:	Primary Key and Foreign Key
Option C:	Default Values for the table columns
Option D:	Who is authorized to access the table
Q12.	Database table by the name Loan_Records is given below:

	<table><tr><td>Borrower</td><td>Bank_Manager</td><td>Loan_Amount</td></tr><tr><td>Ramesh</td><td>Sunderajan</td><td>10000.00</td></tr><tr><td>Suresh</td><td>Ramgopal</td><td>5000.00</td></tr><tr><td>Mahesh</td><td>Sunderajan</td><td>7000.00</td></tr></table>What is the output of the following SQL query? SELECT Count(*) FROM ((SELECT Borrower, Bank_Manager FROM Loan_Records) AS S NATURAL JOIN (SELECT Bank_Manager, Loan Amount FROM Loan_Records) AS T);
Option A:	3
Option B:	9
Option C:	5
Option D:	6
Q13.	Consider the following Relation Schema: Weather (City, Temperature, Humidity, Condition) Find the names of cities whose temperature is not in the range of 71 to 80.
Option A:	SELECT City FROM Weather WHERE Temperature NOT IN (71 to 80)
Option B:	SELECT City FROM Weather WHERE Temperature IN (71 to 80)
Option C:	SELECT City FROM Weather WHERE Temperature NOT BETWEEN (71 to 80)
Option D:	SELECT City FROM Weather WHERE Temperature BETWEEN (71 to 80)
Q14.	Which of these is also known as a virtual table?
Option A:	SCHEMA
Option B:	DATABASE
Option C:	JOIN
Option D:	VIEW
Q15.	In the given query which of the keywords has to be inserted? INSERT INTO employee _____ (1002, Joey,2000);
Option A:	Table
Option B:	Values
Option C:	Relation
Option D:	Field
Q16.	Which one of the following data definition commands is not a SQL command?
Option A:	Create table
Option B:	Drop table
Option C:	Modify table
Option D:	Drop domain

Q17.	Which of the following is NOT a common pitfall or issue in the Relational Database Design?
Option A:	Unique Tuples
Option B:	Null Tuples
Option C:	Spurious Tuples
Option D:	Redundancy
Q18.	Which desirable characteristic out of the following, are imparted during the process of Normalization?
Option A:	Anomalies
Option B:	Redundancies
Option C:	Optimization
Option D:	Null Tuples
Q19.	For a Relational Schema R(A,B,C,D,E,F), the Dependency Set is given as – {A,B} → {C,D,E,F}. Which of the following statement correctly describes it?
Option A:	The relation is at least 2NF Compliant
Option B:	There is no Functional dependency in relation
Option C:	There exists a Transitive Dependency in relation
Option D:	There is Partial Functional Dependency in relation
Q20.	Which of the following is NOT a correct type of Anomaly experienced in the design of databases –
Option A:	Deletion Anomaly
Option B:	Insertion Anomaly
Option C:	Modification Anomaly
Option D:	Transfer Anomaly
Q21.	A system is in a _____ state if there exists a set of transactions such that every transaction in the set is waiting for another transaction in the set.
Option A:	Idle
Option B:	Waiting
Option C:	Deadlock
Option D:	Ready
Q22.	Execution of translation in isolation preserves the _____ of a database.
Option A:	Atomicity
Option B:	Consistency
Option C:	Durability
Option D:	Identity
Q23.	_____ allows only committed data to be read and further requires that no other transaction is allowed to update it between two reads of a data item by a transaction.
Option A:	Read uncommitted

Option B:	Repeatable read
Option C:	Serializable
Option D:	Read committed
Q24.	Failures of various kinds, such as hardware failures and system crashes can be deal with process of: -
Option A:	Normalization
Option B:	Transaction Management
Option C:	Query optimization
Option D:	Data Processing
Q25.	Collections of operations that form a single logical unit of work are called ____.
Option A:	Views
Option B:	Networks
Option C:	Units
Option D:	Transactions

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: ELXDLO5012 and Course Name: Digital Control System

Time: 1 hour Max. Marks: 50

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

Q1.	The eigenvalues of a square matrix remain invariant under
Option A:	Similarity Transformation
Option B:	Z transformation
Option C:	Multiple Transformation
Option D:	Bilateral Transformation
Q2.	The given state variable model is in _____canonical form $x(k+1) = \begin{bmatrix} 0 & 1 \\ -0.4 & -1.3 \end{bmatrix} x(k) + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u(k), \quad y(k) = [0.8 \quad 1] x(k)$
Option A:	Controllable
Option B:	Observable
Option C:	Jordan
Option D:	Kalman
Q3.	Digital Control preferred compared to analog control because of
Option A:	Inflexibility in Control Algorithms
Option B:	Narrow range of Control Algorithms including nonlinear control
Option C:	No errors due to drift problems in analog components
Option D:	Use of ADC
Q4.	In dead beat control, all the poles of Closed Loop system are placed in z plane at
Option A:	Unit Circle
Option B:	Zero
Option C:	Diagonally Opposite
Option D:	Infinity
Q5.	For a given deference equation, y(n) = x(n) – 2y(n-2), the order of discrete transfer function is
Option A:	0
Option B:	1
Option C:	2
Option D:	3

Q6.	If all the roots of characteristic equation lie inside the unit circle in the z plan the system is,
Option A:	stable
Option B:	unstable
Option C:	marginally stable
Option D:	instable
Q7.	The condition for observability for a dynamical system x(k + 1) = Ax(k) + Bu(k) , y(k) = Cx(k) + Du(k) is that the Rank of a composite matrix $\begin{bmatrix} C \\ CA \\ . \\ CA^{n-1} \end{bmatrix}$, should be equal to the order of the system
Option A:	n+1
Option B:	0
Option C:	n
Option D:	n-1
Q8.	In zero order hold,
Option A:	the accuracy improves with decrease in sampling frequency
Option B:	the accuracy improves with increase in sampling frequency
Option C:	the accuracy deteriorate with increase in sampling frequency
Option D:	the accuracy does not depend on sampling frequency
Q9.	For constant value of attenuation σ, the mapping from s plane to z plane results in a _____with radius of _____
Option A:	Circle, Zero
Option B:	Circle, 1
Option C:	Circle, 0.5
Option D:	Circle, e^{σ}
Q10.	Digital control systems are generally superior to analog control systems, but they are always worse with regard to,
Option A:	Speed
Option B:	Flexibility
Option C:	Diagnostics
Option D:	Noise immunity
Q11.	A system is said to be_____ if every state can be completely identified by measurements of the outputs at the finite time interval
Option A:	Controllable
Option B:	Observable
Option C:	Instable
Option D:	Controllable and observable

Q12.	A system x(k + 1) = Ax(k) + Bu(k), y(k) = Cx(k) + Du(k) is completely state controllable if rank of _____matrix is same as _____of the system
Option A:	Observability, Rank
Option B:	Controllability, Order
Option C:	Observability, order
Option D:	Controllability, Rank
Q13.	The transfer function of unit delay is represented by
Option A:	(1-z) /z
Option B:	z/(1-z)
Option C:	1/z
Option D:	z
Q14.	In impulse invariance method, _____response of the system is first discretized and then transformed in _____domain.
Option A:	Step, Z
Option B:	Impulse, Z
Option C:	Step, W
Option D:	Impulse, W
Q15.	If A= $\begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$, B= $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$, and C = $\begin{bmatrix} 1 & 0 \end{bmatrix}$, then system transfer function will be
Option A:	(z+3) / z(z+2)
Option B:	(z+3) / z(z+1)
Option C:	(z+3) / z(z+1) (z+2)
Option D:	(z+3) / (z+1) (z+2)
Q16.	If sensor noise is a significant factor,
Option A:	half order of observer is more attractive
Option B:	reduced order of observer is more attractive
Option C:	full order of observer is less attractive
Option D:	reduced order of observer is less attractive
Q17.	The system is said to be in equilibrium state, when the initial internal energy storage is _____ and external input is _____
Option A:	infinite, zero
Option B:	infinite, finite
Option C:	zero, infinite
Option D:	zero, zero
Q18.	_____ are the techniques for converting general state models into canonical one.

Option A:	Observable
Option B:	Controllable
Option C:	Diagonalization
Option D:	Canonical
Q19.	A band limited signal with a maximum frequency of 5 KHz to be sampled. According to the sampling theorem, the sampling frequency which is not valid is:
Option A:	5 KHz
Option B:	12 KHz
Option C:	15 KHz
Option D:	20 KHz
Q20.	A pole in z plane given by $z = e^{jaT}$, maps to s plane using the relationship $s = \frac{\ln z}{T}$ to
Option A:	$s = ja$
Option B:	$s = -ja$
Option C:	$s = ja^2$
Option D:	$s = -ja^2$
Q21.	A system described by state model, A= $\begin{bmatrix} 1 & 0 \\ 1 & 2 \end{bmatrix}$, B= $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$, and C = $\begin{bmatrix} 1 & 0 \end{bmatrix}$, is
Option A:	Controllable and observable
Option B:	Not controllable but observable
Option C:	Controllable but not observable
Option D:	Neither Controllable nor observable
Q22.	The z transform for a function a^k is
Option A:	z/z-a
Option B:	1
Option C:	1/z-a
Option D:	z
Q23.	An initially relaxed (all the initial conditions of the system are zero) LTI system is said to be BIBO stable if for every bounded input, the output is also_____.
Option A:	Growing exponentially
Option B:	Going to Zero
Option C:	Bounded
Option D:	Increasing linearly
Q24.	A system with one pole at z=1, in discrete transfer function has _____ position error and _____ acceleration error at steady state
Option A:	zero, zero
Option B:	zero, infinite
Option C:	infinite, infinite

Option D:	infinite, zero
Q25.	Pulse transfer function relates z-transform of the _____ at the sampling instants to the Z-transform of the _____ input.
Option A:	Input, sampled
Option B:	Output, continuous
Option C:	Input, Continuous
Option D:	Output, sampled

University of Mumbai

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

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016 (CBCGS)

Examination: Third Year Semester V

Course Code: ELX 501 **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.

Q1.	Register Banks in 8051
Option A:	Increase the performance
Option B:	Increase storage capacity
Option C:	Facilitate fast context switching
Option D:	Are used to facilitate aligned transfers
Q2.	AJMP instruction in the 8051 is used to
Option A:	Compares two operands and jump to a given target address
Option B:	Jump to a target address located anywhere within the 64K-byte address space of the 8051
Option C:	Jump to a target address located anywhere within 2K bytes of the instruction
Option D:	Jump to a target address located within 256 bytes of the instruction
Q3.	Which of the following instructions will copy the contents of RAM whose address is in Register 0 to Port 1?
Option A:	MOV @ P1, R0
Option B:	MOV @ R0, P1
Option C:	MOV P1, @ R0
Option D:	MOV P1, R0
Q4.	MUL instruction in the 8051
Option A:	Multiplies two memory operands
Option B:	Multiplies two register operands
Option C:	Multiplies contents of Register A and Register B
Option D:	Multiplies a Register and an Immediate operand
Q5.	PSEN signal in 8051 is
Option A:	A control signal to read from internal program memory
Option B:	A control signal to read from external program memory
Option C:	A control signal to read from internal data memory
Option D:	A control signal to read from external data memory
Q6.	The External interrupts of the 8051 can be received on

Option A:	P3.2 and P3.3
Option B:	P0.2 and P0.3
Option C:	P1.2 and P1.3
Option D:	P3.4 and P3.5
Q7.	The Transmit Interrupt (TI) bit is set in 8051 when
Option A:	A byte is available in the SBUF register
Option B:	The byte in the SBUF register is transmitted
Option C:	The 8051 is waiting for acknowledgment from the receiver
Option D:	Transmission is temporarily stalled
Q8.	The Reset address of the 8051 is
Option A:	0000H in Data memory
Option B:	FFFFH in Data memory
Option C:	0000H in Program memory
Option D:	FFFFH in Program memory
Q9.	The crystal frequency of the 8051 is generally 11.0592 MHz because
Option A:	Reduces power consumption
Option B:	It is directly divisible to generate standard baud rates
Option C:	It ensures stable operation of the 8051
Option D:	It is required for I/O port working
Q10.	The conversion time of ADC 0808 is
Option A:	50 µs
Option B:	100 µs
Option C:	500 µs
Option D:	250 µs
Q11.	Port 0 pins in 8051 are used
Option A:	As I/O lines and Address lines
Option B:	As I/O lines, Address lines and Data lines
Option C:	As I/O lines and Data lines
Option D:	As Address lines and Data lines
Q12.	The maximum count possible for delay routines using two nested loops in 8051 is
Option A:	00FFH
Option B:	FFFFH
Option C:	03FFH
Option D:	07FFH
Q13.	The EA (asserted low) pin in 8051 is used to
Option A:	Multiplex address and data lines
Option B:	Read code from external memory

Option C:	Enable/Disable external memory interfacing
Option D:	Read data from external memory
Q14.	Timer 0/1 of 8051 in Mode 2 is a
Option A:	Split timer
Option B:	8-Bit timer (with Auto-Reload)
Option C:	13-Bit Timer
Option D:	16-Bit Timer
Q15.	In Power-down mode of the 8051
Option A:	The voltage applied to the 8051 is lowered
Option B:	the oscillator clock provided to system is OFF
Option C:	peripherals clock will remain active
Option D:	Only CPU remains active
Q16.	The minimum step angle in a stepper motor is a
Option A:	Function of the steps per revolution
Option B:	Function of the number of stator windings
Option C:	Function of the number of teeth on the rotor
Option D:	Function of the voltage applied
Q17.	The Link register in the ARM Cortex M3 is
Option A:	R10
Option B:	R13
Option C:	R14
Option D:	R15
Q18.	When the ARM Cortex M3 is running a main program (thread mode)
Option A:	it can be either in a privileged state or a user state
Option B:	It must be in the privileged state
Option C:	It must be in the user state
Option D:	It must run an exception handler
Q19.	In a dc motor, as the load increases
Option A:	The applied voltage needs to be decreased
Option B:	Heat generated decreases
Option C:	The rpm decreases
Option D:	Power consumption decreases
Q20.	What is the difference between LM 34 and LM 35 sensors?
Option A:	one is a sensor and the other is a transducer
Option B:	one's output voltage corresponds to the Fahrenheit temperature and the other corresponds to the Celsius temperature
Option C:	one is of low precision and the other is of higher precision
Option D:	one requires external calibration and the other doesn't require it
Q21.	RISC design characteristics include
Option A:	Variable length instructions

Option B:	Microprogrammed control unit
Option C:	Load-Store architecture
Option D:	Few registers
Q22.	The number of external interrupts supported by ARM Cortex M3 is
Option A:	128
Option B:	240
Option C:	64
Option D:	8
Q23.	The ARM Cortex M3 has
Option A:	4 stage pipeline
Option B:	3 stage pipeline
Option C:	5 stage pipeline
Option D:	8 stage pipeline
Q24.	Which of the following is not a feature of the ARM Cortex M3?
Option A:	Low gate count
Option B:	Harvard Architecture
Option C:	Low code density
Option D:	Low interrupt latency
Q25.	Thumb 2 Instruction set of the ARM Cortex
Option A:	Reduces power consumption
Option B:	Increases Performance
Option C:	Reduces the time spent in Context switching
Option D:	Reduces Interrupt Latency

University of Mumbai

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

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016 (CBCGS)

Examination: Third Year Semester V

Course Code: ELX502, 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.	In Binary Symmetric Channel inputs are X1 and X2 both are equally likely and outputs are Y1 and Y2 given that P(Y1/X1)=0.7 and P(Y1/X2)=0.4 then P(Y1) is
Option A:	0.35
Option B:	0.55
Option C:	0.20
Option D:	0.45
Q2.	For a Poisson Distribution, if mean (m) = 1, then P(1) is?
Option A:	Indeterminate
Option B:	e
Option C:	e/2
Option D:	1/e
Q3.	Which satellites of the following used at orbital height of 8000 to 20000 kms and GPS applications?
Option A:	Low Earth Orbit
Option B:	High Earth Orbit
Option C:	Medium Earth Orbit
Option D:	Geosynchronous Earth Orbit
Q4.	If operating frequency bands are higher _____ is available.
Option A:	Smaller bandwidth
Option B:	Larger bandwidth
Option C:	Very Smaller bandwidth
Option D:	No bandwidth
Q5.	Find maximum rate at which data can be sent from terminal to the computer without error for entropy of 7bits/character and channel capacity of 10378 bits/sec.
Option A:	1482 characters/sec
Option B:	1842 characters/sec
Option C:	1664 characters/sec
Option D:	1500 characters/sec

Q6.	Amount of information for two binary digits '0' and '1' occur equally likely is
Option A:	2 bits
Option B:	3 bits
Option C:	1 bit
Option D:	0 bit
Q7.	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
Q8.	What is the critical angle for a silica optical fiber having refractive index of core layer as 1.56 and that of cladding is 1.35.
Option A:	69.52 Degree
Option B:	59.92 Degree
Option C:	49.92 Degree
Option D:	39.92 Degree
Q9.	The binary data 011100101 applied to the input of a modified duo-binary system. The output of duo-binary decoder without any error in the input is
Option A:	-1+1+1+1-1-1+1-1+1
Option B:	-1-1+1+1-1-1+1+1-1
Option C:	-1+1-1+1-1+1-1+1-1
Option D:	+1+1-1-1+1+1-1-1+1
Q10.	The coding technique for removal of ISI will be
Option A:	Manchester Encoding
Option B:	NRZ Coding
Option C:	RZ Coding
Option D:	Differential Coding
Q11.	The time interval over which the received signal may be sampled without error may be explained by
Option A:	Rate of closure of eye of eye pattern
Option B:	Height of the eye opening of eye pattern
Option C:	Width of eye opening of eye pattern
Option D:	Rate of opening of eye pattern
Q12.	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
Q13.	The bandwidth efficiency of 16-PSK system if its maximum bit rate is 40 kbps and minimum bandwidth is 10KHz is
Option A:	2 bits/Hz
Option B:	6 bits/Hz
Option C:	4 bits/Hz
Option D:	8 bits/Hz
Q14.	The difference between the higher and lower frequency in MSK is
Option A:	Same as the bit rate
Option B:	Half of the bit rate
Option C:	Twice of the bit rate
Option D:	Four time the bit rate
Q15.	No phase discontinuity found in
Option A:	Uniform FSK
Option B:	Discrete FSK
Option C:	Continuous FSK
Option D:	Discrete ASK
Q16.	A 4-PSK modulated signal has a bit rate of 2000bps, the baud rate is
Option A:	1000
Option B:	2000
Option C:	4000
Option D:	8000
Q17.	The carrier signal is transmitted bit '0' indicate no carrier and '1' indicate what in On- Off keying?
Option A:	Signal value
Option B:	Amplitude of modulating signal
Option C:	Half the carrier amplitude
Option D:	Phase of modulating signal
Q18.	The spectrum of BFSK may be viewed as the sum of
Option A:	Two FSK spectra
Option B:	Two ASK spectra
Option C:	Two PSK spectra
Option D:	Two MSK spectra
Q19.	Which modulation techniques have bandwidth twice the bandwidth of BPSK
Option A:	DPSK
Option B:	BFSK
Option C:	QPSK
Option D:	16 QPSK

Q20.	For a systematic (7,4) cyclic code and generator polynomial G(x)= X^3+X+1 received code word is 1101100 then the transmitted data word is
Option A:	0101100
Option B:	1001100
Option C:	1111100
Option D:	1100100
Q21.	This logic is used to code in convolution coding
Option A:	EX-OR logic
Option B:	AND logic
Option C:	OR logic
Option D:	NAND logic
Q22.	The transitions in the states represented during the shifting of bits in convolution encoder by
Option A:	lines
Option B:	circles
Option C:	summers
Option D:	squares
Q23.	For error free transmission in channel coding theorem, channel capacity decides the permissible rate which is to be
Option A:	Minimum
Option B:	Maximum
Option C:	Moderate
Option D:	Constant
Q24.	In linear block code if dmin is 3 then the error detection and error correction capability of that code is
Option A:	Detection 2 bit and correction 1bit
Option B:	Detection 1 bit and correction 2 bits
Option C:	Detection 2 bits and correction 2 bits
Option D:	Detection 1 bit and correction 1 bit
Q25.	The index fiber in which the light rays travel in straight line due to constant refractive index of the fiber throughout the bulk of the core is
Option A:	Graded index
Option B:	Step index
Option C:	Continuous refraction
Option D:	Large acceptance cone

University of Mumbai

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

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016 (CBCGS)

Examination: Third Year Semester V

Course Code: ELX503. Course Name: Engineering Electromagnetics

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.	Point Form of Gauss's Law is .....
Option A:	$\nabla.D=\rho_v$
Option B:	$\nabla.D=0$
Option C:	$\nabla.D=1$
Option D:	$\nabla*D=1$
Q2.	The divergence of curl of a vector is ___
Option A:	1
Option B:	-1
Option C:	0
Option D:	2
Q3.	----------Law states that between two point charges there is a force of attraction or repulsion depending on nature of charges.
Option A:	Biot-Savart's
Option B:	Ampere's
Option C:	Laplace's
Option D:	Coulomb's
Q4.	Divergence of gradient of a vector function is equivalent to
Option A:	Laplacian operation
Option B:	Curl operation
Option C:	Gradient operation
Option D:	Null operation
Q5.	Tangential components of electric field E is---------- across boundary between two dielectric
Option A:	Discontinuous
Option B:	Continous
Option C:	Passing
Option D:	Closed
Q6.	The wave equation for electric field E for lossless media is given by
Option A:	$\nabla^2E = \mu\varepsilon(d^2E/dt^2)$

Option B:	$\nabla^2 E = -\mu\varepsilon(d^2E/dt^2)$
Option C:	$\nabla^2 H = \mu\varepsilon(d^2H/dt^2)$
Option D:	$\nabla^2 H = -\mu\varepsilon(d^2H/dt^2)$
Q7.	A wave for which E.H=0 and E*H=direction of propagation, is called as-----
Option A:	Transverse electric wave
Option B:	Transverse magnetic wave
Option C:	Transverse electromagnetic wave
Option D:	Transverse wave
Q8.	The depth in which wave has been attenuated to 1/e or 37% of original value,it is called as-------
Option A:	Skin distance
Option B:	Skip distance
Option C:	Skip depth
Option D:	Skin depth
Q9.	The relation between phase constant and wavelength is given by--
Option A:	$\lambda=2/\beta$
Option B:	$\lambda=2\pi/\beta$
Option C:	$\lambda=3\pi/\beta$
Option D:	$\lambda=\pi/\beta$
Q10.	Which of the following is NOT Intrinsic Impedance for Free Space ?
Option A:	377
Option B:	120π
Option C:	μ_o/H_o
Option D:	$\sqrt{\mu_o}/H_o$
Q11.	The wave is said to be ___ polarized if the tip of electric field vector traces ellipse
Option A:	Rectangularly
Option B:	Elliptical
Option C:	Straight line
Option D:	Circularly
Q12.	_____ is numerical procedure for converting partial differential equation in to set of algebraic equation of boundary value problem.
Option A:	MOM
Option B:	FDM
Option C:	FEM
Option D:	Numerical method
Q13.	Over some part of boundary, Dirichlet condition is specified, while over other part Neumann condition is specified. This type of boundary is called-----
Option A:	Dirichlet boundary condition
Option B:	Mixed boundary condition
Option C:	Neumann boundary condition
Option D:	No boundary condition

Q14.	Method of Moments is used to solve ------type of equation
Option A:	Differential
Option B:	Linear
Option C:	Algebraic
Option D:	Integral
Q15.	Which of the following is not characteristic of Isotropic antenna?
Option A:	It is a point of source
Option B:	It is not possible in practice
Option C:	It radiates in only one direction.
Option D:	The radiation pattern is spherical
Q16.	The beam width of the antenna pattern measured at half power points is called
Option A:	Half power beam width
Option B:	Full null beam width
Option C:	Beam width
Option D:	Power Gain
Q17.	The retarded potential have been delayed or retarded by time delay----sec
Option A:	t
Option B:	t-R
Option C:	t-R/C
Option D:	t-C
Q18.	The layer is present only during daylight hours and disappear at night is-------
Option A:	D
Option B:	E
Option C:	F1
Option D:	F2
Q19.	The shortest distance from transmitter where sky wave return to earth is called as
Option A:	Angle of Radiation
Option B:	Maximum usable frequency
Option C:	Skip distance
Option D:	Skip Zone
Q20.	LOS distance in terms of radio horizon is measured as ----
Option A:	$4.12[\sqrt{ht}+\sqrt{hr}]$
Option B:	$4[\sqrt{ht}+\sqrt{hr}]$
Option C:	$4.12[\sqrt{ht}-\sqrt{hr}]$
Option D:	4.12[ht + hr]
Q21.	The reflection coefficient in terms of ZL and Zo is given by
Option A:	$(Z_L + Z_o)/(Z_L - Z_o)$
Option B:	$(Z_L – Z_o)/(Z_L + Z_o)$
Option C:	Z_L/Z_o
Option D:	Z_o/ Z_L

Q22.	The circles in the Smith chart pass through which point?
Option A:	(0,1)
Option B:	(0,-1)
Option C:	(-1,0)
Option D:	(1,0)
Q23.	The reflection coefficient lies in the range of
Option A:	$0 < \tau < 1$
Option B:	$-1 < \tau < 1$
Option C:	$1 < \tau < \infty$
Option D:	$0 < \tau < \infty$
Q24.	The condition for distortion less line is _____
Option A:	R/L=G/C
Option B:	L/R=G/C
Option C:	R/L>G/C
Option D:	R/L<G/C
Q25.	Which of the following scale is not present in Smith Chart?
Option A:	Rn-Scale
Option B:	Xn-Scale
Option C:	Impedance scale
Option D:	Wavelength towards load scale

University of Mumbai

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

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016 (CBCGS)

Examination: Third Year Semester V

Course Code: ELX504 Course Name: Design with Linear Integrated Circuits

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

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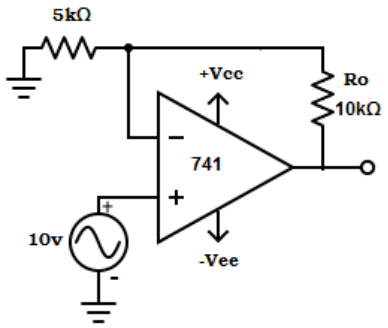
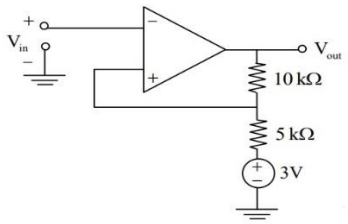
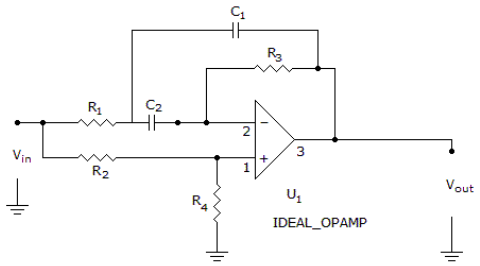
Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

Q1.	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:	0.62 KΩ
Q2.	Given voltage to current converter with floating load. Determine the output current? 
Option A:	3mA
Option B:	6mA
Option C:	4mA
Option D:	2mA
Q3.	The PSRR value of an ideal operational amplifier should be
Option A:	Zero
Option B:	Unity
Option C:	Infinite
Option D:	Unpredictable
Q4.	The average of the currents that flow into the inverting and non- inverting input terminals of op-amp is called as
Option A:	Input offset current
Option B:	Output current
Option C:	Input bias current
Option D:	Offset voltage

Q5.	In a peak detector circuit, which component holds the peak value till a higher peak value is detected?
Option A:	Diode
Option B:	Inductor
Option C:	Capacitor
Option D:	MOSFET switch
Q6.	For the operational amplifier circuit shown, the output saturation voltages are ±15V. The upper and lower threshold voltages for the circuit are, respectively. 
Option A:	+5V and -5V
Option B:	+7V and -3V
Option C:	-3V and +7V
Option D:	+3V and -3V
Q7.	What happens if the input voltage is higher than reference voltage in a positive clipper?
Option A:	Output voltage = Reference voltage
Option B:	Output voltage = ∞
Option C:	Output voltage = Input voltage
Option D:	Output voltage ≠ Reference voltage
Q8.	Which among the following performance parameter is called the change in line voltage within a specified range at a constant load current?
Option A:	Line regulation
Option B:	Load regulation
Option C:	Temperature stability factor
Option D:	Ripple factor
Q9.	External trigger input is not required for _____ using IC 555.
Option A:	Monostable multivibrator
Option B:	ADC
Option C:	Bistable multivibrator
Option D:	Astable multivibrator

Q10.	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
Q11.	Drawback of counter type A/D converter
Option A:	Counter clears automatically
Option B:	More complex
Option C:	High conversion time
Option D:	Low speed
Q12.	The circuit shown in following figure is of _____ 
Option A:	A low-pass filter
Option B:	A high-pass filter
Option C:	A bandpass filter
Option D:	A band-stop filter
Q13.	3v, 5v and 7v are the three-input voltage applied to the inverting input terminal of averaging amplifier. Determine the output voltage?
Option A:	-5v
Option B:	-10v
Option C:	-15v
Option D:	-20v
Q14.	What happens when VCO output is 90° out of phase with respect to input signal?
Option A:	Perfect lock
Option B:	Attenuation
Option C:	Shift in phase of comparator
Option D:	Error signal is removed
Q15.	Which is not considered as a linear voltage regulator?
Option A:	Fixed output voltage regulator
Option B:	Adjustable output voltage regulator
Option C:	Switching regulator
Option D:	Series regulator
Q16.	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:	Clipper
Q17.	State the reason for thermal shutdown of IC regulator?
Option A:	Spikes in temperature
Option B:	Decrease in temperature
Option C:	Fluctuation in temperature
Option D:	Increase in temperature
Q18.	Find out the resolution of 8-bit DAC/ADC.
Option A:	256
Option B:	625
Option C:	265
Option D:	562
Q19.	What instrument is used to amplify output signal of transducer?
Option A:	Peaking amplifier
Option B:	Differential amplifier
Option C:	Instrumentation amplifier
Option D:	Bridge amplifier
Q20.	In LM317 voltage regulator, what is the minimum value of voltage required between its input & output in order to supply power to an internal circuit?
Option A:	1V
Option B:	3V
Option C:	5V
Option D:	10V
Q21.	Which among the following is ideal for audio amplifier?
Option A:	NE5018
Option B:	LM380
Option C:	MC1408
Option D:	SE5018
Q22.	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 cosine wave generator
Q23.	The 7812 regulator IC provides _____.
Option A:	5V

Option B:	-5V
Option C:	12V
Option D:	-12V
Q24.	Calculate the frequency of oscillation for RC phase shift oscillator having the value of R and C as 35Ω and 3.7µF respectively.
Option A:	1230 Hz
Option B:	204 Hz
Option C:	502Hz
Option D:	673 Hz
Q25.	An astable multivibrator using op-amp has f_o =1kHz. Assume the resistor value to be 10kΩ and find the capacitor value?
Option A:	3.9 µF
Option B:	0.3 µF
Option C:	2 µF
Option D:	0.05µF

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

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016 (CBCGS)

Examination: Third Year Semester V

Course Code: ELXDLO5013 Course Name: ASIC Verification

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.	In Verilog continuous assignment, LHS must be
Option A:	Scalar Net
Option B:	Vector Net
Option C:	Vector Reg
Option D:	Scalar as well as Vector Net
Q2.	For inter process communication, what is used to get a new semaphore without blocking it.
Option A:	New
Option B:	Get
Option C:	Try_get
Option D:	Create
Q3.	Default value of register datatype is
Option A:	0
Option B:	X
Option C:	Z
Option D:	U
Q4.	…..is used to returns a real number with the complete time value including fractions.
Option A:	$time
Option B:	$realtime
Option C:	$constanttime
Option D:	$variabletime
Q5.	State the unpacked array for the following
Option A:	bit [7:0] my_array[3:0];
Option B:	bit [7:0] [3:0] my_array;
Option C:	bit [7:0] my_array;
Option D:	bit [7] my_array;

Q6.	……is a variable that holds data.
Option A:	Class
Option B:	Object
Option C:	Handle
Option D:	Property
Q7.	……. Is a basic building block containing routines and variables. The analogue in Verilog is a module.
Option A:	Class
Option B:	Object
Option C:	Handle
Option D:	Property
Q8.	The …….. specifies that signals are sampled in the Postponed region of the previous time slot before any design activity.
Option A:	1step delay
Option B:	Delay()
Option C:	Time()
Option D:	$Delay()
Q9.	…….. is the header of a routine that shows the name, type, and argument list? The body of the routine contains the executable code.
Option A:	Method
Option B:	Prototype
Option C:	Object
Option D:	Handle
Q10.	What is the output? module test; Bit [31:0] abc[*]; Initial begin abc[500]=40; $display("size of abc = %d",abc.num()); End
Option A:	Size of abc=500
Option B:	Size of abc=40
Option C:	Size of abc=501
Option D:	Size of abc=1
Q11.	Verification ensure that RTL performance__?
Option A:	Correct function
Option B:	Correct task
Option C:	Correct work
Option D:	Correct value
Q12.	RTL stands for ?
Option A:	Register top level

Option B:	Register top level
Option C:	Register transfer level
Option D:	Register trail level
Q13.	Which of the following data types is new in system Verilog?
Option A:	Integer
Option B:	Logic
Option C:	Time
Option D:	Try
Q14.	In System Verilog, ….is called intelligent bundle of signals.
Option A:	Modport
Option B:	Class
Option C:	Event
Option D:	Interface
Q15.	Abbreviate FPGA
Option A:	Field programmable gate accumulator
Option B:	Field programmable array
Option C:	Field paired gate array
Option D:	Field programmable gate array logic
Q16.	In Verilog, a output port must always connected externally to
Option A:	net only
Option B:	a reg only
Option C:	either net or reg
Option D:	None of the above
Q17.	DUT instance is created in
Option A:	Agent
Option B:	Environment
Option C:	Test
Option D:	Testbench_top
Q18.	Which level of abstraction level is available in Verilog but not in VHDL?
Option A:	Behavioral level
Option B:	Dataflow level
Option C:	Switch level
Option D:	Gate level
Q19.	What does R and C stand for
Option A:	Random constraint
Option B:	Random Custom
Option C:	Random Cyclic
Option D:	Random Call
Q20.	Initial value of x=1 and y=2, then what will be final value if

	always @ (posedge clock)
	x<=y;
	always @ (posedge clock)
	y<=x;

Option A:	X=2, Y=1
Option B:	X=1, Y=2
Option C:	Both will have value equal to 1
Option D:	Both will have value equal to 1=2
Q21.	How many flops will be synthesized by the given code? always @ (posedge clock) begin Q1<=d; Q2<=q1; Q3<=q2; end
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q22.	Which is not a correct method of specifying time scale in Verilog?
Option A:	1ns/1ps
Option B:	10ns/1ps
Option C:	100ns/100ps
Option D:	100ns/110ps
Q23.	Steps of verification process
Option A:	Plan , work , test
Option B:	Test , plan
Option C:	Specification , create plan , create test
Option D:	Plan , test
Q24.	A Constrained Random Test can be made to work differently by changing
Option A:	Seed
Option B:	Design under test
Option C:	Reference model
Option D:	Transfer function
Q25.	In Verilog `h1234 is a
Option A:	16 bit hexadecimal number
Option B:	32 bit hexadecimal number
Option C:	4 bit hexadecimal number
Option D:	It is invalid notation

University of Mumbai

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

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016 (CBCGS)

Examination: Third Year Semester V

Course Code: ELXDLO5014 Course Name: Biomedical Instrumentation

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

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Note:

1. All Questions are compulsory and carry equal marks.

2. Assume suitable data wherever necessary.

Q1.	Ribosomes help in _____
Option A:	Photosynthesis
Option B:	Protein Synthesis
Option C:	Lipid Synthesis
Option D:	Respiration
Q2.	Name the process of gaseous exchange in the body.
Option A:	Lymphatic system
Option B:	Respiration
Option C:	Cardiovascular system
Option D:	Skeletal System
Q3.	Heart Lung machine is used for _____
Option A:	Cardiopulmonary bypass
Option B:	Liver transplant
Option C:	Peritoneal dialysis
Option D:	Pneumonia
Q4.	Which of the following medical imaging modality other than ultrasound does not use any form of radiation?
Option A:	PET Scan
Option B:	SPECT Scan
Option C:	CT Scan
Option D:	MRI
Q5.	The spherical structured organelle that contains the genetic material is_____
Option A:	Cell Walls
Option B:	Ribosomes
Option C:	Nucleus
Option D:	Mitochondria
Q6.	Structures of the body that are responsible for conveying information/messages around the body are called: _____

Option A:	Lymphocytes
Option B:	Alveoli
Option C:	Nephrons
Option D:	Neurons
Q7.	Generally what is the material of needle electrodes?
Option A:	stainless steel
Option B:	copper
Option C:	lead
Option D:	iron
Q8.	The reason why tricuspid and bicuspid valves are closed is_____
Option A:	ventricular relaxation
Option B:	ventricular filling
Option C:	atrial systole
Option D:	attempted backflow of blood into the atria
Q9.	A person normally passively inhales and exhales 500 mL of air. This is the _____.
Option A:	tidal volume
Option B:	expiratory capacity
Option C:	residual volume
Option D:	Dead Space
Q10.	Magnitude of voltage picked up is denoted as e = CHVd, where H is _____
Option A:	velocity of blood flow
Option B:	strength of magnetic field
Option C:	diameter of blood vessel
Option D:	constant of proportionality
Q11.	In the presence of a uniform magnetic field, hydrogen protons_____
Option A:	Line up along the field and rotate around its axis
Option B:	line up along the field and precess around its axis
Option C:	Remain oriented mostly randomly and precess around the field axis
Option D:	Are not affected by the magnetic field
Q12.	_____ electrodes are used to study the electrical activity of individual cells.
Option A:	Microelectrodes
Option B:	Floating electrodes
Option C:	Disc electrodes
Option D:	Plate electrodes
Q13.	Which of the following is the correct formula for cardiac output?
Option A:	Heart Rate * BP
Option B:	stroke volume* BP
Option C:	heart rate / resistance
Option D:	Stroke Volume * heart rate

Q14.	The energy that supplies the electric shock for cardioversion and defibrillation is measured in _____.
Option A:	Joules
Option B:	Volt
Option C:	Kilowatts
Option D:	Horsepower
Q15.	In a normal X-Ray machine, X – Rays are produced by _____
Option A:	bombardment of cathode rays on a radioactive material
Option B:	nuclear fission
Option C:	nuclear fusion
Option D:	super heating of an element
Q16.	The commonly used MRI's have a magnetic strength of _____
Option A:	1.5 – 3 Tesla
Option B:	3 – 6 Tesla
Option C:	6 – 12 Tesla
Option D:	12 – 24 Tesla
Q17.	The first two heart sounds are _____
Option A:	Lub-dub
Option B:	Dak-Dak
Option C:	Hissing sound
Option D:	Loud Sound
Q18.	By definition, ultrasound is sound having a frequency greater than _____ cycles per second, that is, sound above the audible range.
Option A:	10,000
Option B:	20,000
Option C:	30,000
Option D:	40,000
Q19.	Transient time and Doppler shift blood flow meters are types of
Option A:	electromagnetic blood flow meter
Option B:	ultrasonic blood flow meter
Option C:	NMR blood flow meter
Option D:	LASER Doppler blood flow meter
Q20.	In a DC Defibrillator, the energy is stored in _____
Option A:	Inductor
Option B:	Mercury batteries
Option C:	Capacitor
Option D:	Lithium Iodide Battery
Q21.	The two general class of waveforms used in Defibrillators are ___ & _____
Option A:	Monophasic & Biphasic
Option B:	Sine & Square wave

Option C:	Triangular & Rectangular wave
Option D:	Singe sine and 90°phase shifted wave
Q22.	_____is an instrument used for recording the electrical activity of the muscles to determine whether the muscle is contracting or not
Option A:	Electromyograph
Option B:	Electrocardiograph
Option C:	Electroencephalograph
Option D:	Electro-oculograph
Q23.	A pattern of electrodes on the head and the channels they are connected to is called a_____
Option A:	Web
Option B:	Sections
Option C:	Zigzag pattern
Option D:	Montages
Q24.	In MRI, _____ nuclei is used which consist solely of a proton, that are in tissues create a signal that is processed to form an image of the body
Option A:	Oxygen
Option B:	Carbon
Option C:	Nitrogen
Option D:	Hydrogen
Q25.	By giving external electrical stimulation impulses to the heart muscle, it is possible to regulate the heart rate. These impulses are given by an electronic instrument called a_____
Option A:	Pacemaker
Option B:	Defibrillator
Option C:	Heart Lung Machine
Option D:	Ventilator

University of Mumbai

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

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016 (CBCGS)

Examination: Third Year Semester V

Course Code: ELXDLO501. **Course Name:** Database and Management System.

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

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Note:

1. All Questions are compulsory and carry equal marks.

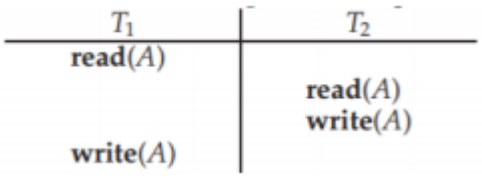
2. Assume suitable data wherever necessary.

Q1.	Which of the following in not a function of DBA?
Option A:	Network Maintenance
Option B:	Routine Maintenance
Option C:	Schema Definition
Option D:	Authorization for data access
Q2.	Relationships in a relational model between relations or tables are created by using:
Option A:	Determinants.
Option B:	Composite keys.
Option C:	Candidate keys.
Option D:	Foreign keys.
Q3.	Identify one of the following that can't be added in the CREATE TABLE command of SQL ?
Option A:	Names and data types of the table columns
Option B:	Primary keys and foreign keys of table
Option C:	Who is authorized to access the table
Option D:	Unique constraint
Q4.	The degree of relationship is
Option A:	number of entities in relationship
Option B:	number of row and columns in relationship
Option C:	number of tables in relationship
Option D:	number of participating entities in relationship
Q5.	In SQL, which of the following is not a DML Command?
Option A:	DELETE
Option B:	SELECT
Option C:	CREATE
Option D:	UPDATE
Q6.	The availability of same data at multiple places is known as
Option A:	Data Isolation

Option B:	Data Redundancy
Option C:	Atomicity problem
Option D:	Data Inconsistency
Q7.	Consider the employee table: employee(employee id, name, dept name, salary) Create a new employee 'W-101', named 'Ashwin singh', with 10,00,000 salary for department 'Wireless'. Identify the appropriate SQL.
Option A:	INSERT INTO TABLE employee VALUES ('W-101','Ashwin Singh','Wireless', 10,00,000)
Option B:	INSERT INTO employee ('W-101','Ashwin Singh','Wireless', 10,00,000)
Option C:	INSERT INTO employee VALUES('W-101','Ashwin Singh','Wireless', 10,00,000)
Option D:	INSERT INTO employee(employee id, name, dept name, salary) as ('W-101','Ashwin Singh', 'Wireless', 10,00,000)
Q8.	_____ is the process of defining a set of subclasses of superclass
Option A:	Generalization
Option B:	Specialization
Option C:	Assertion
Option D:	Aggregation
Q9.	Which of the following is not a transaction state?
Option A:	Active
Option B:	Compensated
Option C:	Failed
Option D:	Partially committed
Q10.	Consider the following relations student(id, name, address, gpa, sizeHS) campus(location, enrollment, rank) apply(id, location, date, major, decision) Identify the correct query to find name and address of all students with GPA > 3.7 and sizeHS < 1000.
Option A:	Πname, address(σGP A>3.7 ∧ sizeHS<1000(student))
Option B:	σname, address(ΠGP A>3.7 ∧ sizeHS<1000(student))
Option C:	Πname, address(σGP A>3.7 ∨ sizeHS<1000(student))
Option D:	σname, address(ΠGP A>3.7 ∨ sizeHS<1000(student))
Q11.	Consider a relation R (A, B, C, D, E, F, G, H), where each attribute is atomic, and following functional dependencies exist. CH → G A → BC B → CFH E → A F → EG The relation R is _____ .

Option A:	in 1NF but not in 2NF
Option B:	in 2NF but not in 3NF
Option C:	in 3NF but not in BCNF
Option D:	in BCNF
Q12.	Identify the one, which is not a valid binary operation in the relational algebra.
Option A:	Project
Option B:	Union
Option C:	Set Difference
Option D:	Cartesian Product
Q13.	It is given for attributes X, Y of relational schema R as X --> Y ,This means
Option A:	Attribute X and Attribute Y are functions of R
Option B:	Attribute X and Attribute Y are functions of R
Option C:	Attribute Y is functionally dependent on Attribute X
Option D:	Attribute X is Transitively dependent on Attribute Y
Q14.	Which one statement about keys is correct out of the following?
Option A:	Candidate key is a subset of super key
Option B:	Super key is a subset of candidate key
Option C:	Candidate key is a subset of primary key
Option D:	A relation can have only one candidate key
Q15.	_____is an example of Derived attribute .
Option A:	Name
Option B:	Age
Option C:	PhoneNumber
Option D:	Adhar_number
Q16.	Consider the following instance: **TEST** TNAME | TVALUE | TGROUP t1 | 12340 | g1 t2 | 500 | g2 t3 | 3456 | g2 t4 | 23 | g2 t5 | 100 | g3 What will be the output of the following query? SELECT MAX(TVALUE)/MIN(TVALUE) FROM TEST GROUP BY TGROUP HAVING TGROUP='g2' ;
Option A:	150.260 (approx)
Option B:	536.52 (approx)
Option C:	1326.33 (approx)
Option D:	AN ERROR

Q17.	Identify the use of HAVING clause.
Option A:	Acts like a WHERE clause but is used for groups rather than rows.
Option B:	Acts like a WHERE clause but is used for rows rather than columns.
Option C:	Acts like a WHERE clause but is used for columns rather than groups.
Option D:	Acts EXACTLY like a WHERE clause.
Q18.	A _____ is a sequence of query and/or update statements.
Option A:	Commit
Option B:	Rollback
Option C:	Transaction
Option D:	Flashback
Q19.	Second Normal Form (2NF) decomposes relation by dis-allowing _____
Option A:	Transitive Dependencies
Option B:	Partial Functional Dependencies
Option C:	Additive Tuples
Option D:	Multi-valued & Composite Attributes
Q20.	The "all-or-none" property is commonly referred to as _____
Option A:	Isolation
Option B:	Durability
Option C:	Atomicity
Option D:	Consistency
Q21.	Consider the following schedule involving two transactions: T1 | T2 R(x) | | R(y) W(x) | commit | | R(x) | commit Which of the following statement is true?
Option A:	The above schedule is irrecoverable.
Option B:	The above schedule is recoverable with cascading rollback.
Option C:	The above schedule is cascade less recoverable.
Option D:	It cannot be determined from the given schedule whether cascading roll back is required in case it is recoverable.
Q22.	Which of the following systems is responsible for ensuring durability?
Option A:	Recovery system
Option B:	Atomic system
Option C:	Concurrency control system
Option D:	Compiler system

<table>
<tr><td></td><td></td></tr>
<tr><td>Q23.</td><td>Identify the correct statement based on the schedule below
 
</td></tr>
<tr><td>Option A:</td><td>Schedule shows Lost Update Anomaly</td></tr>
<tr><td>Option B:</td><td>Schedule shows Lost Delete Anomaly</td></tr>
<tr><td>Option C:</td><td>Schedule does not show Lost Update Anomaly</td></tr>
<tr><td>Option D:</td><td>Schedule shows Lost Delete Anomaly along with Lost Update Anomaly</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Q24.</td><td>Every Boyee-Codd normal form is in</td></tr>
<tr><td>Option A:</td><td>First normal form</td></tr>
<tr><td>Option B:</td><td>Fourth normal form</td></tr>
<tr><td>Option C:</td><td>Third normal form</td></tr>
<tr><td>Option D:</td><td>First, second and third normal form</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Q25.</td><td>Consider the following instance of Covid19Patients relation.
<table><tr><th colspan="2">Covid19Patients</th></tr><tr><th>State</th><th>NoofPatient</th></tr><tr><td>Assam</td><td>581</td></tr><tr><td>Delhi</td><td>65000</td></tr><tr><td>Jharkhand</td><td>2500</td></tr><tr><td>Kerala</td><td>3400</td></tr><tr><td>Punjab</td><td>4300</td></tr><tr><td>Tripura</td><td>1200</td></tr><tr><td>Telengana</td><td>10000</td></tr></table>
Which of the following query will display name of States in which NoofPatient is not in the range of 1000 to 3000?</td></tr>
<tr><td>Option A:</td><td>SELECT State FROM Covid19Patients WHERE NoofPatient NOT IN(1000 TO 3000);</td></tr>
<tr><td>Option B:</td><td>SELECT State FROM Covid19Patients WHERE NoofPatient NOT IN(1000 AND 3000);</td></tr>
<tr><td>Option C:</td><td>SELECT State FROM Covid19Patients WHERE NoofPatient NOT BETWEEN 1000 TO 3000;</td></tr>
<tr><td>Option D:</td><td>SELECT State FROM Covid19Patients WHERE NoofPatient NOT BETWEEN 1000 AND 3000;</td></tr>
</table>

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

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016 (CBCGS)

Examination: Third Year Semester V

Course Code: ELXDLO5012 **Course Name: Digital Control Systems**

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

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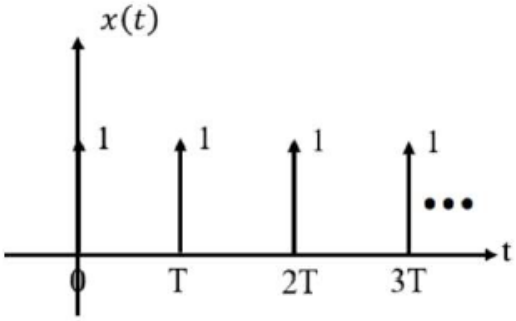
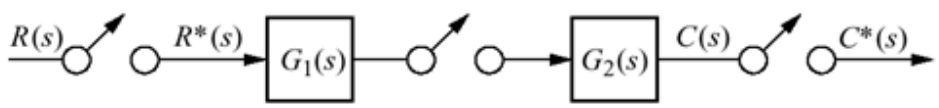
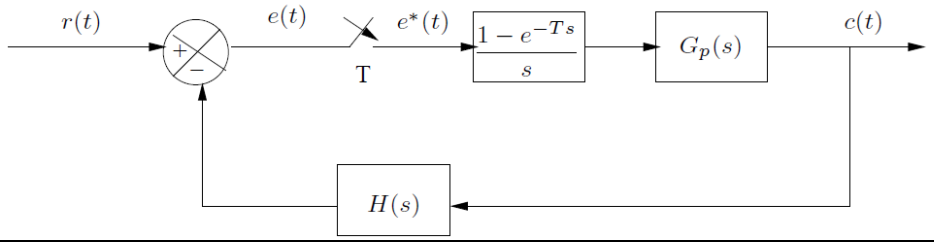
Note:
1. All the Questions are compulsory and carry equal marks.
2. Assume suitable data wherever necessary.

Q1.	Find the Nyquist rate and Nyquist interval for the signal f(t)=*sin*500*πt/πt*
Option A:	500 Hz, 2 ms
Option B:	500 Hz, 2 sec
Option C:	2 Hz, 500 sec
Option D:	2 Hz, 500 ms
Q2.	Does the terms "discrete-time system" and "digital system" refer to exactly the same type of system?
Option A:	Yes
Option B:	No
Option C:	Depends on sampling time
Option D:	Depends on Nyquist frequency
Q3.	Which of the following happens in 'aliasing'?
Option A:	Peaks overlapping
Option B:	Phase overlapping
Option C:	Amplitude overlapping
Option D:	Spectral overlapping
Q4.	 What is the equation of the impulse train shown in the figure above?
Option A:	$\sum_{k=0}^{\infty} \delta(t-kT)$

Option B:	$\sum_{k=-\infty}^{\infty} \delta(t-kT)$
Option C:	$\sum_{k=0}^{\infty} \delta(t+kT)$
Option D:	1
Q5.	Transfer function of Zero Order Hold is
Option A:	$\frac{1-e^{st}}{s}$
Option B:	$\frac{1+e^{st}}{s}$
Option C:	$\frac{1+e^{-st}}{s}$
Option D:	$\frac{1-e^{-st}}{s}$
Q6.	Select the correct Z-transform of a^n u(n); a>0 from the options.
Option A:	1/(1+az)
Option B:	z/(z+a)
Option C:	1/(1-az)
Option D:	z/(z−a)
Q7.	Which of the following describes impulse invariant discretization method.
Option A:	Take the backward difference of the signal derivative
Option B:	Sample the impulse response of continuous time system
Option C:	Sample the step response of continuous time system
Option D:	Use the bilinear transformation
Q8.	Which of the following relationship is true for the pulse transfer function
Option A:	G(z)H(z) = GH(z)
Option B:	G(z)H(z) ≠ GH(z)
Option C:	G(z)H(z) >= GH(z)
Option D:	G(z)H(z) <= GH(z)
Q9.	Find the Pulse transfer function of following 
Option A:	$G_1(z)G_2(z)$
Option B:	$G_1G_2(z)$
Option C:	$G_1(z)+G_2(z)$
Option D:	$1+G_1(z)G_2(z)$
Q10.	Which of the following discretization technique provides one to one mapping

	from s-domain to z-domain?
Option A:	Backward difference for the derivative
Option B:	Approximation of derivatives
Option C:	Impulse invariance method
Option D:	Bilinear transformation method
Q11.	The z transform can be understood as the starred Laplace transform i.e. X(z) = $X^*(s)$ with zreplaced by
Option A:	e^{Ts}
Option B:	e^{-Ts}
Option C:	s
Option D:	s+1
Q12.	Compute the position error constant (Kp) for the system shown below 
Option A:	$\lim_{z\to 1} GH(z)$
Option B:	$\lim_{z\to 1} \frac{(1-z^{-1})GH(z)}{T}$
Option C:	$\lim_{z\to 1} \frac{(1-z^{-1})^2 GH(z)}{T^2}$
Option D:	$GH(z)$
Q13.	In the Bilinear Transformation mapping, which of the following are correct?
Option A:	All points in the LHP of s are mapped outside the unit circle in the z-plane
Option B:	All points in the RHP of s are mapped inside the unit circle in the z-plane
Option C:	All points in the LHP & RHP of s are mapped inside & outside the unit circle in the z-plane
Option D:	All points in the LHP & RHP of s are mapped outside & inside the unit circle in the z-plane
Q14.	What is the number of the root locus segments which do not terminate on zeroes?
Option A:	The number of poles
Option B:	The number of zeroes
Option C:	The sum of the number of poles and the number of the zeroes
Option D:	The difference between the number of poles and zeroes
Q15.	The state transition matrix can be obtained by z-transform using formula
Option A:	$L^{-1}\{(zI-A)^{-1}\}$
Option B:	$L^{-1}\{(zI+A)^{-1}\}$
Option C:	$L^{-1}\{(zI-A)\}$
Option D:	$L^{-1}\{(zI+A)\}$

Q16.	Which of the following is true for the effect of sampling period(T) on stability?
Option A:	Increasing sampling period does not affect stability
Option B:	Increasing sampling period increases gain margin of stability
Option C:	Increasing sampling period decreases gain margin of stability
Option D:	Decreasing sampling period decreases gain range of stability
Q17.	$\frac{Y(z)}{U(z)} = \frac{z-1}{z^2+0.8z+0.64}$. What is the value of A matrix in state-space representation of this transfer function in controllable canonical form?
Option A:	$\begin{bmatrix} 0 & 1 \\ -0.8 & -0.4 \end{bmatrix}$
Option B:	$\begin{bmatrix} 0 & 1 \\ 0.4 & 0.8 \end{bmatrix}$
Option C:	$\begin{bmatrix} 0 & 1 \\ -0.64 & -0.8 \end{bmatrix}$
Option D:	$\begin{bmatrix} 1 & 0 \\ 1 & -0.8 \end{bmatrix}$
Q18.	Determine the stability of the system if the system matrix is given as A=$\begin{bmatrix} 0 & 1 \\ -0.21 & -1 \end{bmatrix}$
Option A:	Stable
Option B:	Unstable
Option C:	Marginally stable
Option D:	Cannot be determined with given information
Q19.	Which of the following method for realization of digital system require the most number of additions?
Option A:	Direct form
Option B:	Canonic form
Option C:	Cascade form
Option D:	Parallel form
Q20.	Kalman's test can be used to determine :
Option A:	Observability but not Controllability of the system
Option B:	Controllability but not Observability of the system
Option C:	Both Controllability and Observability of system cannot be determined
Option D:	Both Controllability and Observability of system can be determined
Q21.	The state variable equations of a system are $\dot{x}1 = -3x1 - x2 - u$, $\dot{x}2 = 2x1$. Is the system controllable?
Option A:	System is not controllable
Option B:	System is controllable
Option C:	Data insufficient for finding controllability
Option D:	Cannot be found as matrix **A** and **B** are not given
Q22.	Which of the following is true?
Option A:	A digital control system can be controllable but not observable

Option B:	A digital control system must be controllable and observable both
Option C:	A digital control system cannot be controllable and observable both
Option D:	If a digital control system is not controllable then it cannot be observable.
Q23.	$\frac{Y(z)}{U(z)} = \frac{z+3}{z^2+3z+2}$. If the transfer function is represented in diagonal state-space model which of the following is correct **A** matrix?
Option A:	$\begin{bmatrix} 0 & -2 \\ 1 & -3 \end{bmatrix}$
Option B:	$\begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$
Option C:	$\begin{bmatrix} -1 & 0 \\ 0 & -2 \end{bmatrix}$
Option D:	$\begin{bmatrix} 0 & 1 \\ 2 & 3 \end{bmatrix}$
Q24.	Assertion (A): The stability of the system is assured if the ROC includes the unit circle in z-plane. Reason (R): For a causal stable system all the poles should be outside the unit circle in the z-plane.
Option A:	Both A and R are true and R is the correct explanation of A
Option B:	Both A and R are true bit R is NOT the correct explanation of A
Option C:	A is true but R is false
Option D:	A is false but R is true
Q25.	The state variable equations of a system are $\dot{x1} = -2x1 - x2 - u$ $\dot{x2} = 3x1$ $y = -x1 + u$ Determine if the system described by above equation is observable.
Option A:	System is not observable.
Option B:	System is observable.
Option C:	Data insufficient for finding observability.
Option D:	Cannot be found as matrix **A** and **C** are not given.

University of Mumbai
Examination 2020 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)

Examinations Commencing from 7th January 2021 to 20th January 2021

Program: **Electronics Engineering**

Curriculum Scheme: Rev 2016

Examination: TE Semester V

Course Code: ELXDLO5011 and Course Name: Data base & Management System

Time: 2 hours 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.	A characteristic of an entity
Option A:	Relation
Option B:	Attribute
Option C:	Parameter
Option D:	Constraint
2.	A view of database that appears to an application program is known as
Option A:	Subschema
Option B:	Schema
Option C:	virtual table
Option D:	display
3.	A weak entity set in an E-R diagram is an entity set that:
Option A:	has a primary key
Option B:	must be part of a one-to-many relationship set
Option C:	is not existence dependent on a dominant entity
Option D:	must not participate as owner in an identifying relationship with another entity set
4.	In an E-R model oval represents
Option A:	Entity sets
Option B:	Links
Option C:	Attributes
Option D:	Relationships
5.	The number of entities to which another entity can be associated via a relationship set is expressed as
Option A:	Cardinality
Option B:	Entity
Option C:	Schema
Option D:	Attributes
6.	_____ produces the relation that has attributes of R1 and R2
Option A:	Difference
Option B:	Cartesian Product
Option C:	Intersection

Option D:	Product
7.	What is the degree of a table with 1000 rows and 10 columns
Option A:	10
Option B:	100
Option C:	1000
Option D:	1
8.	The minimal set of super keys is called
Option A:	Primary key
Option B:	Secondary key
Option C:	Candidate key
Option D:	Foreign key
9.	Which operator is used to compare a value to a specified list of values
Option A:	BETWEEN
Option B:	ANY
Option C:	IN
Option D:	ALL
10.	In SQL which of the following is not a data definition language command
Option A:	RENAME
Option B:	REVOKE
Option C:	GRANT
Option D:	UPDATE
11.	Find all the cities whose humidity is 90
Option A:	SELECT city WHERE humidity=90
Option B:	SELECT city FROM weather WHERE humidity=90
Option C:	SELECT humidity=90 FROM weather
Option D:	SELECT city FROM weather
12.	Find the temperature in increasing order of all cities
Option A:	SELECT city FROM weather ORDER BY temperature
Option B:	SELECT city, temperature FROM weather
Option C:	SELECT city, temperature FROM weather ORDER BY temperature
Option D:	SELECT city, temperature FROM weather ORDERBY city
13.	Which of the following is a SQL aggregate function
Option A:	LEFT
Option B:	AVG
Option C:	JOIN
Option D:	LEN
14.	In relational schema ‘R’, if the domains of all attributes are atomic, the schema is said to be of form
Option A:	Normal form
Option B:	First Normal form
Option C:	Second Normal form
Option D:	Third Normal form

15.	Multi valued dependencies helps in eliminate of some forms of
Option A:	Redundancy
Option B:	Isolation
Option C:	Atomicity
Option D:	Inconsistency
16.	A protocol that ensures the system will never enter a deadlock state is called
Option A:	Deadlock detection
Option B:	Deadlock elimination
Option C:	Deadlock prevention
Option D:	Deadlock recovery
17.	Which of the following occurs when one transaction reads a changed record that has not been committed to the database?
Option A:	Nonrepeatable read
Option B:	Phantom read
Option C:	Dirty read
Option D:	Consistent read
18.	The property of DBMS which ensures the execution of all the operations in transaction or none of the operation is executed is classified as
Option A:	isolation property
Option B:	atomicity property
Option C:	online execution property
Option D:	offline execution property
19.	When the transaction finishes the final statement, the transaction enters into
Option A:	Active state
Option B:	Committed state
Option C:	Partially committed state
Option D:	Abort state
20.	DBMS periodically suspends all processing and synchronizes its files and journals through the use of
Option A:	Checkpoint facility
Option B:	Backup facility
Option C:	Recovery manager
Option D:	Database change log

Q2	**Solve any Two Questions out of Three 10 marks each**
A	Explain different relational algebra operators with the help of an example. Also explain following terms with the help of relational algebra: Set intersection, Set difference, Natural join.
B	Explain 3NF with example and compare BCNF and 3NF.
C	Following information is maintained for online bookstore: (i) Books (ISBN, price, title, year) (ii) Author (name, address, url) (iii) Publisher (name, address, phone, url) (iv) Customer (name, address, email, phone)

	(v) Shopping basket (basket ID) Construct ER diagram with the following constraints: Each book should have author and publisher. Book may have more than one author. Each customer has a dedicated shopping basket. Books can further categorize as books, music, cassette or compact discs.

Q3	**Solve any Two Questions out of Three 10 marks each**
A	What is data independence? Discuss three tier schema architecture of data independence.
B	Give syntax for DML commands. Show their operations with an example.
C	Discuss ACID properties of transaction in detail

University of Mumbai

Examination 2020 under Cluster 06

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

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

Program: **Electronics Engineering**

Curriculum Scheme: Rev 2016

Examination: TE Semester V

Course Code: ELXDLO5012 and Course Name: Digital Control System

Time: 2 hour 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.	According to Shanon's Sampling theorem, the sampling frequency is _____ times the maximum frequency content in the signal.
Option A:	Two
Option B:	Three
Option C:	Four
Option D:	1.5
2.	The differential equations in Continuous Domain become _____ equations in discrete domain.
Option A:	Partial differential
Option B:	Remains Same
Option C:	Difference
Option D:	Linear Algebraic
3.	For constant value of attenuation σ, the mapping from s plane to z plane results in a _____with radius of _____
Option A:	Circle, Zero
Option B:	Circle, 1
Option C:	Circle, e^{σ}
Option D:	Circle, 0.5
4.	The hold circuits are used to remove _____from the signal
Option A:	Low Frequency component
Option B:	High frequency components
Option C:	Non uniform components
Option D:	Nyquist frequency component
5.	In which of the following the jw axis in s plane maps uniquely and entirely in unit circle in z plane
Option A:	Bilinear Transformation
Option B:	Finite Difference Approximation
Option C:	Impulse Invariance
Option D:	Finite Sum approximation
6.	Z transform for a discretized unit step input is given by_____.

Option A:	z/z-1
Option B:	z/z+1
Option C:	z+1/z
Option D:	z-1/z
7.	Pulse transfer function relates z-transform of the _____ at the sampling instants to the Z-transform of the _____ input.
Option A:	Output, sampled
Option B:	Output, continuous
Option C:	Input, Continuous
Option D:	It is not related to z
8.	If output of the system depends on past and present inputs
Option A:	System is causal
Option B:	System is Noncausal
Option C:	System is anti-causal
Option D:	System is observable
9.	In pole zero cancellation, using a controller, we should never cancel
Option A:	Pole inside unit circle
Option B:	Pole Outside Unit circle
Option C:	Stable Pole
Option D:	Should cancel only zero
10.	An initially relaxed (all the initial conditions of the system are zero) LTI system is said to be BIBO stable if for every bounded input, the output is also_____.
Option A:	Growing exponentially
Option B:	Going to Zero
Option C:	Bounded
Option D:	Increasing linearly
11.	For an nth order system, he number of rows in the Jury's table is
Option A:	2n-1
Option B:	3n+1
Option C:	2n-3
Option D:	3n-1
12.	The eigenvalues of a square matrix remain invariant under
Option A:	Similarity Transformation
Option B:	Z transformation
Option C:	Multiple Transformation
Option D:	Bilateral Transformation
13.	For a system governed by 5th order differential equation, the number of state variables is
Option A:	3
Option B:	5
Option C:	4
Option D:	2

14.	The eigenvalues of matrix A in state variable model, are also called as
Option A:	Closed loop poles
Option B:	Open loop poles
Option C:	Open loop zeros
Option D:	Closed loop zeros
15.	In dead beat control for a third order system, any initial state x(0) is driven to zero in at most
Option A:	3 steps
Option B:	6 steps
Option C:	9 steps
Option D:	12 steps
16.	A dynamic system which estimates the state vector based on the information of input and output is called as
Option A:	Controller
Option B:	Dead Beat Controller
Option C:	Observer
Option D:	Pole Placement Controller
17.	A system x (k + 1) = Ax (k) + Bu (k), y (k) = Cx (k) + Du (k) is completely state controllable if rank of _____matrix is same as _____of the system.
Option A:	Observability, Rank
Option B:	Controllability, Order
Option C:	Observability, order
Option D:	Controllability, Rank
18.	In dead beat control, all the poles of Closed Loop system are placed in z plane at
Option A:	Unit Circle
Option B:	Zero
Option C:	Diagonally Opposite
Option D:	Infinite
19.	The control law using state feedback, given by expression u(k)= -Kx(k), where u(k)is controller output, K is controller gain, x(k)-state vector gives
Option A:	Tracking Control
Option B:	Regulatory Control
Option C:	Breaking Control
Option D:	Static Control
20.	The P controller is given by _____, Where K is controller gain and e(k) is error at kth instant
Option A:	U(k)=Ke(k)
Option B:	U(k)=-Ke(k)
Option C:	U(k)=(1+K)e(k)
Option D:	U(k)=(1-K)e(k)

Q2	**Solve any Two Questions out of Three 10 marks each**
A	Explain the concepts of controllability and observability
B	List the difference between the Jury stability test and stability analysis using bilinear transformation coupled with Routh stability criterion?
C	State and prove the sampling theorem? Describe the sample and hold operations?

Q3	**Solve any Two Questions out of Three 10 marks each**
A	Derive the necessary and sufficient conditions for design of state feedback controller through pole placement?
B	Prove Ackermann's formula for the determination of the state feedback gain
C	What are the state space representation forms and explain them.

University of Mumbai
Examination 2020 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)

Examinations Commencing from 7th January 2021 to 20th January 2021

Program: **Electronics Engineering**

Curriculum Scheme: Rev 2016

Examination: TE Semester V(CBCGS)

Course Code: ELXDLO5013 and Course Name: ASIC VERIFICATION

Time: 2 hour Max. Marks: 80

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

Q1.	In continuous assignment LHS can be
Option A:	Scalar net
Option B:	Vector net
Option C:	Concatenation of both
Option D:	Vector reg
Q2.	To get a new semaphore, but not block it then what can be used
Option A:	New
Option B:	Get
Option C:	try_get
Option D:	Create
Q3.	Which flow verification follows ?
Option A:	Waterfall flow
Option B:	Downfall flow
Option C:	Top down flow
Option D:	Bottom up flow
Q4.	1st step of test bench verification involves following steps
Option A:	Generate task
Option B:	Generate delay
Option C:	Generate function
Option D:	Generate stimulus
Q5.	Simulation phase involves following steps
Option A:	Build , task
Option B:	Build, run , share
Option C:	Build, run , wrap up
Option D:	Run, build

Q6.	Unsigned 16 bits can be represented in system verilog as
Option A:	bit [2 :0] my-reg;
Option B:	bit [4:0] my-reg;
Option C:	bit [15:0] my-reg;
Option D:	bit [8:0] my -reg ;
Q7.	Which operators has highest precedence in Verilog
Option A:	Unary
Option B:	Multiplication
Option C:	Addition
Option D:	Conditional
Q8.	While operating in a loop, if a programmer wants to leave the loop immediately which function has to be used?
Option A:	Break
Option B:	Continue
Option C:	Exit
Option D:	Return
Q9.	Which keyword has to be used if a routine should not change the array values
Option A:	Const ref type
Option B:	Int
Option C:	Const
Option D:	Val
Q10.	The system task ……. returns an integer scaled to the time precision of the current module, but missing any fractional units
Option A:	$time
Option B:	$realtime
Option C:	$constanttime
Option D:	$variabletime
Q11.	Target to the compilation of Verification process is
Option A:	Functional Coverage 100% and code coverage is not considered
Option B:	Functional Coverage 100% and code coverage is 100%
Option C:	Code coverage should be 100% and Functional Coverage is not considered.
Option D:	If all the test cases in
Q12.	An intelligent bundle of signals contains:
Option A:	Connectivity
Option B:	Synchronization
Option C:	Functionality
Option D:	All of the mentioned.
Q13.	fork...join executes the statements in

Option A:	Sequential
Option B:	Parallel
Option C:	Randomly
Option D:	Sequential and Parallel

Q14.	class Packet;
	rand bit [31:0] src, dst, data[8];
	randc bit [7:0] kind;
	constraint c {src> 10;
	src< 15;}
	endclass
	Packet p;
	initial begin
	p = new; // Create a packet
	assert (p.randomize());
	transmit(p);
	end
	Src variable will choose the value between

Option A:	10-14
Option B:	10-15
Option C:	11-14
Option D:	11-15

Q15.	class bounds;
	rand int size;
	int max_size = 100;
	constraint c_size {
	size inside {[1:max_size]};
	}
	endclass
	By varying max_size, value of size can lie between

Option A:	1-100
Option B:	1-99
Option C:	1- max_size
Option D:	2 - max_size
Q16.	A task can have arguments of type
Option A:	Input only
Option B:	Output only
Option C:	Both input and output
Option D:	All input, output and inout
Q17.	Reuse of same code to take on many different behaviors based on the type of object at hand is called as
Option A:	Abstraction
Option B:	Polymorphism
Option C:	Encapsulation

Option D:	Inheritance
Q18.	In System Verilog, if a programmer wants to call a function and ignore its return value programmer has to cast the result to …….
Option A:	Void
Option B:	Nullify
Option C:	Main
Option D:	Float
Q19.	initial begin $display("@%0d: start fork...join_noneexample",$time); #10 $display("@%0d: sequential after #10", $time); fork $display("@%0d: parallel start", $time); #50 $display("@%0d: parallel after #50", $time); #10 $display("@%0d: parallel after #10", $time); begin #30 $display("@%0d: sequential after #20", $time); #10 $display("@%0d: sequential after #10", $time); end join_none $display("@%0d: after join_none", $time); #80 $display("@%0d: final after #80", $time); end after join_none will execute at time unit
Option A:	60
Option B:	50
Option C:	90
Option D:	10
Q20.	The task *$stop* is provided to
Option A:	End simulation
Option B:	Suspend simulation
Option C:	Exit simulation
Option D:	Not related to simulation

Q2 **(20 Marks Each)**	**Solve any Two out of Three 10 marks each**
A	What is Randomization and why it is required in design verification? Give detail explanation with suitable example.
B	Draw the architecture and highlight the important features of Virtex 7 family.
C	Explain various data types in verilog? Write verilog code to swap contents of 2 registers with and without a temporary register.

Q3. **(20 Marks Each)**	**Solve any Two out of Three 10 marks each**
A	What are semaphores? Also, explain the difference between semaphore and monitor.
B	What are the different types of coverage? Explain line and toggle coverage with suitable example.
C	Explain various fork join statements supported in verilog.

University of Mumbai

Examination 2020 under Cluster 06

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

Examinations Commencing from 7th January 2021 to 20th January 2021

Program: **Electronics Engineering**

Curriculum Scheme: Rev 2016

Examination: TE Semester V

Course Code: ELXDLO5014 and Course Name: Biomedical Instrumentation

Time: 2 hours 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 principle of this electrode is to practically eliminate movement artifact by avoiding any direct contact of the metal with skin.
Option A:	The pH Electrode
Option B:	Microelectrodes
Option C:	Floating Electrode
Option D:	Needle Electrode
2.	The process of changing from the resting state to the action potential is called
Option A:	Depolarization
Option B:	Refractory action
Option C:	Repolarization
Option D:	Polarization
3.	This cell is the longest in the human body
Option A:	Muscle cells
Option B:	Nerve cells
Option C:	Bone cells
Option D:	Gland cells
4.	Nerves that carry sensory information from the various parts of the body to the brain are called
Option A:	Afferent nerves
Option B:	Efferent nerves
Option C:	Dendrites
Option D:	Axon hillock
5.	It is a graphic recording or display of the time invariant voltages produced by the myocardium.
Option A:	EEG
Option B:	EMG

Option C:	EKG
Option D:	PNS
6.	EEG Potentials have random appearing waveforms with peak to peak amplitudes ranging from
Option A:	less than 10 µV to over 100 µ V
Option B:	less than 100 µV to over 100 V
Option C:	less than 5 µV to over 50 µ V
Option D:	less than 1µV to over 10µ V
7.	The reason why tricuspid and bicuspid valves are closed is_____
Option A:	ventricular relaxation
Option B:	ventricular filling
Option C:	atrial systole
Option D:	attempted backflow of blood into the atria
8.	It is the volume of gas remaining in the lungs at the end of maximal expiration.
Option A:	Tidal volume
Option B:	Residual volume
Option C:	Inspiratory reserve volume
Option D:	Expiratory reserve volume
9.	Which statement is true
Option A:	R-wave amplitude of lead II is equal to the sum of the R-wave amplitudes of leads I and III.
Option B:	R-wave amplitude of lead I is equal to the sum of the R-wave amplitudes of leads II and III.
Option C:	R-wave amplitude of lead III is equal to the sum of the R-wave amplitudes of leads I and II.
Option D:	I+II+III
10.	This one is not a direct measurement method used to measure blood pressure.
Option A:	Implantation of a transducer in a vessel
Option B:	Percutaneous insertion
Option C:	Auscultatory
Option D:	Catheterization
11.	Out of the following, which type of plethysmography, is said to be a “True” plethysmography.
Option A:	Reactance
Option B:	Capacitance
Option C:	Impedance
Option D:	Photoelectric
12.	Transient time and Doppler shift blood flow meters are types of
Option A:	Electromagnetic blood flow meter
Option B:	Ultrasonic blood flow meter

Option C:	NMR blood flow meter
Option D:	LASER Doppler blood flow meter
13.	Which type of wave is sensed by ventricular program pulse generator?
Option A:	P-wave
Option B:	Q-wave
Option C:	T-Wave
Option D:	R-wave
14.	What is the basic problem with automatic analyzer?
Option A:	Negative identification of sample
Option B:	Positive identification
Option C:	Mix-ups of samples
Option D:	Improper calibration
15.	In a normal X-Ray machine, X – Rays are produced by _____
Option A:	bombardment of cathode rays on a radioactive material
Option B:	nuclear fission
Option C:	nuclear fusion
Option D:	super heating of an element
16.	The commonly used MRI's have a magnetic strength of _____
Option A:	1.5 – 3 Tesla
Option B:	3 – 6 Tesla
Option C:	6 – 12 Tesla
Option D:	12 – 24 Tesla
17.	Which of the following is the principal mode of heat exchange in an infant incubator
Option A:	Radiation
Option B:	Evaporation
Option C:	Convection
Option D:	Conduction
18.	The main components of a heart–lung machine is/are
Option A:	pump (to provide the driving force to the blood in the arterial system),
Option B:	an oxygenator (for exchange of oxygen and carbon dioxide),
Option C:	a heat exchanger (to allow control of temperature of the body)
Option D:	Pump+ oxygenator+ heat exchanger
19.	During DC defibrillation, what is the range of electrical energy discharged by the capacitor?
Option A:	Between 100 and 400 Joules
Option B:	Between 100 and 200 Joules
Option C:	Between 200 and 400 Joules

Option D:	Between 40 and 400 Joules
20.	In physiological effects of electrical currents in humans, the minimal threshold for the let-go current is _____.
Option A:	60 mA
Option B:	50 mA
Option C:	5 mA
Option D:	6 mA

Q2	**Solve any four questions out of the given six. (5 marks each)**
A	Explain the types of bio-potential electrodes.
B	Draw and explain 10-20 Electrode positioning system
C	Explain the Lung volume and Lung Capacities.
D	Explain the principle of an ultrasonic blood flow meter.
E	State Beer Lambert's law with mathematical expression.
F	Explain in detail the modes of scanning in ultrasound imaging and their applications.

Q3	**Solve any two questions out of the given three. (10 marks each)**
A	Draw the block diagram of EMG Measurement and write a detailed note on it.
B	Discuss in detail the Shock Hazards from electrical equipments and methods of accident prevention.
C	Draw the block diagram of X ray Machine and explain its working along with applications.

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: ELX 502 and Course Name: Digital Communication

Time: 1-hour Max. Marks: 50

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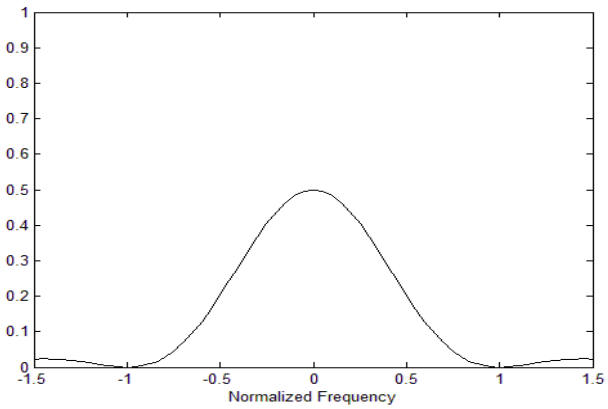
Note to the students: - All the Questions are compulsory and carry equal marks.

Q1.	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.	In an optical fiber, the concept of Numerical aperture is applicable in describing the ability of
Option A:	Light Collection
Option B:	Light Scattering
Option C:	Light Dispersion
Option D:	Light Polarization
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:	a) Inter Channel Interference
Option B:	b) Intra Symbol Interference
Option C:	c) Inter Symbol Interference
Option D:	d) Intra Channel Interference
Q14.	Huffman coding is used to
Option A:	a) compress data by using more bits to encode more frequently occurring characters
Option B:	b) expand data by using fewer bits to encode more frequently occurring characters
Option C:	c) compress data by using fewer bits to encode more frequently occurring characters
Option D:	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.	The frequency range for satellite communication is
Option A:	1kHz – 1GHz
Option B:	3GHz – 3THz
Option C:	100THz – 1PHz
Option D:	530kHz – 1600kHz
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:	a) P(A) = (nA/N)
Option B:	b) P(A) = Lim $_{n \to \infty}$ (nA/N)
Option C:	c) P(A) = Lim $_{n \to 0}$ (nA/N)
Option D:	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.	Effective isotopically radiated power in dB for output power of 3W with total gain of 20dB is
Option A:	24.77dB
Option B:	25.70dB
Option C:	50.01dB
Option D:	22.77dB
Q22.	The coding techniques in which the maximum synchronizing capability is present is called
Option A:	a) Huffman coding
Option B:	b) Hamming Coding
Option C:	c) Manchester Coding
Option D:	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:	a) Generator polynomial
Option B:	b) Generator matrix

Option C:	c) Generator polynomial & matrix
Option D:	d) Shift Registers
Q25.	Given xi = {x1, x2, x3} with probabilities as p(xi) = {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

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: ELX503 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 volume of a closed surface bounded by 0 ≤x ≤2, 0≤y≤1, and 0≤z≤5
Option A:	10 m^3
Option B:	100 m^3
Option C:	20 m^3
Option D:	30 m^3
Q2.	$\nabla \cdot \bar{B} = 0$ will concludes
Option A:	Existance of magnetic dipoles
Option B:	Existance of electric dipoles
Option C:	Existance of electric monopoles
Option D:	Inexistance of magnetic monopoles
Q3.	A point charge Q1 =2mC is located in free space at P1(-3,7,-4)m while Q2=5mc is at P2 (2,4,-1) find Positional vector R12
Option A:	-3ax
Option B:	$-3a_x+7a_y-4a_z$
Option C:	$5a_x-3a_y+3a_z$
Option D:	$a_x+a_y+a_z$
Q4.	Electric field $\bar{E}$ generated by infinite line charge is define by relation
Option A:	$\bar{E} = \frac{\rho_l}{4\pi\varepsilon R^2}$
Option B:	$\bar{E} = \frac{\rho_l}{2\pi\varepsilon R^3}$
Option C:	$\bar{E} = \frac{\rho_l}{2\pi\varepsilon R}$
Option D:	$\bar{E} = \frac{\rho_l}{4\pi\varepsilon R}$
Q5.	Electric field $\bar{E}$ generated by infinite sheet charge is proportional
Option A:	$\bar{E} \propto \frac{1}{R^2}$
Option B:	$\bar{E}$ *is indepenadant*
Option C:	$\bar{E} \propto \frac{1}{R}$
Option D:	$\bar{E} \propto R$

Q6.	Electromagnetic waves are produced by
Option A:	A static charge
Option B:	An accelerated charge
Option C:	A moving charge
Option D:	Charged particles
Q7.	In electromagnetic waves the phase difference between electric field vector and magnetic field vector is
Option A:	zero
Option B:	$\pi/2$
Option C:	π
Option D:	$\pi/3$
Q8.	Which properties amount the following is false about electromagnetic waves?
Option A:	The energy in an electromagnetic wave is divided equally between electric and magnetic vectors.
Option B:	Both electric and magnetic field vectors are parallel to each other and perpendicular to the direction of Propagation of the wave.
Option C:	These waves do not require any material medium for propagation
Option D:	Both electric and magnetic field vectors attain the maxima and minima at the same place and the same time
Q9.	Which of the following rays are not electromagnetic waves?
Option A:	Gamma rays
Option B:	Beta rays
Option C:	Heat rays
Option D:	X rays
Q10.	The finite difference method is
Option A:	Graphical methods
Option B:	Experimental methods
Option C:	Analog methods,
Option D:	Numerical methods.
Q11.	The Correct sequence to solve finite difference solution to Poisson's or Laplace's equation are i) Approximating the differential equation and boundary conditions by a set of linear algebraic equations on grid points within the solution region ii) Dividing the solution region into a grid of nodes iii)Solve set of algebraic equation
Option A:	i,ii.iii
Option B:	ii,iii,i
Option C:	i,iii,ii
Option D:	ii,i,iii

Q12.	Assume Δx and Δy to be the step-sizes with indices i and j along x- and y-axes respectively. $\nabla^2\Psi(x,y)=0$.The finite-difference representation for two-dimensional Laplace equation using central differencing scheme is
Option A:	$\frac{\Psi_{i+1,j}-2\Psi_{i,j}+\Psi_{i-1,j}}{\Delta x}+\frac{\Psi_{i+1,j}-2\Psi_{i,j}+\Psi_{i-1,j}}{\Delta y}=0$
Option B:	$\frac{\Psi_{i+1,j}-2\Psi_{i,j}+\Psi_{i-1,j}}{\Delta x}+\frac{\Psi_{i,j+1}-2\Psi_{i,j}+\Psi_{i,j-1}}{\Delta y}=0$
Option C:	$\frac{\Psi_{i+1,j}-2\Psi_{i,j}+\Psi_{i-1,j}}{\Delta x^2}+\frac{\Psi_{i,j+1}-2\Psi_{i,j}+\Psi_{i,j-1}}{\Delta y^2}=0$
Option D:	$\frac{\Psi_{i+1,j}-2\Psi_{i,j}+\Psi_{i-1,j}}{\Delta x^2}+\frac{\Psi_{i+1,j}-2\Psi_{i,j}+\Psi_{i-1,j}}{\Delta y^2}=0$
Q13.	If problem of finite difference method is solved by band matrix method where $[A]$ is sparse matrix , $[V]$is unknown potential at free node and $[B]$ is known potential at fixed node .The solution of potential at the free notes can be found by
Option A:	$[V]=[B]^{-1}[A]$
Option B:	$[V]=[A]^{-1}[B]$
Option C:	$[V]=[A][B]$
Option D:	$[V]=[B][A]$
Q14.	The shape of the electromagnetic energy radiated from or received by an antenna is called the
Option A:	Signal shape
Option B:	Electromagnetic pattern
Option C:	Radiation pattern
Option D:	Antenna pattern
Q15.	The radiation resistance of half wavelength dipole antenna is
Option A:	73 Ω
Option B:	75 Ω
Option C:	77 Ω
Option D:	74 Ω
Q16.	Antennas that transmit an equal amount of energy in the horizontal direction are called
Option A:	Bi-directional
Option B:	Unidirectional
Option C:	Omnidirectional
Option D:	Unilateral
Q17.	The directivity of half wave dipole is
Option A:	1.5
Option B:	1.64
Option C:	1.76
Option D:	2.15

Q18.	What is the direction of varying orientation of polarized surface wave at the earth surface in a wave tilt mechanism?
Option A:	Horizontal
Option B:	Vertical
Option C:	Diagonal
Option D:	Opposite
Q19.	By which name/s is an ionospheric propagation, also known as?
Option A:	Sea wave propagation
Option B:	Ground wave propagation
Option C:	Sky wave propagation
Option D:	All of the above
Q20.	High-frequency long-distance propagation mostly depends on
Option A:	Ionospheric reflection
Option B:	Tropospheric reflection
Option C:	Ground reflection
Option D:	Inverted reflection
Q21.	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
Q22.	The power transmission capacity of a transmission line is
Option A:	Proportional to transmission voltage
Option B:	Proportional to the square of transmission voltage
Option C:	Inversely proportional to the transmission voltage
Option D:	Inversely proportional to the square of transmission voltage
Q23.	..... Are used to provide compensation at the receiving end of a transmission line so as to improve its voltage profile
Option A:	Condensers
Option B:	Resistors
Option C:	Reactors
Option D:	Condensers, resistors or reactors
Q24.	The voltage of a transmission line can be controlled by
Option A:	Excitation control
Option B:	Using induction regulator
Option C:	Reactive VAR injection methods
Option D:	using condenser regular

Q25.	Indicate the false statement. The SWR on a transmission line is infinity; the line is terminated in
Option A:	A short circuit
Option B:	A complex impedance
Option C:	An open circuit
Option D:	A pure reactance

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: ELX504 and Course Name: Design with linear Integrated circuits

Time: 1hour Max. Marks: 50

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

Q1.	Which of the following electrical characteristics is not exhibited by an ideal op-amp?
Option A:	Infinite voltage gain
Option B:	Infinite bandwidth
Option C:	Infinite input resistance
Option D:	Infinite output resistance
Q2.	Which of the following element is present in the feedback path of an ideal integrator circuit_____
Option A:	Resistor
Option B:	Diode
Option C:	Capacitor
Option D:	Inductor
Q3.	The following oscillator types provides extremely stable output frequency:
Option A:	Colpitt's oscillator
Option B:	Wein bridge oscillator
Option C:	Crystal oscillator
Option D:	Hartley oscillator
Q4.	Which of the following is nonlinear application of op-amp?
Option A:	Integrator
Option B:	Instrumentation amplifier
Option C:	V to I converter
Option D:	Schmitt trigger
Q5.	Which of the following is not a method of DAC
Option A:	Weighted resistor method
Option B:	R-2R ladder
Option C:	Inverted R-2R-ladder method
Option D:	Flash type
Q6.	For non inverting adder, which theorem is applicable to determine the expression

	for output voltage?
Option A:	Miller's theorem
Option B:	Superposition theorem
Option C:	Thevenin's theorem
Option D:	Millman's theorem
Q7.	What does the discharge transistor do in the 555 timer circuit?
Option A:	Charge the external capacitor to stop the timing
Option B:	Charge the external capacitor to start the timing over again
Option C:	Discharge the external capacitor to stop the timing
Option D:	Discharge the external capacitor to start the timing over again
Q8.	Which among the following can be used to detect the missing pulse detector
Option A:	Astable multivibrator
Option B:	Comparator
Option C:	Bistable multivibrator
Option D:	Monostable multivibrator
Q9.	Which among the following performance parameters is called the change in line voltage within a specified range at a constant load current?
Option A:	Line regulation
Option B:	Load regulation
Option C:	Temperature stability factor
Option D:	Ripple factor
Q10.	As the frequency increases the input impedance of differentiator circuit ----------
Option A:	Decreases
Option B:	Increases
Option C:	remains constant
Option D:	no relation between impedance and frequency
Q11.	Which of the following is not the features of instrumentation amplifier?
Option A:	Low noise
Option B:	High gain accuracy
Option C:	Low thermal and time drift
Option D:	Low voltage gain
Q12.	A monostable 555 timer has the following number of stable states:
Option A:	0
Option B:	1
Option C:	2
Option D:	3
Q13.	Which is not considered as a linear voltage regulator?
Option A:	Fixed output voltage regulator
Option B:	Adjustable output voltage regulator
Option C:	Switching regulator

Option D:	Special regulator
Q14.	The output of a particular Op-amp increases 8V in 12µs. The slew rate is ____
Option A:	90 V/µs
Option B:	0.67 V/µs
Option C:	1.5 V/µs
Option D:	45 V/µs
Q15.	A square wave oscillator has fo =1KHz. Assume the resistor value to be 10KΩ and find the capacitor value?
Option A:	3.9 µF
Option B:	0.3 µF
Option C:	2 µF
Option D:	0.05µF
Q16.	Which of the following are main circuits of voltage to frequency converter?
Option A:	differentiator and comparator
Option B:	integrator and Schmitt trigger
Option C:	S/H circuit and Schmitt trigger
Option D:	differentiator and S/H circuit
Q17.	A binary input “000” is fed to 3 bit DAC/ADC. The resultant output is “101”.Which type of error is produced?
Option A:	settling error
Option B:	gain error
Option C:	linearity error
Option D:	offset error
Q18.	The one shot multivibrator is not an oscillator because----------
Option A:	its output switches between two states
Option B:	it requires sine wave as input signal
Option C:	it does not require DC power supply
Option D:	it requires trigger signal to obtain output signal
Q19.	A switching regulator improves the----------
Option A:	switching flexibility
Option B:	efficiency of regulator
Option C:	response of regulator
Option D:	line regulation
Q20.	The 2^{nd} order HPF , quality factor of the circuit is given by ----------
Option A:	Q = 1 / 3- K
Option B:	Q = 1 / K-3
Option C:	Q = 1 / 3 + K
Option D:	Q = 3- K
Q21.	To a Schmitt trigger in non inverting configuration, an input triangular wave of 1 Vp-p is applied. What will be the output waveform if upper and lower threshold voltages are 0.25 V?

Option A:	sawtooth waveform
Option B:	sine waveform
Option C:	square waveform
Option D:	pulse waveform
Q22.	Calculate the analog output voltage of 4 bit DAC , if the digital input is “1011”.Assume full scale voltage is 5 V.
Option A:	3.43 V
Option B:	5 V
Option C:	4.5 V
Option D:	8 V
Q23.	To get more output voltage from buck switching regulator , we need to ----------
Option A:	decrease the duty cycle
Option B:	decrease the input voltage
Option C:	increase the duty cycle
Option D:	increase the switching frequency
Q24.	Bridge audio power amplifier can deliver power upto ---------- as output of single LM 380 audio power amplifier.
Option A:	Half
Option B:	Twice
Option C:	Thrice
Option D:	four times
Q25.	If the load is shorted, the pass transistor has the least power dissipation when regulator has ---------
Option A:	foldback limiting
Option B:	low efficiency
Option C:	high zener voltage
Option D:	boost topology