NOTE: “These are sample MCQs to indicate pattern, may or may not appear in examination”

Program: BE Computer Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VIII

Course Code: **CPC801** and Course Name: **Data Warehousing and Mining**

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 statements about DW is true?
Option A:	A data warehouse is necessary to all those organizations that are using relational OLTP
Option B:	A data warehouse is useful to all organizations that currently use OLTP
Option C:	A data warehouse is valuable to the organizations that need to keep an audit trail of their activities
Option D:	A data warehouse is valuable only if the organization has an interest in analyzing historical data
Q2.	Data cubes can grow to n-number of dimensions, thus becoming _____
Option A:	Hypercubes
Option B:	Star Cubes
Option C:	Dimensional Cubes
Option D:	Solid cubes
Q3.	The Validation step in which data set is divided usually 1/3 for testing and 2/3 for training is
Option A:	Holdout
Option B:	Cross Validation
Option C:	Random Subsampling
Option D:	Bootstrapping
Q4.	The numeric measurements or values that represent a specific business aspect or activity is
Option A:	Facts
Option B:	dimensions
Option C:	Tables
Option D:	schemas
Q5.	Association rule mining can find application in:

Option A:	Basket data analysis
Option B:	Fraud detection
Option C:	Salary prediction
Option D:	Weather prediction
Q6.	In which type of SCD(Slowly changing dimensions) do we preserve history of data:
Option A:	Type one
Option B:	Type Two
Option C:	Type Three
Option D:	Type four
Q7.	The operation of moving from coarser granular data to finer granular data is called _____
Option A:	Reduction
Option B:	Increment
Option C:	Roll up
Option D:	Drill down
Q8.	The measure of Classifier Precision is given by
Option A:	TP/P
Option B:	TN/N
Option C:	|TP| / |TP| + |FP|
Option D:	|TP| / |TP| + |FN|
Q9.	What is the method to interpret the results after rule generation?
Option A:	Absolute Mean
Option B:	Mean squared error
Option C:	Lift ratio
Option D:	Gini index
Q10.	Which modeling scheme is used for data warehousing
Option A:	ER model
Option B:	EER model
Option C:	Dimension model
Option D:	DFD model
Q11.	In general, the data Warehouse is_____.
Option A:	Read only
Option B:	Write only
Option C:	Read and write only
Option D:	Update only
Q12.	The final step in the data mining process is
Option A:	data cleaning
Option B:	data preprocessing
Option C:	modeling

Option D:	Data visualization
Q13.	Using given table create classification model and classify the following tuple

Transaction ID	Income	Credit	Decision
1	Very high	Excellent	AUTHORIZE
2	High	Good	AUTHORIZE
3	Medium	Excellent	AUTHORIZE
4	High	Good	AUTHORIZE
5	Very high	Good	AUTHORIZE
6	Medium	Excellent	AUTHORIZE
7	High	Bad	REQUEST ID
8	Medium	Bad	REQUEST ID
9	High	Bad	REJECT
10	Low	Bad	CALL POLICE

Option A:	AUTHORIZE
Option B:	REQUEST ID
Option C:	REJECT
Option D:	CALL POLICE
Q14.	Why integration of spatial data is one of the challenging issues regarding the construction and utilization of spatial Data warehouse
Option A:	Because data formats are very simple and not efficient for analytics
Option B:	Such records are difficult to collect from source so integration is not possible
Option C:	It comes from heterogenous sources and systems
Option D:	It if generated with a very fast speed so integration is not possible
Q15.	Which of the following is true related to data format?
Option A:	Both apriori and FP-Growth uses horizontal data format.
Option B:	Both apriori and FP-Growth uses vertical data format.
Option C:	Apriori uses horizontal and FP-Growth uses vertical data format.
Option D:	Apriori uses vertical and FP-Growth uses horizontal data format
Q16.	The Validation step which uses sampling of data set without replacement is
Option A:	Holdout
Option B:	Cross Validation
Option C:	Random Sub sampling
Option D:	Bootstrapping
Q17.	Which process is used to upgrade the quality of data before it is moved into a data warehouse
Option A:	Data scrubbing
Option B:	Data deletion
Option C:	OLTP
Option D:	Extraction

Q18.	If particular data warehouse in organization provides information about product, customers, suppliers, sales, revenue and does not focus on the ongoing operations ,it is feature of data warehouse is
Option A:	Integrity
Option B:	Subject Oriented
Option C:	Non Volatile
Option D:	Time Variant
Q19.	How can we best represent 'support' for the following association rule: "If Bread and Jam, then Milk".
Option A:	{Bread, Jam}/(Total number of transactions)
Option B:	{Bread, Jam , Milk}/(Total number of transactions)
Option C:	{Milk}/{ Bread, Jam }
Option D:	{Milk}/(Total number of transactions)
Q20.	For questions given below consider the data Transactions : T1 {F, A, D, B} T2 {D, A, C, E, B} T3 {C, A, B, E} T4 {B, A, D} With minimum support is 60% and the minimum confidence is 80%. Find frequent item sets that satisfy the criteria?
Option A:	{ABC}, {ABE}, {BCD}, {ACD}
Option B:	{ABE},{BCD}, {ACD}
Option C:	{ABE}, {BCD}
Option D:	{ABD}
Q21.	Calculate median of the following data set X={1,6,5,3,2,8}
Option A:	4
Option B:	5
Option C:	6
Option D:	4.5
Q22.	The problem of identifying dangerous zones based on earthquake epicenters can be solved using
Option A:	Clustering
Option B:	Classification
Option C:	Frequent Pattern Mining
Option D:	Regression
Q23.	Which clustering algorithm groups data over a variety of scales by creating a cluster tree or dendrogram.
Option A:	Partitional
Option B:	Hierarchical
Option C:	Naive Bayes
Option D:	K-means

Q24.	Which plot is used to represent five number summary?
Option A:	Histogram
Option B:	Scatter plot
Option C:	Box plot
Option D:	Quantile plot
Q25.	Which clustering algorithm determines k clusters by partitioning n objects where each object belongs to the cluster with the nearest mean
Option A:	K-Means
Option B:	K- medoids
Option C:	K-Averaging
Option D:	K-means and K-medoids

Program: BE Mechanical Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VIII

Course Code: MEC801 and Course Name: Design of Mechanical System.

Time: 1 hour

Max. Marks: 50

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

Q1.	For structural diagram to be optimum, value of X1 in structural formula should be
Option A:	0
Option B:	2
Option C:	-1
Option D:	1
Q2.	For a given gear box its structural formula and ray formula will be ___
Option A:	Reverse of each other
Option B:	Symmetrical to each other
Option C:	First and last term would be equal
Option D:	Exactly same
Q3.	For a three stage gear box, structural equation would look like
Option A:	(P1)(X1) . (P2)(X2)
Option B:	(P1)(X1) . (P2)(X2) . (P3)(X3)
Option C:	(P1)(X1) . (P2)(X2) . (P3)(X3) . (P4)(X4)
Option D:	(P1)(X1)
Q4.	In a multi stage gearbox design for machine tool application % speed deviation at all times should be less than ____ (ϕ = Geometric progressor)
Option A:	$\pm 20(\phi - 1)$
Option B:	$\pm 10(\phi - 1)$
Option C:	$\pm 10\phi$

Option D:	± 20ϕ
Q5.	Indicator diagram of a reciprocating pump is a graph between
Option A:	Floor vs swept volume
Option B:	Pressure in cylinder vs swept volume
Option C:	Flow vs speed
Option D:	Pressure vs speed
Q6.	The ratio of the theorotical power that must be deliver to a pump to the actual power delivered to the pump is known as
Option A:	Mechanical efficiency
Option B:	Volumetric efficiency
Option C:	Manometric efficiency
Option D:	Overall efficiency
Q7.	A centrifugal pump delivers water at the rate of 50 litres/s against a total head of 40 metres. Then the power required to drive the pump is
Option A:	2 kW
Option B:	15.2 kW
Option C:	19.6 kW
Option D:	25.8 kW
Q8.	The function of the shaft in pump is to
Option A:	Transmit input power from driver into the impeller
Option B:	Transmit output power driver into the impeller
Option C:	Transmit output power driven into the impeller
Option D:	Transmit Intput power driver into the impeller

Q9.	With the increase in the flow rate, efficiency _____
Option A:	Decreases
Option B:	Increases
Option C:	Remains same
Option D:	Independent
Q10.	In design of Cylinder liner for calculation of thickness of liner is based on which stress? Follow notation As per Design data book for IC Engine Componants by Kale and Khandare
Option A:	Design Strss (Sd)
Option B:	Thermal Stree (St)
Option C:	Maximum Pressure criteria (Sx)
Option D:	Crushing Stress (Sc)
Q11.	Condition 1, D>125mm Condition 2, D<= 125mm Type of liner used for condition 1 and 2 respectivly
Option A:	wet, Dry
Option B:	Dry, Wet
Option C:	selection does not depends on bore dia
Option D:	Wet for both
Q12.	Calculate BSFC in Kg/ Kw. hr if mechanical efficiency is 76% and ISFC 0.2 Kg/Kw.hr
Option A:	0.155
Option B:	0.152
Option C:	0.148
Option D:	0.156
Q13.	The inventor of modern IC engine is
Option A:	Henry Ford

Option B:	Karl Benz
Option C:	Nikolaus Otto
Option D:	Rudolph Diesel
Q14.	Ratio of length of connecting rod to crank radius is usualy
Option A:	1 to 2
Option B:	2 to 3
Option C:	3 to 4
Option D:	4 to 5
Q15.	Conveyor belts are subject to three primary failure mechanisms
Option A:	Yield, Fatigue and Wear
Option B:	Torsion, wear, tension
Option C:	Yeild, fatigue, compressive
Option D:	shear,wear,tension
Q16.	In conveyor belting part breaker is _____.
Option A:	Rubber that resist cutting abrasion & chemical action
Option B:	woven fabric material for tensile strength
Option C:	Fabric coat above carcass to break impact load
Option D:	Rubber layers between carcass plys
Q17.	_____is the supporting device for belt and cargo of belt conveyors on which the belt moves so as to reduce the running resistance of the conveyor.
Option A:	Head pulley
Option B:	Main Pulleys
Option C:	Feed Chutes
Option D:	Idlers
Q18.	In four fall system in EOT crane, relation between velocity of rope on drum and velocity of hook
Option A:	velocity of rope on drum is equal to velocity of hook

Option B:	velocity of rope on drum is twice of velocity of hook
Option C:	velocity of rope on drum is square of velocity of hook
Option D:	velocity of rope on drum is half of velocity of hook
Q19.	Cross section of hook of EOT crane is
Option A:	Circular
Option B:	Rectangular
Option C:	Trapezoidal
Option D:	Square
Q20.	Depth of the crosspiece in EOT crane is found out by considering
Option A:	Tensile stress
Option B:	Compressive stress
Option C:	Bending stress
Option D:	Shear stress
Q21.	In a hook of an EOT crane, in cross section exactly below the centre of curvature, which type of stress is induced?
Option A:	Tensile stress
Option B:	Bending stress
Option C:	Shear stress
Option D:	Compressive stress
Q22.	Find life of bearing in million revolutions for sheave pulley in EOT crane if life in hours is 10000 hrs and N = 6RPM.
Option A:	3.6 mr
Option B:	7.2 mr
Option C:	36 mr
Option D:	72 mr
Q23.	**In the optimum design, the stress equation are the part of _____**

Option A:	**Primary design equation**
Option B:	**Subsidiary design equation**
Option C:	**Limit equation**
Option D:	**Secondary equation**
Q24.	**Blue print of the design of assembly and components includes_____**
Option A:	**Mode of failure**
Option B:	**Tolerances**
Option C:	**Requirement of the products**
Option D:	**Dimensions, Tolerances & Manufacturing methods**
Q25.	**_____ means the actions to be followed while designing**
Option A:	**Morphology**
Option B:	**Methodology**
Option C:	**Preliminary design**
Option D:	**Optimum design**

Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VIII

Course Code: ETC 801 and Course Name: Wireless networks

Time: 1 hour 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 multiple access technique is used by UMTS?
Option A:	CDMA
Option B:	TDMA
Option C:	FDMA
Option D:	SDMA
Q2.	Which of the following multiple access techniques are used by second generation cellular systems?
Option A:	FDMA/FDD and TDMA/FDD
Option B:	TDMA/FDD and CDMA/FDD
Option C:	FDMA/FDD and CDMA/FDD
Option D:	FDMA/TDMA and FDMA/FDD
Q3.	HSDPA stands for
Option A:	High-sensitive Downlink Packet Access
Option B:	High-speed Downlink Packet Access
Option C:	High-speed Data Packet Access
Option D:	High-sensitive Data Packet Access
Q4.	_____has been used successfully commercially by the WLAN (Wi-Fi) community.
Option A:	SIMO
Option B:	MISO
Option C:	SISO
Option D:	MIMO
Q5.	Factors considered for Radio Design for a Cellular Network
Option A:	Radio frequencies, cell site
Option B:	Use of spectrum in cell
Option C:	Quality of service for same environments
Option D:	Radio coverage ,efficient use of spectrum
Q6.	Average throughput in HSDPA can be estimated by----------

Option A:	SINR
Option B:	Noise figure
Option C:	Interference
Option D:	Path loss
Q7.	Higher is the value of the interference margin in the uplink, the ----------is the coverage area
Option A:	Moderate
Option B:	Higher
Option C:	Smaller
Option D:	Not dependent
Q8.	Plans may need to be iterated several times (on average 5 times) before the desired capacity/QoS/ coverage is achieved
Option A:	Capacity and coverage planning
Option B:	Optimisation Phase
Option C:	Static simulation approach
Option D:	Network Dimensioning
Q9.	Link budget consists of calculation of
Option A:	Only received signal power.
Option B:	Only noise power.
Option C:	Useful signal & Interfering noise power.
Option D:	Price of a link
Q10.	In a cellular system if allotted spectrum is 4.8MHz and full rate RF channel width is 200kHz, total number of RF carriers are
Option A:	12
Option B:	24
Option C:	30
Option D:	36
Q11.	If initial numbers of subscribers are 30,000, then how many subscribers will be there after 4 years with a subscriber growth of 5%?
Option A:	34,500
Option B:	35,600
Option C:	36,465
Option D:	38,200
Q12.	The data rate of ZigBee for WBAN applications:
Option A:	200kbs at 2.4GHz
Option B:	250kbs at 2.9GHz
Option C:	250kbs at 2.4GHz
Option D:	250kbs at 1.4GHz
Q13.	ZigBee supports three topologies: _____ , ____ and _____.

Option A:	Star, mesh, Cluster tree
Option B:	Star, Bus, tree
Option C:	Ring, mesh, Cluster tree
Option D:	Star, mesh, Ring
Q14.	IEEE 802.16 standard is commonly known as
Option A:	WiMAX
Option B:	Wi-Fi
Option C:	WLAN
Option D:	WMAN
Q15.	WiMAX link can transfer data at rate of
Option A:	20 Mbps
Option B:	100 Mbps
Option C:	50 Mbps
Option D:	70 Mbps
Q16.	WiMAX network applications are grouped in which of the following categories?
Option A:	Private networks
Option B:	Public networks
Option C:	Both private and public
Option D:	Autonomous Network
Q17.	The size of RFID tag is dependent
Option A:	Power and Antenna type (power from 1 mw to 1 W)
Option B:	Power and frequency (13.56 mhz, 433 mhz, 900 mhz, 2.4 ghz with power from 1 mw to 1 W)
Option C:	Power and frequency (10 mhz, 333 mhz, 891 mhz, 1.4 ghz with power from 100 mw to 1 W)
Option D:	Power and Antenna type (from 100mw to 1 W)
Q18.	The task of mobility management plane in WSN is
Option A:	Is to detect and register the movement of sensor nodes
Option B:	Maintain the flow of data if the sensor network's application requires it
Option C:	Find the location of the sensor node
Option D:	Schedule the sensing task
Q19.	SPIN is an acronym used for
Option A:	Sensor protocol for information via negotiation;
Option B:	Sensor protect information in network
Option C:	Sensor protocol for information nested
Option D:	Sensor period in non-active mode
Q20.	_____routes user queries or commands to appropriate nodes in a sensor network (bridge/gateway)
Option A:	Bridge

Option B:	Hub
Option C:	Gateway
Option D:	Modem
Q21.	Because of the unique attenuation characteristics of RF signals, multihop network provides a significant energy saving over _____network for the same distance
Option A:	Centralized
Option B:	Multihop
Option C:	Single hop
Option D:	Star
Q22.	Drawbacks of Flooding protocol
Option A:	Simplicity
Option B:	Implosion and overlap
Option C:	Complex routing algorithms
Option D:	Saves energy consumption
Q23.	RTS/CTS mechanism in MACA protocol solves the problem of
Option A:	Medium contention
Option B:	Congestion
Option C:	Hidden node
Option D:	Bandwidth delay product
Q24.	Middleware also helps to reduce
Option A:	Latency
Option B:	Number of sensor nodes in WSN
Option C:	Distance between the source and the sink
Option D:	Number of hops between two nodes
Q25.	The Design of network management for WSN is challenging as
Option A:	WSN is wired network with densely deployed sensor nodes
Option B:	WSN is a wireless network with limited Resources and supports ad-hoc architecture.
Option C:	WSN is a very simple energy efficient network
Option D:	WSN has fixed topology and scalability of sensor nodes

Program: BE Information Technology

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VIII

Course Code: **ITC801** and Course Name: **Storage Network Management and Retrieval**

Time: 1 hour Max. Marks: 50

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

Q1.	What is hit ratio in cache?
Option A:	Hit ratio is the number of read hits with respect to the total number of read requests.
Option B:	Hit ratio is the number of write hits with respect to the total number of read requests.
Option C:	Hit ratio is the number of write hits with respect to the total number of write requests.
Option D:	Hit ratio is the number of read hits with respect to the total number of write requests.
Q2.	Forced flushing in cache occurs at _____.
Option A:	High level Watermark capacity usage
Option B:	Low level Watermark capacity usage
Option C:	Middle level Watermark capacity usage
Option D:	100 percent capacity usage
Q3.	Which of the following is characteristic of RAID 2?
Option A:	Highly fault tolerant
Option B:	Extremely high transfer rate
Option C:	One read or two writes are possible per mirrored pair.
Option D:	Can sustain multiple disk failures.
Q4.	Which of the following system referred as active-passive array?
Option A:	Traditional storage provisioning
Option B:	Virtual storage provisioning
Option C:	High-end storage system
Option D:	Midrange storage system
Q5.	The data at the time of creation has
Option A:	Lowest value
Option B:	Highest value
Option C:	It is not important
Option D:	Accessed less frequently

Q6.	In which of the following cache data is placed in cache and an acknowledgement is sent to the host immediately?
Option A:	Write front cache
Option B:	Write back cache
Option C:	Write through cache
Option D:	Write forward cache
Q7.	What is SAS?
Option A:	Serial Attached SCSI
Option B:	Storage Attached SCSI
Option C:	Serial Advance SCSI
Option D:	SAS is not SCSI
Q8.	NFS doesn't have the following characteristics
Option A:	Idempotent Procedures
Option B:	Stateless
Option C:	Uses RPC
Option D:	OverNetBIOS
Q9.	iSCSI names are:
Option A:	Globally Unique and Temporary
Option B:	Local to the Setup
Option C:	Globally Unique and Permanent
Option D:	Local Setup and Temporary
Q10.	What is incorrect about Command Descriptor Block?
Option A:	It has SCSI Command
Option B:	Has Fixed Length of 6,10,12 or 16 Bytes
Option C:	Target Fetches CDB from initiators
Option D:	CDB is Sent During Data Phase
Q11.	In FC structure which layer maps block I/O SCSI commands into FC frames?
Option A:	FC-4
Option B:	FC-0
Option C:	FC-2
Option D:	FC-3
Q12.	A "Fiber Connector" is used to
Option A:	Facilitate conversion between two forms of media
Option B:	Terminate the end of an optical fiber and it enables quicker connection and disconnection
Option C:	Connects a computer to storage devices
Option D:	Connects to Server
Q13.	Backup is a _____.

Option A:	Mirrored copy of data
Option B:	An email system
Option C:	Virtual machine
Option D:	Network Protocol
Q14.	The process of identifying which business units, operations, and processes are essential to the survival of the business is called _____process in Business continuity plan.
Option A:	Business Process recovery
Option B:	Business Policy Setting
Option C:	Business Impact Analysis
Option D:	Business Process Restart
Q15.	Which is an example of Virtual Storage?
Option A:	Cache
Option B:	Swap file
Option C:	Hard Disk Drive
Option D:	RAM
Q16.	_____enables presenting a logical unit, to a host, with more capacity than is physically allocated to it on the storage array.
Option A:	Virtual Provisioning
Option B:	Disaster recovery
Option C:	Traditional Provisioning
Option D:	Random Provisioning
Q17.	Which accurately describes the role of a backup server?
Option A:	Gathers the data that is to be backed up and sends it to storage node
Option B:	Responsible for writing the data, which client sends, to backup device
Option C:	Manages the backup operation and maintains backup catalog
Option D:	Controls the robotic arm in the tape library
Q18.	_____ is not a type of Backup Granularity implementation method.
Option A:	Full Backup
Option B:	Incremental Backup
Option C:	Cumulative Backup
Option D:	Regular backup
Q19.	Data by itself is not useful unless:
Option A:	It is massive
Option B:	It is processed to obtain information
Option C:	It is collected from diverse sources
Option D:	It is properly stated
Q20.	The process of reducing a large document collection into reasonably small sized set of potentially retrievable documents is called as

Option A:	Information Storage
Option B:	Information processing
Option C:	Information filtering
Option D:	Information retrieval
Q21.	Which of the following is not a technology driver for information system?
Option A:	Enterprise application
Option B:	Objective technologies
Option C:	Knowledge assessment and management
Option D:	Intranet
Q22.	The advantage of automatic indexing is
Option A:	Very fast
Option B:	Large document can be indexed easily
Option C:	Flexibility to choose index term
Option D:	To locate document easily
Q23.	The matrices used to represent the document-term relationship can't be used directly because
Option A:	Difficult to process
Option B:	Matrices are sparse
Option C:	Size of matrices
Option D:	Difficult to store
Q24.	The _____ works on the principle that for the given document and query and probability can be calculated such that the document is relevant to the query.
Option A:	Boolean Matching
Option B:	Fuzzy matching
Option C:	Probabilistic matching
Option D:	Proximity matching
Q25.	The matching process is complicated because
Option A:	Both document and query are in different form
Option B:	Query is shorter as compared to document
Option C:	Document is not organized
Option D:	Document size is large

Program: BE Instrumentation Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VIII

Course Code: ISC 801, Course Name: Digital Control System

Time: 1hour Max. Marks: 50

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

Q1.	Quantization error occurs because
Option A:	A/D converter has infinite resolution.
Option B:	A/D converter has finite resolution.
Option C:	D/A converter has finite resolution.
Option D:	D/A converter has infinite resolution.
Q2.	Aliasing occurs when
Option A:	sampling frequency is equal to twice the highest frequency component present in the continuous-time signal.
Option B:	sampling frequency is greater than twice the highest frequency component present in the continuous-time signal.
Option C:	sampling frequency is greater than or equal to twice the highest frequency component present in the continuous-time signal.
Option D:	sampling frequency is less than twice the highest frequency component present in the continuous-time signal.
Q3.	For the time delay system, if ω_s is the sampling frequency, ω is the signal frequency and θ is the time delay, then sampling frequency should satisfy
Option A:	$2\omega > \omega_s > 2\pi/\theta$
Option B:	$\omega_s > 2\pi/\theta$
Option C:	$2\omega < \omega_s < 2\pi/\theta$
Option D:	$\omega_s < 2\omega$

Q4.	If T is the sampling period then Z-transform of the function e^{-at} is given by
Option A:	$1/(z-e^{-aT})$
Option B:	$z/(z-e^{-aT})$
Option C:	$z/(1-e^{-aT})$
Option D:	$1/(1-e^{-aT}z)$
Q5.	If T is the sampling time, then constant attenuation locus passing through σ in s-plane is mapped in z-plane as
Option A:	spiral starting at on $\ln(\sigma T)$ real axis.
Option B:	circle of radius $\ln(\sigma T)$.
Option C:	spiral starting at $e^{\sigma T}$ on the real axis.
Option D:	circle of radius $e^{\sigma T}$.
Q6.	If a system $G(s)$ is discretized using step invariance method then the pulse transfer function of the model is given by
Option A:	$(1-T^{-1})\times Z\{G(s)/s\}$
Option B:	$(1-z^{-1})\times Z\{G(s)/s\}$
Option C:	$(1-Tz^{-1})\times Z\{G(s)/Ts\}$
Option D:	$(1-T^{-1})\times Z\{G(s)/T\}$
Q7.	If $G(s)$ is the forward path transfer function with input sampler and $H(s)$ is the feedback path transfer function with input sampler then the pulse transfer function between output and reference input is given by
Option A:	$G(z)/[1+G(z)H(z)]$
Option B:	$G(z)/[1+GH(z)]$
Option C:	$G(z)/[1+H(z)]$
Option D:	$GH(z)/[1+GH(z)]$

Q8.	Integration of the continuous-time function is represented in discrete-time domain as
Option A:	product of sampled values of the function.
Option B:	ratio of successive sampled values of the function.
Option C:	summation of sampled values of the function.
Option D:	difference in successive sampled values of the function.
Q9.	The stability of a 5th order system is being checked using Jury's Stability test. Which of the following conditions for characteristics equation F(z) are necessary for the system to be stable
Option A:	F(1)>0 and F(-1) >0
Option B:	F(1)>0 and F(-1) <0
Option C:	F(1)=0 and F(-1) >0
Option D:	F(1)<0 and F(-1) <0
Q10.	Find the steady state error for ramp input for a system with open loop transfer function $$GH(z) = \frac{10(z+1)}{(z-1)(z^2-0.25z)(z+0.1)}$$ Sampling time T=1 sec
Option A:	0
Option B:	infinity
Option C:	12.12
Option D:	0.0825
Q11.	The number of sign changes in the first column of RH table indicates

Option A:	Number of poles in the system in the unstable region
Option B:	Total number of poles
Option C:	Total number of zeros
Option D:	Number of zeros in the unstable region
Q12.	A second order system is described by the state equation $$x(k+1) = \begin{pmatrix} 1 & 0 \\ 0 & 0.3 \end{pmatrix} x(k)$$ The state transition matrix of the system is
Option A:	$\begin{pmatrix} 1 & 0 \\ 0 & -0.3^k \end{pmatrix}$
Option B:	$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$
Option C:	$\begin{pmatrix} 1 & 0 \\ 0 & 0.3 \end{pmatrix}$
Option D:	$\begin{pmatrix} 1 & 0 \\ 0 & 0.3^k \end{pmatrix}$
Q13.	A 3rd order system is represented in diagonal form. What can you comment about the state model
Option A:	Controllable but not observable
Option B:	Observable but not controllable
Option C:	Can't say
Option D:	Controllable and observable
Q14.	A 5th order system is represented in Jordan canonical form. What can you say about the elements of the state matrix
Option A:	The sign of the diagonal elements indicate the stability of the system
Option B:	The diagonal elements represents the poles of the system
Option C:	The diagonal elements represents the poles of the system lying in the stable region

Option D:	The diagonal elements represents the poles of the system lying in the unstable region
Q15.	If the pair (A, B) is controllable, then there exists a feedback gain matrix K that arbitrarily assigns the system poles to any set {li, i = 1,. . . , n} is in relation with.
Option A:	Compensator design
Option B:	Pole placement
Option C:	Forward loop control
Option D:	Initial conditions
Q16.	MROF stands for--
Option A:	Multiple Range Output Force
Option B:	Multiple Rate Output Feedback
Option C:	Multiply Rate Output Field
Option D:	Mask Reference Option Force
Q17.	A closed-loop response that is much faster than the slowest component response will lead to--
Option A:	Unstable system
Option B:	High gains for the state feedback matrix
Option C:	Least control efforts
Option D:	Low gains for the state feedback matrix
Q18.	In a second order system, which among the following remains independent of gain (k)?
Option A:	Open loop poles
Option B:	Closed loop poles
Option C:	Feedback gain
Option D:	Damping ratio
Q19.	With feedback------reduces

Option A:	Stability
Option B:	Both Stability and gain
Option C:	Phase
Option D:	System gain
Q20.	A transfer function G(z) is realizable if and only if
Option A:	the system can be described by a finite-dimensional state-space equation.
Option B:	the system has infinite states in its state-space equation.
Option C:	the system has open loop poles at origin
Option D:	the system has both poles and zeros at origin.
Q21.	The cancellation of unstable poles with unstable zeros _____
Option A:	Provides the system with internal stability
Option B:	Do not guarantee the internal stability of the system
Option C:	Guarantee the relative stability of the system
Option D:	Provides the system with marginal stability
Q22.	The 2-DOF PID controller is a _____input, one _____controller.
Option A:	two, one
Option B:	one, two
Option C:	two, two
Option D:	two, three
Q23.	The design approach of placing the _____ at the desired location in z plane is called the pole placement design technique.
Option A:	Open loop zeros
Option B:	Open loop poles
Option C:	Close loop poles
Option D:	Close loop zeros

Q24.	Which of the following systems is not realizable?
Option A:	Pure integrator
Option B:	First order system with lag
Option C:	Pure differentiator
Option D:	Second order system with lag
Q25.	Z transform of a^k is given by
Option A:	$1/(1-az^{-1})$
Option B:	$a/(1-z^{-1})$
Option C:	$az^{-1}/(1-z^{-1})$
Option D:	$z^{-1}/(1-az^{-1})$