

Program: BE - ELECTRONICS Engineering

Curriculum Scheme: Revised - 2012

Examination: Final Year B.E. Semester - VII

Course Code: EXC701 and Course Name: EMBEDDED SYSTEM DESIGN (ESD)

Time: 1 Hour

Max. Marks: 50

Q. No.	Question
1	Some of the important characteristics expected in consumer electronics -products are ...
	a) Recovering from failures
	b) Low Cost
	c) Performance
	d) Low unit cost, low power consumption and smaller product size.
2	The most important phase in software life cycle is
	a) Integration
	b) Design
	c) Testing
	d) Debugging
3	The security and protection of an Embedded System can be done by ---
	a) OTP
	b) IPR
	c) Memory Disk Security
	d) Security Chips
4	What kind of image sensor do most digital camera use?
	a) Complementary Metal-Oxide Semiconductors (CMOS)
	b) Computerized Imaging Detectors (CID)
	c) Charged Couple Devices (CCD)
	d) Battery Operated device
5	I2C Communication works with _____ wires.
	a) 2 (SCK, SDA)
	b) 3 (Rx, Tx, Gnd)
	c) 4 (DI, DO, CK, Gnd)
	d) More than 4
6	Minimum _____ wire signaling is required for EIA-RS232C serial communication to establish.
	a) 2 (SDO, SDI)
	b) 3 (Rx, Tx, Gnd)
	c) 4 (SDK, SCK, SS, Gnd)
	d) 6 (4-Bit Data, Clock, Gnd)
7	Zigbee, Zigbee-Pro and Bluetooth fundamentally work on ____ protocol std.
	a) IEEE 802.15
	b) IEEE 802.3
	c) IEEE 802.11
	d) IEEE 802.2
8	GDB stands for _____ and is a popular debugging tool on _____ platform for debugging _____ programs.
	a) General Debugger, Windows, C/C++
	b) GNU Debugger, UNIX/GNU, C/C++
	c) Generic Debugger, Linux, C++/C#
	d) Global Debugger, BSD Linux, Java

9	In Black Box Testing, the tester
	a) Is not knowing the internal architecture or structure/techniques of the functional block to be tested.
	b) Is fully aware the internal architecture or structure/techniques of the functional block to be tested.
	c) Is independent and has no idea of data, requirements or specifications.
10	Hardware Emulators are used for testing the functionality of a Hardware with the help of ...
	a) Software Tool
	b) Another unit of specific purpose hardware
	c) Online Software simulation tool
11	Earliest deadline first algorithm assigns priorities according to _____
	a) periods
	b) deadlines
	c) burst times
12	Inter process communication -----
	a) allows processes to communicate and synchronize their actions without using the same address space
	b) allows processes to communicate and synchronize their actions when using the same address space
	c) allows the processes to only synchronize their actions without communication
13	An ----- is a software routine that hardware invokes in response to an interrupt.
	a) IP
	b) ISR
	c) IPR
14	-----involves storing the context or state of a process so that it can be reloaded when required and execution can be resumed
	a) POSIX
	b) IPC
	c) RPC
15	-----semaphore uses a count that helps task to be acquired or released numerous times.
	a) mailbox
	b) binary
	c) pipe
16	-----is one which repeats itself after a fixed time interval
	a) EDF task
	b) Periodic task
	c) Aperiodic task
17	Cortex M3 supports which among following Instruction Set Architecture
	a) ARM Instruction Set
	b) Thumb Instruction Set
	c) X86 Instruction Set
18	Which of the following registers in ARM7 is used to point to the location of currently executing instruction in a program?
	a) R1
	b) R5
	c) R15
	d) R8

19	In Cortex-M processors, 'M' stands for
	a) Multimedia
	b) Microcontrollers
	c) Memory
20	The FPGA refers to
	a) First programmable Gate Array
	b) Field Programmable Gate Array
	c) First Program Gate Array
21	PWM stands for
	a) Pulse Wave Modulation
	b) Positive Width Modulation
	c) Positive Wave Modulation
22	Which Real time OS will you select for designing an automated Teller machine?
	a) Linux
	b) VxWorks
	c) Windows XP Embedded
23	In Digital Camera, shutter control and zooming control is performed by -----
	a) I/O Buttons
	b) Software controlled battery
	c) Stepper Motors
24	The microcontroller present in the Energy metering IC stores the average power consumption in the --- ----- memory
	a) RAM
	b) ROM
	c) EEPROM
25	Which RTOS is selected in cars and NASA space platforms?
	a) VxWorks
	b) QNX
	c) RTLinux
	d) eCos

Program: BE- ELECTRONICS Engineering

Curriculum Scheme: Revised-2012

Examination: Fourth Year Semester-VII

Course Code: EXC702 and Course Name: IC Technology

Time: 1 hour

Max. Marks: 50

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

Q1.	Clean rooms are classified on the basis of _____
Option A:	Silicon size
Option B:	Humidity level
Option C:	No. of chips
Option D:	Particle count
Q2.	In the process of Czochralski method, melt and the growing crystals are usually
Option A:	not related to each other
Option B:	rotated counterclockwise
Option C:	rotated clockwise
Option D:	kept at a constant position
Q3.	The technique of growing GaAs is _____
Option A:	Jan Czochralski
Option B:	Bridgemen
Option C:	Float Zone
Option D:	VLS
Q4.	Which of the following is P-type of dopant?
Option A:	Phosphorous
Option B:	Arsenic
Option C:	Boron
Option D:	Antimony
Q5.	Gate oxide thickness in modern VLSI technology is in the range of -----
Option A:	2-6 μm
Option B:	2-6 nm
Option C:	100-200nm
Option D:	100-200 μm
Q6.	Which of the following is "Hot wall reactor"?
Option A:	APCVD
Option B:	LPCVD

Option C:	PECVD
Option D:	Sputtering
Q7.	In diffusion systems, role of carrier gas is to _____
Option A:	transport vapour from the source
Option B:	transport vapour to the source
Option C:	transports vapour to the bubbler
Option D:	Transport vapour to the outlet
Q8.	Molecular beam epitaxy is similar to which deposition method?
Option A:	DC Sputtering
Option B:	RF Sputtering
Option C:	Evaporation
Option D:	Chemical vapor deposition
Q9.	Ion implantation process is carried out at _____
Option A:	Above 600 ° C
Option B:	Above 1000 ° C
Option C:	Below room temperature
Option D:	Room Temperature
Q10.	Which of the following is a figure of merit for lithography process?
Option A:	Depth of focus
Option B:	Mask generation
Option C:	Photoresist
Option D:	Contact printing
Q11.	Butting contact and the buried contact arecontacts
Option A:	Metal-Poly
Option B:	Poly-Diffusion
Option C:	Metal-Diffusion
Option D:	Metal-Metal
Q12.	____ Color is used for drawing layout for metal line
Option A:	Green
Option B:	Yellow
Option C:	Blue
Option D:	Black
Q13.	Positive photoresist _____
Option A:	Hardens the area exposed to UV
Option B:	Softens the area exposed to UV
Option C:	Remains unreacted

Option D:	Etches oxide
Q14.	Process of removal of material from the wafer surface is known as _____
Option A:	Deposition
Option B:	Diffusion
Option C:	Epitaxy
Option D:	Etching
Q15.	Mobility decreases at high temperature because-
Option A:	Semiconductor crystals becomes harden
Option B:	Carrier concentration increases
Option C:	Lattice vibrations scatter the electrons
Option D:	Semiconductor crystals begins to melt
Q16.	Which of the following method is used to measure resistance?
Option A:	2 probe
Option B:	1 probe
Option C:	5 probe
Option D:	4 probe
Q17.	Through- hole packages include the following
Option A:	Chip scale package
Option B:	Dual in-line
Option C:	Chip on board
Option D:	Chip on flex
Q18.	MMIC stands for _____
Option A:	Monolithic Microwave Integrated Circuit
Option B:	Monolithic Minimum Integrated Circuits
Option C:	Monolithic Maximum Integrated Circuit
Option D:	Maximum Monolithic Integrated Circuit
Q19.	The process used to repair the damage in SIMOX technology is
Option A:	Incineration
Option B:	Calcination
Option C:	Pyrolysis
Option D:	Annealing
Q20.	SOI wafer fabrication process is given by
Option A:	Smart cut
Option B:	CZ process
Option C:	FZ process
Option D:	HB growth process
Q21.	Formation of n-active layer in GaAs is achieved by-

Option A:	liquifying
Option B:	wafering
Option C:	direct ion implantation
Option D:	indirect ion implantation
Q22.	FinFET is an example of-
Option A:	Tripple Gate MOSFET
Option B:	All around gate
Option C:	Single Gate MOSFET
Option D:	MODFET
Q23.	Which of the following device is best suitable for below 10nm technology?
Option A:	MOSFET
Option B:	CMOS
Option C:	BJT
Option D:	Nanowire
Q24.	Carbon nanotubes are allotropes of carbon arranged in _____ nanostructures
Option A:	Rectangular
Option B:	Spherical
Option C:	Conical
Option D:	Cylindrical
Q25.	Bird's Beak is disadvantage of _____
Option A:	Gate Oxide
Option B:	LOCOS
Option C:	STI
Option D:	Deposited oxides

Program: BE ELECTRONICS Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VII

Course Code: EXC703 and Course Name: Power Electronics II

Time: 1 hour

Max. Marks: 50

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

Q1.	How many switching states are there in space vector modulation technique for two – level 3 – ϕ inverter?
Option A:	2
Option B:	4
Option C:	6
Option D:	8
Q2.	Due to effect of source inductance in 1-phase controlled rectifier, output voltage
Option A:	increase by $(\omega L_s/\pi)I_o$
Option B:	decreases by $(\omega L_s/\pi)I_o$
Option C:	increases by $3(\omega L_s/\pi)I_o$
Option D:	decreases by $3(\omega L_s/\pi)I_o$
Q3.	In 180° conduction mode of voltage source Inverter, How many devices conduct devices conduct at a time?
Option A:	5
Option B:	2
Option C:	3
Option D:	4
Q4.	The space vector modulation technique is used ____
Option A:	To generate random vector in the same plane for alternate modulation cycle.
Option B:	To generate reference vector in the same plane for each modulation cycle.
Option C:	To generate reference vector in the different plane for each modulation cycle.
Option D:	To generate random vector in the different plane for alternate modulation cycle.
Q5.	Which of the following is not a PWM technique?
Option A:	Single-pulse width modulation
Option B:	Multiple-pulse width modulation
Option C:	Triangular-pulse width modulation
Option D:	Sinusoidal-pulse width modulation

Q6.	For a three phase voltage source with 180° conduction mode having dc input voltage V_s . What is the peak value of phase.
Option A:	V_s
Option B:	$3V_s/2$
Option C:	$2V_s/3$
Option D:	$3V_s$
Q7.	A single phase full-converter using R load is a _____ quadrant converter.
Option A:	One
Option B:	Two
Option C:	Three
Option D:	Four
Q8.	The ratio of output voltage to input voltage for DC – DC buck – boost converter considering D as the duty ratio of switch is
Option A:	D
Option B:	(1-D)
Option C:	$D/(1-D)$
Option D:	$(1-D)/D$
Q9.	Which of the following device is used as a switch preferable in DC – DC converter?
Option A:	SCR
Option B:	Diode
Option C:	MOSFET
Option D:	TRIAC
Q10.	In induction heating, the heat generated in metal object is through
Option A:	Conduction of current
Option B:	Electromagnetic induction
Option C:	Microwave induction
Option D:	Radiation
Q11.	Which parameter remains unchanged, in battery management system if all the batteries are connected in parallel?
Option A:	Current
Option B:	Voltage
Option C:	Power
Option D:	Energy
Q12.	The switch mode power supply is used for
Option A:	Regulated DC supply
Option B:	Regulated AC supply
Option C:	Constant AC supply
Option D:	Constant DC supply

Q13.	D.C. motors are preferable in which of the following applications
Option A:	High efficiency operation
Option B:	Variable voltage
Option C:	Variable speed drive
Option D:	High starting torque
Q14.	The speed of dc separately excited motor with a semi-converter, can be controlled
Option A:	Only in one quadrant
Option B:	Only in 2 quadrants
Option C:	3 quadrants
Option D:	4 quadrants
Q15.	The speed of dc motor can be controlled
Option A:	Zero rated speed
Option B:	Infinite rated speed
Option C:	Only rated speed
Option D:	Above & below the rated speed
Q16.	Which of the following technique is used for achieving the dynamic braking
Option A:	Reversal of field connections
Option B:	Reversal of armature connections
Option C:	Removal of armature circuit from current machine circuit
Option D:	Addition of equal and opposite field
Q17.	When armature current becomes discontinuous?
Option A:	Small firing angles
Option B:	Large firing angles
Option C:	Infinite firing angle
Option D:	Does not depend on firing angle
Q18.	In which braking type ,dc motor offers the terminals of armature of d.c. machine are interchanged
Option A:	Dynamic braking
Option B:	Regenerative braking
Option C:	Plugging
Option D:	Rheostatic braking
Q19.	In an induction motor, the slip is always
Option A:	Infinity
Option B:	Positive
Option C:	Zero
Option D:	Negative
Q20.	Switch Mode Power Supply is employed for
Option A:	obtaining controlled ac power supply

Option B:	obtaining controlled dc power supply
Option C:	storage of dc power
Option D:	switch from one source to another
Q21.	In an induction motor, no-load the slip is generally
Option A:	Less than 1%
Option B:	5%
Option C:	2%
Option D:	4%
Q22.	In a 3-phase induction motor, the speed of rotating magnetic field is called
Option A:	Rated speed
Option B:	Actual speed
Option C:	Synchronous speed
Option D:	There is no rotation of field
Q23.	Speed control of induction motor can be affected by varying
Option A:	flux
Option B:	keeping rotor coil open
Option C:	voltage input to stator
Option D:	Current input
Q24.	Three phase induction motor, if the supply frequency is increases by keeping supply voltage constant, the speed of the motor _____
Option A:	decreases
Option B:	increases
Option C:	same
Option D:	zero
Q25.	In which of the speed control technique of Induction motor the v/f ratio is maintained constant
Option A:	Below base speed with voltage control
Option B:	Above base speed with frequency control
Option C:	Below the base speed with frequency control
Option D:	Above base speed with voltage control

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VII

Course Code: EXC704 and Course Name: Computer Communication & Networks

Time: 1hour

Max. Marks: 50

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

Q1.	Synchronization of bits is which layer function of OSI?
Option A:	Physical layer
Option B:	Data link layer
Option C:	transport layer
Option D:	session layer
Q2.	Segmentation is which layer function of OSI?
Option A:	Physical layer
Option B:	Data link layer
Option C:	transport layer
Option D:	session layer
Q3.	Wimax is _____ technology.
Option A:	LAN
Option B:	MAN
Option C:	WAN
Option D:	PAN
Q4.	At which layer of OSI model does Ethernet switch operates.
Option A:	Physical layer
Option B:	data link layer
Option C:	network layer
Option D:	transport layer
Q5.	what is the data rate of fast Ethernet
Option A:	10mbps
Option B:	100mbps
Option C:	1000mbps
Option D:	512kbps

Q6.	Which of the following comes under unguided media.
Option A:	Twisted pair cable
Option B:	Coaxial cable
Option C:	Free space
Option D:	Fiber-optic cable
Q7.	To which layer the data link layer adds reliability by adding mechanisms to detect and retransmit damaged, duplicate, or lost frames
Option A:	Physical layer
Option B:	Network layer
Option C:	Session layer
Option D:	Presentation layer
Q8.	The vulnerable time, during which a collision may occur in pure ALOHA is-
Option A:	Same as frame transmission time
Option B:	2 times the frame transmission time
Option C:	3 times the frame transmission time
Option D:	1/2 times the frame transmission time
Q9.	The maximum throughput for slotted ALOHA is-
Option A:	36.80%
Option B:	18.40%
Option C:	9.20%
Option D:	12.20%
Q10.	LEO satellites are normally below an altitude of-
Option A:	2000km
Option B:	5000km
Option C:	6000km
Option D:	4000km
Q11.	The _____ between two words is the number of differences between corresponding bits
Option A:	Hamming code
Option B:	Hamming Distance
Option C:	Hamming rule
Option D:	Hamming length
Q12.	Which error detection method uses one's complement arithmetic?
Option A:	Simple parity check
Option B:	CRC
Option C:	Two-dimensional parity check
Option D:	Checksum
Q13.	_____ control refers to a set of procedures used to restrict the amount of data that the sender can send before waiting for acknowledgment.

Option A:	Flow
Option B:	Error
Option C:	Transmission
Option D:	reception
Q14.	In the _____ Protocol, if no acknowledgment for a frame has arrived, we resend all outstanding frames.
Option A:	Go-Back-N ARQ
Option B:	Selective-Repeat ARQ
Option C:	Stop-and-Wait ARQ
Option D:	OSPF
Q15.	Identify class C IP address.
Option A:	126.10.5.0
Option B:	191.20.10.0
Option C:	196.10.20.0
Option D:	240.10.20.0
Q16.	What is full-form of BGP
Option A:	Best Gateway Protocol
Option B:	Big Gateway Protocol
Option C:	Broader Gateway Protocol
Option D:	Border Gateway Protocol
Q17.	The header length of an IPv6 datagram is _____
Option A:	10bytes
Option B:	25bytes
Option C:	30bytes
Option D:	40bytes
Q18.	Which are the features present in IPv6 but not in IPv4
Option A:	Fragmentation
Option B:	Header checksum
Option C:	Options
Option D:	Anycast address
Q19.	Protocols used in Network layer are
Option A:	IP & ICMP
Option B:	HTTP & SMPT
Option C:	HDLC & ADCCP
Option D:	TCP & UDP
Q20.	Port Address is also known as-----
Option A:	Service Point Address
Option B:	Receiver Point Address
Option C:	Sender Point Address

Option D:	Logical address
Q21.	_____ is a flow characteristic that applications can tolerate in different degrees.
Option A:	Reliability
Option B:	Jitter
Option C:	Delay
Option D:	Bandwidths
Q22.	In the congestion avoidance algorithm, the size of the congestion window increases _____ until congestion is detected.
Option A:	exponentially
Option B:	additively
Option C:	multiplicatively
Option D:	suddenly
Q23.	Electronic mail uses which Application layer protocol?
Option A:	SMTP
Option B:	HTTP
Option C:	FTP
Option D:	SIP
Q24.	When displaying a web page, the application layer uses the _____
Option A:	HTTP protocol
Option B:	FTP protocol
Option C:	SMTP protocol
Option D:	TCP protocol
Q25.	TELNET uses port no. ____
Option A:	443
Option B:	80
Option C:	23
Option D:	20

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester: VII

Course Code: EXC 7051 and Course Name: Digital Image Processing

Time: 1-hour

Max. Marks: 50

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

Q1.	2 D Fourier Transform and its inverse are infinitely
Option A:	Aperiodic
Option B:	Periodic
Option C:	Linear
Option D:	Nonlinear
Q2.	The difference between the original image and the eroded is creates
Option A:	Boundary
Option B:	Gray level
Option C:	Skeleton
Option D:	Convex hull
Q3.	The Product of two even and two odd function
Option A:	Even
Option B:	Odd
Option C:	Prime
Option D:	Aliasing
Q4.	One can increase dynamic range of image using
Option A:	Histogram Equalization
Option B:	Histogram matching
Option C:	Histogram stretching
Option D:	Thresholding
Q5.	To display image, we need image in a
Option A:	Spatial domain
Option B:	Frequency domain
Option C:	Algebraic domain
Option D:	Time Domain
Q6.	In general, which of the following assures of no ringing in the output?
Option A:	Gaussian Lowpass Filter
Option B:	Ideal Lowpass Filter

Option C:	Butterworth Lowpass Filter
Option D:	Notch Filter
Q7.	In a typical picture, most pixels will be:
Option A:	Bright
Option B:	Equal
Option C:	Very similar to their neighbors
Option D:	Very different to their neighbors
Q8.	To perform Zooming operation on the image one method is Replication and other is
Option A:	Interpolation
Option B:	Multiplication
Option C:	Division
Option D:	Addition
Q9.	Image Enhancement is
Option A:	Based on descriptors
Option B:	To bring out detail that is obscured
Option C:	Based on mathematical model of image
Option D:	Based on subjective preference
Q10.	Down sampling is to make a digital image file smaller by:
Option A:	Removing noise
Option B:	Adding pixels
Option C:	Adding noise
Option D:	Removing pixels
Q11.	Hough transform is mainly used to detect
Option A:	Point in an image
Option B:	Lines in an image
Option C:	Curves in an image
Option D:	Area of an image
Q12.	Origin of digital image lies at
Option A:	Right bottom
Option B:	Top right corner
Option C:	Top left corner
Option D:	Left bottom
Q13.	Huffman code: A = 1, B = 000, C = 001, D = 01 P(A) = 0.4, P(B) = 0.1, P(C) = 0.2, P(D) = 0.3 The average number of bits per letter is:
Option A:	2.0 bit
Option B:	2.1 bit
Option C:	8.0 bit

Option D:	1.9 bit
Q14.	The computation of Walsh coefficients involves
Option A:	Addition and subtraction
Option B:	Addition and multiplication
Option C:	Multiplication
Option D:	Division
Q15.	Huffman coding is a technique used for
Option A:	Lossless compression
Option B:	Lossy Compression
Option C:	Expansion
Option D:	Modulation
Q16.	Image compression is
Option A:	Making image look better
Option B:	Sharpening the intensity-transition regions
Option C:	Minimizing degradation over image
Option D:	Reducing the redundancy of the image data
Q17.	The direction of angle to the gradient is
Option A:	Orthogonal
Option B:	Isolated
Option C:	Isomorphic
Option D:	Isotropic
Q18.	Dynamic range of imaging system is a ratio where the upper limit is determined by
Option A:	Saturation
Option B:	Noise
Option C:	Brightness
Option D:	Contrast
Q19.	In gray scale image two components of each element of the set refer to _____ and the third correspondence to its _____
Option A:	Coordinates of pixel, discrete intensity value
Option B:	Discrete intensity value, coordinates of pixel
Option C:	Coordinates of gray scale, analog intensity value
Option D:	Analog intensity value, coordinates of pixel
Q20.	The abbreviation of ROI is
Option A:	Region of image
Option B:	Region of interest
Option C:	Region of indicator
Option D:	Restoration of image

Q21.	The starting pixel of region growing process is called
Option A:	Seed pixel
Option B:	Base pixel
Option C:	Original pixel
Option D:	Voxel
Q22.	DFT stands as:
Option A:	Discrete Fourier transform
Option B:	Digital function transform
Option C:	Digital frequency transform
Option D:	Digital Functional Transform
Q23.	The theory of mathematical morphology is based on
Option A:	Convolution theory
Option B:	Set theory
Option C:	Probability theory
Option D:	Correlation theory
Q24.	Which of the following filter is used to find the darkest point in the image?
Option A:	Max Filter
Option B:	Min Filter
Option C:	Median Filter
Option D:	Low Pass Filter
Q25.	Which of the following file formats is an example of lossy compression only?
Option A:	GIF
Option B:	PNG
Option C:	JPEG
Option D:	TIFF

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012

Examination: Final year Semester VII

Course Code: EXC7052 and Course Name: Artificial Intelligence

Time: 1hour

Max. Marks: 50

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

Q1.	Dendrites is -
Option A:	where the cell nucleus is located.
Option B:	where the nerve is connected to the cell body.
Option C:	which carries impulses of the neuron.
Option D:	biological cell
Q2.	Which of the following is not a Neural network Learning method in ANNs?
Option A:	Unsupervised Learning
Option B:	Reinforcement Learning
Option C:	Synchronous Learning
Option D:	Supervised Learning
Q3.	Identify the learning rule when weight updation is as given below: $W_i(\text{new}) = W_i(\text{old}) + \alpha t x_i$
Option A:	Hebb rule
Option B:	Perceptron rule
Option C:	DeltaRule
Option D:	Widrow-Hoff Rule
Q4.	The membership function values is represented by
Option A:	Discrete Set
Option B:	Degree of truth
Option C:	Probabilities
Option D:	Both Degree of truth & Probabilities
Q5.	A positive weight corresponds to
Option A:	Inhibitory synapse
Option B:	Excitatory synapse
Option C:	Soma
Option D:	Axon

Q6.	Feed forward networks are used for?
Option A:	Optimization
Option B:	Generalization
Option C:	Classification
Option D:	Recognition
Q7.	In the neural networks given below, which one uses supervised learning?
Option A:	Perceptron
Option B:	Discrete Hopfield networks
Option C:	Kohonen Self organizing feature maps
Option D:	Learning Vector Quantization
Q8.	Hidden layers are present in which neural network
Option A:	Perceptron and Adaline
Option B:	Adaline and Madaline
Option C:	Madaline and Back propagation network
Option D:	Back propagation network and Adaline
Q9.	What are the steps for using a gradient descent algorithm? 1. Calculate error between the actual value and the predicted value 2. Repeat until you find the best weights of network 3. Pass an input through the network and get values from output layer 4. Initialize random values for weight and bias 5. Go to each neurons which contributes to the error and change its respective values to reduce the error
Option A:	4,3,1,5,2
Option B:	1,2,3,4,5
Option C:	3,4,5,2,1
Option D:	2,3,4,5,1
Q10.	Identify the neural network by from the given activation function. $y = 1$ if $y_{in} > 0$ $y = 0$ if $-0 \leq y_{in} \leq 0$ $y = -1$ if $y_{in} < -0$
Option A:	Discrete Perceptron
Option B:	Back propagation network
Option C:	Adaline
Option D:	Radial basis function
Q11.	The activation function of Maxnet is
Option A:	Signum function
Option B:	Unipolar continuous activation
Option C:	Unipolar continuous activation
Option D:	Lower bounded identity function

Q12.	Training Back Propagation Network is based on
Option A:	Supervised learning
Option B:	Unsupervised learning
Option C:	Reinforced learning
Option D:	Stochastic learning
Q13.	LVQ is a tool for classifying the patterns that are a not _____ separable.
Option A:	Linearly
Option B:	Non linearly
Option C:	Exponentially
Option D:	Easily
Q14.	In ART network resonance represents
Option A:	the process of updating weights
Option B:	The process of matching input vector with any one of the cluster centroides
Option C:	The process of applying activation on the input
Option D:	The process of presenting samples .
Q15.	Hebbian learning is based on
Option A:	Linear weight adjustment
Option B:	Correlative weight adjustment
Option C:	Bipolar weight adjustment
Option D:	Unipolar weight adjustment
Q16.	The memory capacity of BAM is given as (where n is the no. of units in X layer and m is the no. of units in Y layer)
Option A:	Min(m,n)
Option B:	Max(m,n)
Option C:	m
Option D:	n
Q17.	When the simulated annealing process is applied to the discrete Hopfield network it is called
Option A:	Boltzmann machine
Option B:	Cauchy machine
Option C:	Gaussian machine
Option D:	Laplacian machine
Q18.	In Brain-State in a box network
Option A:	Neurons take values between -1 to +1
Option B:	Neurons take values between -1 to 0
Option C:	Neurons take values between 0 to +1.
Option D:	Any finite value
Q19.	Which is a desirable characteristic of auto associative memory network?
Option A:	Suppression of output noise at the memory output

Option B:	Sensitivity
Option C:	Parallelism
Option D:	Reproducibility
Q20.	Consider two fuzzy sets $A = \{(low, 0.2), (medium, 0.4), (high, 0.6)\}$ $B = \{(low, 0.8), (medium, 0), (high, 1)\}$ $A \cap B$ is determined as
Option A:	$\{(low, 0.2), (medium, 0), (high, 0.6)\}$
Option B:	$\{(low, 0.8), (medium, 0.4), (high, 1)\}$
Option C:	$\{(low, 0.16), (medium, 0), (high, 0.6)\}$
Option D:	$\{(low, 0.4), (medium, 1), (high, 0.006)\}$
Q21.	In FLC, defuzzification aims to
Option A:	Determine the fuzzified output for a set of inputs
Option B:	Determine crisp output for a set of inputs
Option C:	Identify inputs and outputs of a process
Option D:	Select fired rules from a set of rules
Q22.	Centroid method is for
Option A:	Fuzzification
Option B:	Defuzzification
Option C:	Fuzzy ordering
Option D:	Inference
Q23.	Three main basic features involved in characterizing membership function are
Option A:	Intuition, Inference, Rank Ordering
Option B:	Fuzzy Algorithm, Neural network, Genetic Algorithm
Option C:	Core, Support, Boundary
Option D:	Weighted Average, center of Sums, Median
Q24.	Let R and S be two fuzzy relations defined as follows. Then, the resulting relation, T, which relates elements of universe of X to elements of universe of Z using max-product composition is given by $R = \begin{bmatrix} 0.1 & 1 \\ 0.2 & 0 \end{bmatrix} \quad S = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
Option A:	$T = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
Option B:	$T = \begin{bmatrix} 0.1 & 1 \\ 0.2 & 0 \end{bmatrix}$
Option C:	$T = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$
Option D:	$T = \begin{bmatrix} 1 & 0.2 \\ 1 & 1 \end{bmatrix}$

Q25.	The weight vector with no self connection to recognize the input vector [1 1 -1] using auto associative networks
Option A:	$\begin{bmatrix} 1 & 1 & -1 \\ 1 & 1 & -1 \\ -1 & -1 & 1 \end{bmatrix}$
Option B:	$\begin{bmatrix} 1 & 1 & -1 \\ 0 & 0 & 0 \\ -1 & -1 & 1 \end{bmatrix}$
Option C:	$\begin{bmatrix} 0 & 1 & -1 \\ 1 & 0 & -1 \\ -1 & -1 & 0 \end{bmatrix}$
Option D:	[1 1 1]

Program: BE- ELECTRONICS Engineering

Curriculum Scheme: Revised-2012

Examination: Final Year Semester-VII

Course Code: EXC7054 and Course Name: Optical Fiber 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.	What is the wavelength range of visible light in electromagnetic spectrum?
Option A:	300nm to 700nm
Option B:	1200nm to 1400nm
Option C:	1500nm to 1550nm
Option D:	800nm to 1300nm
Q2.	A silica optical fiber with a core diameter large enough to be considered by ray theory analysis has a core refractive index of 1.50 and a cladding refractive index of 1.47. Determine: (a) the critical angle at the core–cladding interface; (b) the NA for the fiber; (c) the acceptance angle in air for the fiber.
Option A:	78.5°, 0.3, 17.4°
Option B:	56.2°, 0.5, 21.4°
Option C:	34.9°, 0.8, 22.2°
Option D:	121°, 0.1, 45.7°
Q3.	The normalized frequency V number of the single mode fiber is decided by:
Option A:	Only the radius of the core of the fiber
Option B:	The radius of the fiber, numerical aperture and the operating wavelength
Option C:	The radius of the core and cladding both
Option D:	Only on the operating wavelength and the numerical aperture.
Q4.	What are the three optical windows used in optical communication standards?
Option A:	850nm, 1200nm, 1550nm
Option B:	850nm, 1310nm, 1550nm
Option C:	780nm, 1310nm, 1450nm
Option D:	780nm, 1200nm, 1450nm
Q5.	The abrupt change in refractive index from core to cladding of optical fiber is called.
Option A:	Total internal reflection.
Option B:	Numerical aperture
Option C:	Dispersion
Option D:	Step index.

Q6.	Which process gives the laser its special properties as an optical source?
Option A:	Dispersion
Option B:	Stimulated absorption
Option C:	Spontaneous emission
Option D:	Stimulated emission
Q7.	Population inversion is obtained at a p-n junction by _____
Option A:	Heavy doping of p-type material
Option B:	Heavy doping of n-type material
Option C:	Light doping of p-type material
Option D:	Heavy doping of both p-type and n-type material
Q8.	The high gain in Avalanche Photodiode (APD) is due to process called
Option A:	Impact ionization
Option B:	Stimulated radiation
Option C:	Spontaneous radiation
Option D:	Non-Linear effect
Q9.	The photodetector load resistance R_L contributes to
Option A:	Quantum Noise
Option B:	Thermal Noise
Option C:	Dark Current Noise
Option D:	Johnson Noise
Q10.	Optical Isolators are used to
Option A:	Modulate the light
Option B:	Block any light moving in backward direction
Option C:	Optical to Electrical conversion
Option D:	Amplify the light signal
Q11.	_____ is a nonreciprocal multiport passive device that directs light sequentially from port to port in only one direction.
Option A:	Optical Isolator
Option B:	Optical Coupler
Option C:	Optical Switch
Option D:	Optical Circulator
Q12.	WDM is an analog multiplexing technique to combine
Option A:	Magnetic signals
Option B:	Electromagnetic signals
Option C:	Digital signals
Option D:	Optical signals
Q13.	Which optical devices are adopted or applicable for routing signals from one waveguide to another?

Option A:	Optical Combiner
Option B:	Optical Splitter
Option C:	Optical Coupler
Option D:	Optical Isolator
Q14.	When the mean optical power launched into an 8 km length of fiber is 120 mW, the mean optical power at the fiber output is 3 mW. Determine: (a) the overall signal attenuation or loss in decibels through the fiber assuming there are no connectors or splices; (b) the signal attenuation per kilometer for the fiber.
Option A:	16dB, 2dB/km
Option B:	8dB, 4dB/km
Option C:	4dB, 8dB/km
Option D:	2dB, 16dB/km
Q15.	The absorption of photons in a photodiode is dependent on _____
Option A:	Absorption Coefficient α_0
Option B:	Properties of material
Option C:	Charge carrier at junction
Option D:	Intensity of the light
Q16.	During the design of FOC system, which among the following reasons is/are responsible for an extrinsic absorption?
Option A:	Atomic defects in the composition of glass
Option B:	Impurity atoms in glass material
Option C:	Basic constituent atoms of fiber material
Option D:	Molecular vibrations occurring within the fiber
Q17.	What is the wavelength at which the material dispersion becomes zero?
Option A:	1270nm
Option B:	1310nm
Option C:	1550nm
Option D:	1300nm
Q18.	SONET stands for
Option A:	synchronous optical network
Option B:	synchronous operational network
Option C:	stream optical network
Option D:	shell operational network
Q19.	Photonic layer corresponds to physical layer of the
Option A:	SDH Model
Option B:	CDMA Model
Option C:	ANSI Model
Option D:	OSI Model
Q20.	Which among the following is provided by an optical receiver for the

	regeneration of data signal with minimum error?
Option A:	Photo-diode
Option B:	Signal Processing Circuits
Option C:	Linear Circuitry
Option D:	LED
Q21.	Automatic protection switching in linear network is defined at the
Option A:	line layer
Option B:	section layer
Option C:	photonic layer
Option D:	path layer
Q22.	Power budget requirement equation for optical link is
Option A:	$P_{RX} = P_{TX} - \text{Total Losses} + \text{Total Gain} - P_{MARGIN}$
Option B:	$P_{RX} = P_{TX} + \text{Total Losses} + \text{Total Gain} + P_{MARGIN}$
Option C:	$P_{RX} = P_{TX} - \text{Total Losses} - \text{Total Gain} - P_{MARGIN}$
Option D:	$P_{RX} = P_{TX} + \text{Total Losses} + \text{Total Gain} - P_{MARGIN}$
Q23.	Which of the following is not considered in rise time budget analysis?
Option A:	The transmitter rise time
Option B:	The group-velocity dispersion rise time & modal dispersion rise time of the fiber
Option C:	The receiver rise time
Option D:	The switching time
Q24.	The ratio of the reduced received signal power to the ideal received power is the _____ for that effect.
Option A:	Power Margin
Option B:	Power Penalty
Option C:	Power Coupling
Option D:	Power Loss
Q25.	In the fiber optic link, power transfer from one fiber to another and from fiber to detector must take place with _____ coupling efficiency.
Option A:	maximum
Option B:	stable
Option C:	minimum
Option D:	unpredictable

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: Rev2012
Examination: BE Semester VII
Course Code: EXC7051 and Course Name: Digital Image Processing(DIP)
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.	Which of the following is not an Image type?
Option A:	Monochrome
Option B:	Grey Scale
Option C:	Vidicon
Option D:	Colour
2.	All the wall paper Images that your computer has are -----
Option A:	TIFF Images
Option B:	BMP Images
Option C:	EPS Images
Option D:	PICT Images
3.	From the following which is not an example of point processing
Option A:	Digital Negative
Option B:	Bit plane slicing
Option C:	Contrast Stretching
Option D:	Smoothing
4.	What is the tool used in tasks such as zooming, shrinking and rotating??
Option A:	Filters
Option B:	Interpolation
Option C:	Sampling
Option D:	Quantization
5.	An image contains noise having appearance as black and white dots superimposed on the image is-----
Option A:	Gaussian noise
Option B:	Gamma Noise
Option C:	Uniform Noise
Option D:	Salt-and-pepper noise
6.	Gray level image segmentation is generally based on -----
Option A:	Only Similarity
Option B:	Continuity and similarity
Option C:	Discontinuity and similarity

Option D:	Only Continuity
7.	Laplacian is a
Option A:	Second order derivative filter
Option B:	First order derivative filter
Option C:	Canny operator
Option D:	Sobel operator
8.	Example of similarity approach in image segmentation is
Option A:	edge based segmentation
Option B:	region based segmentation
Option C:	thresholding based segmentation
Option D:	boundary based segmentation
9.	image morphology is an important tool in extraction of image _____
Option A:	Colour
Option B:	Intensities
Option C:	Nature
Option D:	Features
10.	_____ is a process of removing of the extra tail pixels in an image
Option A:	Erosion
Option B:	Dilation
Option C:	hit-miss transform
Option D:	Pruning
11.	DWT stands for
Option A:	Discrete wavelet transform
Option B:	Discrete wavelet transformation
Option C:	Digital wavelet transform
Option D:	Digital wavelet transformation
12.	Which of the following is not a property of 2D-DFT
Option A:	Symmetric
Option B:	Periodic extensions
Option C:	Sampled Fourier transform
Option D:	Linearity
13.	Radix - 2 FFT algorithm performs the computation of DFT in
Option A:	$N/2 \log_2 N$ multiplications and $2 \log_2 N$ additions
Option B:	$N/2 \log_2 N$ multiplications and $N \log_2 N$ additions
Option C:	$\log_2 N$ multiplications and $N/2 \log_2 N$ additions
Option D:	$N \log_2 N$ multiplications and $N/2 \log_2 N$ additions
14.	Discrete cosine transforms (DCTs) express a function or a signal in terms of
Option A:	Sum of cosine functions oscillating at same sampling intervals
Option B:	Sum of cosine functions oscillating at same frequencies
Option C:	Sum of cosine functions at different sampling intervals
Option D:	Sum of cosine functions oscillating at different frequencies

15.	Transform coding is
Option A:	Spatial process
Option B:	Differential process
Option C:	Nonlinear process
Option D:	Linear process
16.	_____ transform kernel is not separable and symmetric
Option A:	Discrete Cosine Transform
Option B:	Discrete Laplace Transform
Option C:	Discrete Fourier Transform
Option D:	Discrete Walsh Transform
17.	Coding redundancy mechanisms is based on
Option A:	Pixels
Option B:	Matrix
Option C:	Intensity
Option D:	Coordinates
18.	Every run length pair introduces new
Option A:	Pixels
Option B:	Matrix
Option C:	Frames
Option D:	Intensity
19.	Mathematically expressed information lost is known as
Option A:	Markov
Option B:	finite memory source
Option C:	Fidelity criteria
Option D:	noiseless theorem
20.	Which of the following is not a type of data redundancy is
Option A:	Coding
Option B:	Spatial
Option C:	Temporal
Option D:	Facsimile

Q2	Solve any Two. (10 Marks each)	20 Marks							
A	The histogram of a digital image with 3 bits per pixel is as shown. Perform histogram equalization. Draw the histograms before and after equalization. [10M]								
	Grey level	0	1	2	3	4	5	6	7
	No. of Pixels	0	100	400	50	200	50	200	0
B	Explain region-based segmentation based on similarities								

C	Find DFT for given image 4×4 image			
	<i>0</i>	<i>1</i>	<i>2</i>	<i>1</i>
	<i>1</i>	<i>2</i>	<i>3</i>	<i>2</i>
	<i>2</i>	<i>3</i>	<i>4</i>	<i>3</i>
	<i>1</i>	<i>2</i>	<i>3</i>	<i>2</i>

Q3	Solve any Two (10 Marks each)	20 Marks								
A	Perform dilation on given 10×10 image									
	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	
	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	
	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>
	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>
	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>
	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>
	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>
	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>
	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	Using structuring element									
	<i>1</i>									
	<i>1</i>									
B	Explain different types of image file format									
C	Write a note on image compression model									

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 2012
Examination: BE Semester VII
Course Code: EXC7052 and Course Name: Artificial Intelligence

Time: 2 hour

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	The value of Log sigmoid transfer function used in neural network varies in the range
Option A:	(-1,1)
Option B:	(0,1)
Option C:	(-2,2)
Option D:	(-10,10)
2.	“John is very short”. Here very short can be represented by _____
Option A:	Fuzzy set
Option B:	Classical set
Option C:	Crisp set
Option D:	Both Fuzzy set and Crisp set
3.	The axon - dendrite contact is called
Option A:	Dendrite
Option B:	Synapse
Option C:	Soma
Option D:	Neuron
4.	Widrow-Hoff learning rule is a
Option A:	Supervised learning rule
Option B:	Unsupervised learning rule
Option C:	Competitive learning rule
Option D:	Hebbian learning rule
5.	In single layer discrete perceptron training algorithm if η is the learning constant ,d is the desired , o is the actual output and X is the input then the weights are updated as
Option A:	$W_{new} = W_{old} + \eta(d-o)X$
Option B:	$W_{new} = W_{old} - \eta(d-o)X$
Option C:	$W_{new} = W_{old} + \eta(d+o)X$
Option D:	$W_{new} = W_{old} * \eta(d-o)X$
6.	In Maxnet during training process the weight

Option A:	Increases
Option B:	Decreases
Option C:	Remains fixed
Option D:	Depends on learning rate
7.	The Hamming distance between the two given vectors $X=[0\ 0\ 1\ 0\ 1\ 1\ 0]$ and $Y=[1\ 1\ 1\ 1\ 0\ 0\ 1]$ is
Option A:	4
Option B:	7
Option C:	6
Option D:	5
8.	Which of the following can be used for clustering of data?
Option A:	Single layer perceptron
Option B:	Multi-layer perceptron
Option C:	Self organizing maps
Option D:	Hopfield network
9.	In competitive learning, the winning neuron has
Option A:	The maximum Euclidean distance between the input vector and weight vector
Option B:	The minimum Euclidean distance between the input vector and weight vector
Option C:	Euclidean distance equal to 1
Option D:	The minimum dot product of the input vector and weight vector
10.	Perceptron can learn
Option A:	AND and XOR logic
Option B:	AND and OR logic
Option C:	XOR and OR logic
Option D:	XOR logic only
11.	The Lambda –cut set for $\lambda=0.3$ for the given fuzzy set $A = \{(a, 1), (b, 0.3), (c, 0.6), (d, 0.9), (e, 0.2)\}$
Option A:	$\{(a, 1), (b, 0.3), (c, 1), (d, 1), (e, 1)\}$
Option B:	$\{(a, 1), (b, 1), (c, 1), (d, 1), (e, 0)\}$
Option C:	$\{(a, 0), (b, 1), (c, 0), (d, 0), (e, 1)\}$
Option D:	$\{(a, 0.3), (b, 0.3), (c, 0.3), (d, 0.3), (e, 0.3)\}$
12.	In KSOM the weights of the winning node is given by
Option A:	$W_{ij}(\text{new}) = W_{ij}(\text{old}) + \alpha(x_i - W_{ij}(\text{old}))$
Option B:	$W_{ij}(\text{new}) = W_{ij}(\text{old}) + \alpha(x_i + W_{ij}(\text{old}))$
Option C:	$W_{ij}(\text{new}) = 0.5W_{ij}(\text{old}) + \alpha(x_i - W_{ij}(\text{old}))$
Option D:	$W_{ij}(\text{new}) = 0.5W_{ij}(\text{old})$
13.	The size of the weight vector for clustering 6 input vectors into 2 clusters is given by

Option A:	6 X 1
Option B:	6 X 6
Option C:	2 X 2
Option D:	6 X 2
14.	A set of input vectors $\{(1\ 1\ 0\ 0);(0\ 1\ 1\ 1);(0\ 1\ 1\ 0)\}$ are to be clustered using ART1 algorithm, assuming a single node in the active set the bottom up weights is initialized as
Option A:	$[1/5,1/5,1/5]^T$
Option B:	$[1/5\ 1/5\ 1/5; 1/5\ 1/5\ 1/5;1/5\ 1/5\ 1/5]$
Option C:	$[1/5\ 1/5\ 1/5\ 1/5]$
Option D:	5
15.	Only Reflexivity and Symmetry properties are satisfied by
Option A:	Fuzzy tolerance relation
Option B:	Fuzzy Equivalence relation
Option C:	Fuzzy composition relation
Option D:	Fuzzy inference relation
16.	Lyapunov Energy function is used for
Option A:	The stability analysis of a BAM network
Option B:	The stability analysis of a Perceptron network
Option C:	The stability analysis of a Maxnet network
Option D:	The stability analysis of a KSOM network
17.	Stability plasticity dilemma can be better tackled in
Option A:	Adaline
Option B:	Madaline
Option C:	ART1
Option D:	Hamming network
18.	In EBPN the weights are updated in
Option A:	Forward pass only
Option B:	Backward pass only
Option C:	Both forward and backward passes
Option D:	Hidden layer only
19.	Radial Basis Function network is
Option A:	A supervised learning network
Option B:	An unsupervised learning network
Option C:	An auto associative memory network
Option D:	A reinforcement learning network
20.	Center of sum is for
Option A:	Fuzzification
Option B:	Inference
Option C:	Tolerance
Option D:	Defuzzification

Q2.	Solve any Two. (10 Marks each)	20 Marks
A	Explain in detail any two learning rules.	
B	Give the summary of the single layer discrete perceptron training algorithm.	
C	Construct a Kohonen self organizing map to cluster the four given input vectors [0 0 1 1],[1 0 0 0],[0 1 1 0] and [0 0 0 1] for one epoch. The number of clusters to be formed is two. Assume the initial learning rate is 0.5 and initial weight vector as $W = \begin{bmatrix} 0.2 & 0.9 \\ 0.4 & 0.7 \\ 0.6 & 0.5 \\ 0.8 & 0.3 \end{bmatrix}$	

Q3.	Solve any Two. (10 Marks each)	20 Marks
A	Explain Adaline network Training algorithm.	
B	Let R and S be two fuzzy relations defined as follows. Obtain the fuzzy relation, T, using 1. Max min composition 2. max-product composition $R = \begin{bmatrix} 0.6 & 0.3 \\ 0.2 & 0.9 \end{bmatrix}$ $S = \begin{bmatrix} 1 & 0.5 & 0.3 \\ 0.8 & 0.4 & 0.7 \end{bmatrix}$	
C	Summarize the important learning factors affecting the convergence of Back Propagation networks.	

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 2012
Examination: BE Semester VII
Course Code: EXC7053 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 functions 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 above
Q13.	fork...join executes the statements in
Option A:	Sequential
Option B:	Parallel
Option C:	Randomly
Option D:	Sequential and Parallel

Q14.	<pre> 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 </pre>
Option A:	10-14
Option B:	10-15
Option C:	11-14
Option D:	11-15
Q15.	<pre> class bounds; rand int size; intmax_size = 100; constraint c_size { size inside {[1:max_size]}; } endclass By varying max_size, value of size can lie between </pre>
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.	<pre> initial begin \$display("@%0d: start fork...join_none example",\$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 </pre>
Option A:	60
Option B:	50
Option C:	90
Option D:	10
Q20.	The task <i>\$stop</i> is provided to
Option A:	End simulation
Option B:	Suspend simulation
Option C:	Exit simulation
Option D:	Not related to simulation

Q2	Solve any Two. (10 Marks each)	20 Marks
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.	Solve any Two. (10 Marks each)	20 Marks
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 2012

Examination: BE Semester VII

Course Code: EXC7054 Course Name: Optical Fiber Communication

Time: 2 hour

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	What is the numerical aperture of silica fiber with $n_1=1.48$ and $n_2=1.46$?
Option A:	0.2525
Option B:	0.2425
Option C:	0.2524
Option D:	0.2424
2.	For V number, $V=42$ the number of modes for a graded index fiber is
Option A:	441
Option B:	431
Option C:	882
Option D:	1763
3.	_____ splicing technique yields permanent joint.
Option A:	connector
Option B:	V-groove mechanical
Option C:	Fusion
Option D:	splitter
4.	Which of the following statements is correct?
Option A:	The optical bandwidth is less than the electrical bandwidth.
Option B:	The optical bandwidth is same as the electrical bandwidth.
Option C:	There is no relation between the optical bandwidth and the electrical bandwidth.
Option D:	The optical bandwidth is greater than the electrical bandwidth.
5.	The radiative and nonradiative recombination lifetimes of the minority carriers in the active region of a double heterojunction LED are 60ns and 100ns respectively. The internal quantum efficiency of the device is _____
Option A:	37.5
Option B:	0.625
Option C:	0.6
Option D:	0.375
6.	In an avalanche photodiode, the dark current and the quantum noise _____ by the multiplication process.
Option A:	increases

Option B:	decreases
Option C:	remains unchanged
Option D:	becomes half
7.	Material dispersion is caused by the
Option A:	Wavelength dependence of the index of refraction
Option B:	Wavelength independence of the index of refraction
Option C:	Dependence of the propagation constant on the mode number
Option D:	Independence of the propagation constant on the mode number
8.	_____ is the width of the range of wavelengths emitted by the light source.
Option A:	Bandwidth
Option B:	Luminescence
Option C:	Spectrum
Option D:	Spectral width
9.	Which light emitter is preferred for high speed data in a fiber-optic system?
Option A:	Incandescent
Option B:	LED
Option C:	Neon
Option D:	Laser
10.	The photonic layer of the SONET is similar to the _____ of OSI model.
Option A:	network layer
Option B:	data link layer
Option C:	physical layer
Option D:	Presentation Layer
11.	The Power Penalty in an optical link result in
Option A:	Lower BER
Option B:	Same BER
Option C:	Zero BER
Option D:	Higher BER
12.	A 2×2 fiber coupler has an input power level of 200 μW. The output power in other two ports are 90 μW and 85 μW. What is coupling ratio for this optical fiber.
Option A:	48.6%
Option B:	30%
Option C:	85%
Option D:	90%
13.	Electrical devices in optical network are basically used for _____
Option A:	Signal degradation
Option B:	Node transfer
Option C:	Signal control
Option D:	Amplification
14.	The term dispersion describes the process of
Option A:	separating light into its component frequencies

Option B:	reflecting light from a smooth surface
Option C:	the process by which light is absorbed by an uneven rough surface light scattering
Option D:	Attenuation of light
15.	In which of the following fabrication process, glass vapor particles, arising from reaction of constituent metal halide gasses and oxygen flow through inside of revolving silica tube
Option A:	OVPO
Option B:	VPAD
Option C:	MCVD
Option D:	Direct Melt methods
16.	The absence of _____ in LEDs limits the internal quantum efficiency.
Option A:	Proper semiconductor
Option B:	Adequate power supply
Option C:	Optical amplification through stimulated emission
Option D:	Optical amplification through spontaneous emission
17.	Which is not a possible cause of optical fiber loss?
Option A:	Impurities
Option B:	Glass attenuation
Option C:	Stepped index operation
Option D:	Microbending
18.	The network structure formed due to the interconnectivity patterns is known as a _____
Option A:	Network
Option B:	Struck
Option C:	Topology
Option D:	D-pattern
19.	Optical Isolators are used to
Option A:	Modulate the light
Option B:	Block any light moving in backward direction
Option C:	Optical to Electrical conversion
Option D:	Amplify the light signal
20.	WDM is an analog multiplexing technique to combine
Option A:	Magnetic signals
Option B:	Electromagnetic signals
Option C:	Digital signals
Option D:	Optical signals

Q2	Solve any Two. (10 Marks each)	20 Marks
A	Explain the working of surface emitting LED.	
B	SONET/SDH frame structure in detail.	
C	Explain OVPO process of fiber fabrication.	

Q3	Solve any Two. (10 Marks each)	20 Marks
A	Explain Fabry-Perot amplifier and Travelling-Wave amplifier in detail.	
B	Explain mechanical splicing and fusion splicing with a neat diagram.	
C	Explain how a Graded index fiber reduces intermodal dispersion?	