K. J. Somaiya Institute of Engineering and Information Technology
Sion, Mumbai - 400022
NAAC Accredited Institute with 'A' Grade
NBA Accredited 3 Programs (Computer Engineering, Electronics & Telecommunication Engineering and Electronics Engineering) Permanently Affiliated to University of Mumbai

EXAMINATION TIME TABLE (JUNE 2021)

PROGRAMME - B.E. (Electronics) (REV-2012)(CBSGS)

SEMESTER - VII

Days and Dates	Time	Course Code	Paper
Tuesday, June 15, 2021	03:30 p.m. to 05:30 p.m.	EXC701	Embedded System Design
Thursday, June 17, 2021	03:30 p.m. to 05:30 p.m.	EXC702	IC Technology
Saturday, June 19, 2021	03:30 p.m. to 05:30 p.m.	EXC703	Power Electronics -II
Tuesday, June 22, 2021	03:30 p.m. to 05:30 p.m.	EXC704	Computer Communication Networks
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	EXC7051	Elective I :- 1)Digital Image Processing
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	EXC7052	2) Artificial Intelligence
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	EXC7053	3) ASIC Verification
Thursday, June 24, 2021	03:30 p.m. to 05:30 p.m.	EXC7054	4) Optical Fiber Communication

Important Note: ● **Change if any, in the time table shall be communicated on the college web site.**

Mumbai
20th May, 2021   **Principal**

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from June 15, 2021
Program: **Electronics Engineering**
Curriculum Scheme: Rev 2012
Examination: BE Semester VII
Course Code: EXC701 and Course Name: ESD

Time: 2 hour   Max. Marks: 80

===

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	For a commercial embedded product, the unit cost is high during
Option A:	Product discontinuing
Option B:	Product growth
Option C:	Product maturity
Option D:	Product launching
2.	Which diagram indicates the behavior of the system as a consequence of external events?
Option A:	data flow diagram
Option B:	workflow diagram
Option C:	control specification diagram
Option D:	state transition diagram
3.	Which determines the sequence and the associated task's priority?
Option A:	scheduling algorithm
Option B:	ready list
Option C:	task control block
Option D:	application register
4.	Which of the following is also known as boundary scan?
Option A:	test pattern
Option B:	JTAG
Option C:	FSM
Option D:	CRC
5.	Switching the CPU to another process requires to save the state of the old process and loading new process state and is called as
Option A:	Process Blocking
Option B:	Time Sharing
Option C:	Context Switch
Option D:	Time slicing

6.	The number of processes completed per unit time in an Embedded system is known as
Option A:	Output
Option B:	Throughput
Option C:	Efficiency
Option D:	Capacity
7.	RS485 is a ----- wire protocol for physical layer, full or half duplex with _____ connection between multiple points.
Option A:	two, serial.
Option B:	four, serial
Option C:	two, parallel
Option D:	four, parallel
8.	Serial interfaces like I2C, SPI, UART, 1-Wire, etc and parallel bus interface, are examples of _____.
Option A:	External Communication Interface
Option B:	Offboard Communication Interface
Option C:	Product level communication interface
Option D:	Onboard Communication Interface
9.	_____ is an output device for displaying alphanumeric characters.
Option A:	LED
Option B:	7 segment display
Option C:	diode
Option D:	photo diode
10.	Which of the following memory type is best suited for development purpose?
Option A:	EEPROM
Option B:	PROM
Option C:	OTP
Option D:	UVEPROM
11.	If you call the macros multiple times then
Option A:	code length increases
Option B:	Code length remains same
Option C:	code will not execute
Option D:	code length decreases
12.	Which of the following are the three measures of information security in embedded systems?
Option A:	Confidentiality, secrecy, integrity
Option B:	Confidentiality, transparency, availability
Option C:	Integrity, transparency, availability
Option D:	Confidentiality, integrity, availability
13.	Solenoid valve is a example of

Option A:	Sensor
Option B:	Input device
Option C:	Actuator
Option D:	Transducer
14.	Which of the following has programmable hardware?
Option A:	Microprocessor
Option B:	Microcontroller
Option C:	Co-processor
Option D:	FPGA
15.	Which of the following is not a assumption for RMA
Option A:	Highest priority task will run first
Option B:	all tasks run at regular interval
Option C:	Tasks do not synchronize with each other
Option D:	Lowest priority task will run first
16.	In which scheduling certain amount of time slice of CPU time is allocated to each process?
Option A:	Round Robin(RR)
Option B:	Shortest Job First(SJF)
Option C:	Last In First Out(LIFO)
Option D:	First In First Out(FIFO)
17.	In which type of testing, internal working of application is required
Option A:	White Box
Option B:	Black Box
Option C:	Gray box
Option D:	Black Box & Gary Box
18.	Priority inversion is
Option A:	the condition in which a low priority task needs to wait for a high priority task
Option B:	the condition in which a high priority task needs to wait for a low priority task
Option C:	the act of increasing the priority of a process dynamically
Option D:	the act of decreasing the priority of a process dynamically
19.	Embedded system should be a
Option A:	Flexible System
Option B:	Rigid System
Option C:	General Purpose System
Option D:	Multitasking System
20.	Which of the following is true about hard real time systems?
Option A:	Missing deadlines for tasks are acceptable
Option B:	Strictly adhere to the timing constraints for a task
Option C:	Always contains a human in the loop
Option D:	Implement virtual memory-based memory management

Q2.	Solve any Two	20 M
1	Differentiate between a) Function and Macros b) RS232 and RS485	
2	Discuss various design metrics that you will consider in the designing of embedded systems.	
3	Discuss Spiral model implementation in the case study of Remote control of smart Television.	

Q3	Solve any Two	20 M
1	What is Message queue? List and explain Message queue related function calls supported by Micro C/OS-II	
2	What is the need of Low power modes in microcontroller? Explain with example	
3	Discuss various kernel objects used in the inter process communication in the embedded system design	

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examination Commencing from June 15, 2021
Program: **Electronics Engineering**
Curriculum Scheme: Rev 2012
Examination: BE Semester VII
Course Code: EXC701 and Course Name: ESD

Time: 2-hour   Max. Marks: 80

==

Q1:

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	D
Q3.	A
Q4	B
Q5	C
Q6	B
Q7	A
Q8.	D
Q9.	B
Q10.	A
Q11.	A
Q12.	D
Q13.	C
Q14.	D
Q15.	A
Q16.	A
Q17.	A
Q18.	B
Q19.	B
Q20.	B

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from 15th June 2021
Program: **Electronics Engineering**
Curriculum Scheme: Rev 2012
Examination: BE Semester VII
Course Code: EXC702 and Course Name: IC Technology

Time: 2 hour   Max. Marks: 80

===

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Which of the following statements describes in the Bridgman method?
Option A:	Melt is outside the temperature furnace, solidification begins at the hotter end
Option B:	Melt is inside the temperature furnace, solidification occurs at the cooler end
Option C:	Melt is inside the temperature furnace, solidification occurs at the hotter end
Option D:	Solidification is achieved by passing the melt through a temperature gradient
2.	Low pressure chemical vapour deposition (LPCVD) is used to
Option A:	Increase the purity of the film
Option B:	To reduce the roughness of the film
Option C:	To form thick films
Option D:	To reduce stress on the film
3.	Where are the silicon wafers placed in the reaction chamber for the epitaxial growth process?
Option A:	Cup
Option B:	Boats
Option C:	Ingots
Option D:	Crucible
4.	The dopants are introduced in the active areas of silicon by using which process?
Option A:	Oxidation
Option B:	Etching
Option C:	Chemical Vapour Deposition
Option D:	Either Diffusion or Ion Implantation Process
5.	Ntap is made in
Option A:	Source of PMOS
Option B:	Drain of PMOS
Option C:	Source of NMOS
Option D:	Drain of PMOS
6.	In stick diagram n and p transistors are separated by using
Option A:	Differentiation line
Option B:	Separation line
Option C:	Demarcation line

Option D:	Black line
7.	In the context of IC fabrication, metallization means.
Option A:	Connecting metallic wires.
Option B:	Covering with a metallic cap
Option C:	Forming interconnection pattern and bonding pads
Option D:	Depositing sio$_2$ layer
8.	Lambda-based (scalable CMOS) design rules define scalable rules based on λ which is _____
Option A:	Same as minimum channel length
Option B:	Twice of the minimum channel length
Option C:	Half of the minimum channel length
Option D:	One third of the minimum channel length
9.	Merit of four point probe method of determining resistivity is that
Option A:	It needs very small current
Option B:	It gives the average resistivity of the sample
Option C:	It gives the resistivity at a localized region of the sample
Option D:	It injects excess minority carriers
10.	VLS technique is to grow …
Option A:	MODFET
Option B:	MESFET
Option C:	Carbon nano tube
Option D:	Nanowire
11.	Hydrogen implant is the process step in _____ wafer fabrication
Option A:	SIMOX
Option B:	Bonded SOI wafer
Option C:	Smart cut
Option D:	E/D MESFET
12.	FinFET is also known as
Option A:	Depleted silicon substrate
Option B:	DELTA
Option C:	VTMOS
Option D:	Gate all around FET
13.	A SOI device achieves
Option A:	High junction capacitance
Option B:	High device threshold voltage
Option C:	Less junction capacitance
Option D:	High subthreshold leakage current
14.	An air bridge process is often used to form ____
Option A:	Capacitors
Option B:	Inductors

Option C:	Resistors
Option D:	Diodes
15.	In the zone melting method _____ of the charge is melted at any one time.
Option A:	Large part
Option B:	Small part
Option C:	Solid part
Option D:	Anionic part
16.	Which one of the following principle has been used in the zone melting method?
Option A:	Impurities concentrate in the solid than in liquid phase
Option B:	Impurities concentrate in the liquid phase than in gaseous phase
Option C:	Impurities concentrate in the liquid phase than in the solid phase
Option D:	Impurities concentrate in the gaseous phase than in the solid phase
17.	When a pure semiconductor is heated, its resistance ……
Option A:	Goes up linearily
Option B:	Goes down
Option C:	Remains the same
Option D:	Goes up exponentially
18.	Physical dry etching uses which of the following material
Option A:	Etchant gases
Option B:	Etchant liquid
Option C:	Etchant powder

Option D:	Ions, electrons and photons
19.	To etch SiO2 which of the following is used
Option A:	Solution of HF and NaHCO3
Option B:	Acetone and/ or IPA
Option C:	Solution of HNO3 and concentrated HCl
Option D:	Solution of HF and NH4F
20.	In CMOS manufacturing process Sheet resistance is used instead of resistivity because _____
Option A:	Resistivity is same for all doped regions
Option B:	Resistivity and thickness are characteristics which cannot be controlled by the circuit designer, and it is expressed as the single sheet resistance parameter
Option C:	Sheet resistance is dimensionless quantity
Option D:	Sheet resistance is equal to resistivity

Q2	
A	**Solve any Two. (5 Marks each)** **10 Marks**
i.	Explain Molecular Beam Epitaxy in short.
ii.	What do you mean by class of a Clean Room?
iii.	Draw cross section of any three multigate device and mention its features.
B	**Solve any One. (10 Marks each)** **10 Marks**
i.	Explain LOCOS isolation technique and state problem arises due to this isolation.
ii.	Explain the working principle of MODFET with its cross section

Q3	
A	**Solve any Two. (5 Marks each)** **10 Marks**
i.	Explain Deal and Grove Model of oxidation in short.
ii.	Write short notes on trench isolation

iii.	Write a short note on BiCMOS fabrication process.	
B	**Solve any One. (10 Marks each)**	**10 Marks**
i.	Explain Bridgeman method for GaAs crystal growth with neat diagram.	
ii.	Describes parametric test and functionality test for IC testing	

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examination Commencing from 15th June 2021
Program: **Electronics Engineering**
Curriculum Scheme: Rev 2012
Examination: BE Semester VII
Course Code: EXC702 and Course Name: IC Technology

Time: 2 hour   Max. Marks: 80

==

Q1:

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	D
Q3.	B
Q4	D
Q5	A
Q6	C
Q7	C
Q8.	C
Q9.	C
Q10.	D
Q11.	C
Q12.	B
Q13.	C
Q14.	B
Q15.	B
Q16.	C
Q17.	B
Q18.	D
Q19.	D
Q20.	B

Important steps and final answer for the questions involving numerical example

Q2(A):Q2(B): Q3(A): Q3(B): No need of answer key.

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from 15th June 2021
Program: **Electronics Engineering**
Curriculum Scheme: Rev2012
Examination: BE Semester VII
Course Code: EXC703 and Course Name: Power Electronics II

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 effect of source inductance on the performance of a 3-phase controlled converter is to
Option A:	increase the average load voltage
Option B:	reduce the average load voltage
Option C:	make the load current continuous
Option D:	remove ripples from the load current
2.	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:	increases by $3(\omega L_s/\pi)I_o$
Option C:	decreases by $(\omega L_s/\pi)I_o$
Option D:	decreases by $3(\omega L_s/\pi)I_o$
3.	In space vector modulation, amplitude of space vector Vs is _____ times the maximum value of phase voltage, Vph
Option A:	2
Option B:	1.5
Option C:	3
Option D:	equal
4.	In the PWM method
Option A:	external commutating capacitors are required
Option B:	more average output voltage can be obtained
Option C:	lower order harmonics are minimized
Option D:	higher order harmonics are minimized
5.	What is the peak value of phase voltage in case of 3-phase VSI with 180° mode. The supply side consists of a constant dc voltage source of Vs.
Option A:	2Vs/3
Option B:	3Vs/2
Option C:	Vs
Option D:	3Vs
6.	The state vector in a DC-DC converter state space model is

Option A:	Voltage across inductor, current through inductor
Option B:	Current through capacitor, voltage across capacitor
Option C:	Current through inductor, Voltage across capacitor
Option D:	Voltage across resistor, current through resistor
7.	Find the output voltage expression for a step down chopper with Vs as the input voltage and D as the duty cycle.
Option A:	$Vo = V_s/D$
Option B:	$Vo = V_s \times D$
Option C:	$Vo = V_s^2/D$
Option D:	$Vo = 2V_s/D\pi$
8.	Average modeling of DC-DC converters depends on
Option A:	Number of inductor turns of the converter
Option B:	Diode drop
Option C:	Input voltage
Option D:	Capacitor value
9.	In the design of a boost converter which among the following converter offers the best system stability?
Option A:	P-I
Option B:	P-D
Option C:	P-I-D
Option D:	Integral
10.	In Induction Heating, heat is generated by
Option A:	Conduction
Option B:	Convection
Option C:	Radiation
Option D:	Conversion of Electromagnetic Energy into Heat inside material
11.	ASMPSoperatingat20kHzto100kHzrangeusesasthemainswitching elements
Option A:	SCR
Option B:	MOSFET
Option C:	Transistor
Option D:	IGBT
12.	Trickle charging of a storage battery helps to
Option A:	Maintain proper electrolyte level
Option B:	Increases its reserve capacity
Option C:	Prevent sulphation
Option D:	Keep it fresh and fully charged
13.	Which type of dc motor is a constant speed motor
Option A:	dc series motor
Option B:	dc shunt motor
Option C:	long shunt dc motor
Option D:	short shunt dc motor

14.	In DC Motor Drive constant power operation is achieved
Option A:	Above the base speed
Option B:	Below the base speed
Option C:	Above and Below the base speed
Option D:	At thebase speed
15.	In which mode of operation of DC drive, high braking torque produced?
Option A:	plugging
Option B:	dynamic braking
Option C:	regenerative braking
Option D:	Mechanical braking
16.	Which method of speed control of 3 phase induction motor can control speed above rated speed?
Option A:	Rotor resistance control
Option B:	Supply frequency control
Option C:	Kramer's drive
Option D:	Scherbius Drive
17.	In a single phase induction motor, the starting torque developed is proportional to
Option A:	supply voltage
Option B:	V^2
Option C:	$1/V^2$
Option D:	$1/V$
18.	If an induction motor is running at slip s, then rotor output is
Option A:	$(1 + s) \times$ Rotor input
Option B:	$(1 - s) \times$ Rotor input
Option C:	$s \times$ Rotor input
Option D:	$s \times$ rotor output
19.	In V/f control of three phase IM, If maximum torque at a V/f ratio of 1.5 is 100 Nm, if the ratio is doubled, the maximum torque will be
Option A:	100 Nm
Option B:	50 Nm
Option C:	75 Nm
Option D:	25 Nm
20.	In an induction generator operation, the slip is always
Option A:	Infinity
Option B:	Positive
Option C:	Zero
Option D:	Negative

Q2	Solve any Four. (5 Marks each)	20 Marks
A	Explain concept of UPS and give classification of ups system.	
B	Explain regenerative breaking of DC motor.	
C	Explain in brief the effect of source inductance in Single Phase Fully Controlled Bridge Rectifier.	
D	Explain the state space model of Buck Converter.	
E	With the help of neat sketch, explain the working of Single Phase Half Wave Converter.	
F	Write a short note on v/f control	

Q3.	Solve any Two. (10 Marks each)	20 Marks
A	Explain the steps involved in space vector modulation (SVM) technique used in three phase voltage source inverter.	
B	Explain in detail the principle and working of simple boost converter with the help of neat diagram.	
C	220V,1500rpm,10A separately excited DC motor has an armature resistance of 1ohm.It is made from single phase fully controlled bridge rectifier with an AC source voltage of 230V,50Hz.Assuming continuous load current, Compute a) a motor speed at the firing angle of 30 degree and torque of 5 Nm b)developed torque at the firing angle of 45 degree and speed of 1000 rpm	

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from 15ᵗʰ June 2021
Program: **Electronics Engineering**
Curriculum Scheme: Rev2012
Examination: BE Semester VII
Course Code: EXC703 and Course Name: Power Electronics II

Time: 2 hour   Max. Marks: 80
===

Q1:

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	C
Q3.	B
Q4	C
Q5	A
Q6	C
Q7	B
Q8.	A
Q9.	C
Q10.	D
Q11.	B
Q12.	D
Q13.	B
Q14.	A
Q15.	A
Q16.	D
Q17.	B
Q18.	B
Q19.	A
Q20.	D

Important steps and final answer for the questions involving numerical example

Q3(C):

Solution

$T_{rated} = 10$ N-m

$R_a = 0.37$ ohm

$N_{rated} = 3700$ rpm

$e = 4.05$ ms

$K_T = 0.5$ N-m

m = 11.7m

Solution

$T_{rated} = 10$ N-m

$R_a = 0.37$ ohm

$N_{rated} = 3700$ rpm

e = 4.05 ms

$K_T = 0.5$ N-m

m = 11.7m

Under rated operating conditions of the separately excited DC motor

$V_t = E_a + I_a R_a = K_m \omega_m + I_a R_a$

$K_m = 1.337$ N-m/A

   a) $I_a = 5/1.337 = 3.74$A

   $V_o = V_t = K_m \omega_m + I_a R_a$

$(2V_m/\pi) \cos\alpha = K_m \omega_m + I_a R_a$

$\omega_m = 131.31$ rad/sec.

Motor speed = $131.31 \times 60/2\pi = 1253.92$ rpm.

b) for $\alpha = 45^0$

$(2V_m/\pi) \cos\alpha = K_m \omega_m + I_a R_a$

$I_a = 6.93$A.

$T_e = K_m I_a = 8.543$Nm.

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from 15th June 2021
Program: **Electronics Engineering**
Curriculum Scheme: Rev2012
Examination: BE Semester VII
Course Code: EXC704 and Course Name: Computer Communication Networks

Time: 2 hour   Max. Marks: 80

==

Q1.	Choose the correct option for following questions. All the sub questions are compulsory and carry two marks each .Total marks for this (Q1) is 40.
1.	OSI stands for _____
Option A:	open system interconnection
Option B:	operating system interface
Option C:	optical service implementation
Option D:	open service Internet
2.	The number of layers in ISO OSI reference model is _____
Option A:	4
Option B:	5
Option C:	6
Option D:	7
3.	TCP/IP model does not have _____ layer but OSI model have this layer.
Option A:	session layer
Option B:	transport layer
Option C:	application layer
Option D:	network layer
4.	Which layer is used to link the network support layers and user support layers?
Option A:	session layer
Option B:	data link layer
Option C:	transport layer
Option D:	network layer
5.	………. transmission systems are widely used in the backbone of networks.
Option A:	Unshielded Twisted Pair(UTP)
Option B:	Shielded Twisted Pair(STP)
Option C:	Optical Fiber
Option D:	Wireless
6.	……….. is also known as store and forward switching since the messages are stored at intermediate nodes in route to their destinations.
Option A:	Message switching
Option B:	Physical switching

Option C:	circuit switching
Option D:	packet switching
7.	The key concern in the design of the data transmission system is Data Rate and ……….
Option A:	Data Path
Option B:	Data flow
Option C:	Distance
Option D:	Frequencies
8.	…………. used in telephone network for bi-directional, real-time transfer between computers.
Option A:	Message switching
Option B:	Circuit switching
Option C:	Packet switching
Option D:	Circular switching
9.	The data link layer takes the packets from _____ and encapsulates them into frames for transmission.
Option A:	Network layer
Option B:	Physical layer
Option C:	Transport layer
Option D:	Application layer
10.	Which sublayer of the data link layer performs data link functions that depend upon the type of medium?
Option A:	Logical link control sublayer
Option B:	Media access control sublayer
Option C:	Network interface control sublayer
Option D:	Error control sublayer
11.	Automatic repeat request error management mechanism is provided by _____
Option A:	Logical link control sublayer
Option B:	Media access control sublayer
Option C:	Network interface control sublayer
Option D:	Application access control sublayer
12.	CRC stands for _____
Option A:	cyclic redundancy check
Option B:	code repeat check
Option C:	code redundancy check
Option D:	cyclic repeat check
13.	The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called _____
Option A:	Piggybacking
Option B:	Cyclic redundancy check
Option C:	Fletcher's checksum
Option D:	Parity check

14.	Which one of the following is not a function of network layer?
Option A:	Routing
Option B:	Inter-networking
Option C:	Congestion control
Option D:	Error control
15.	A 4 byte IP address consists of _____
Option A:	Only network address
Option B:	Only host address
Option C:	Network address & host address
Option D:	Network address & MAC address
16.	In virtual circuit network each packet contains
Option A:	full source and destination address
Option B:	a short VC number
Option C:	only source address
Option D:	only destination address
17.	Which of the following are transport layer protocols used in networking?
Option A:	TCP and FTP
Option B:	UDP and HTTP
Option C:	TCP and UDP
Option D:	HTTP and FTP
18.	User datagram protocol is called connectionless because _____
Option A:	All UDP packets are treated independently by transport layer
Option B:	It sends data as a stream of related packets
Option C:	It is received in the same order as sent order
Option D:	It sends data very quickly
19.	Which is not a application layer protocol?
Option A:	HTTP
Option B:	SMTP
Option C:	FTP
Option D:	TCP
20.	Pick the odd one out.
Option A:	Transfer
Option B:	File download
Option C:	E-mail
Option D:	Interactive games

Q2.	**Solve any TWO. (10 Marks each)**	**20 Marks**

A	Explain HDLC protocol. Explain the format of different HDLC frames.
B	Explain different local area network technologies.

C	.Explain TCP/IP model with diagrams.

Q3.	Solve any TWO. (10 Marks each)	20 Marks

A	Explain RIP and OSPF protocols and explain their header structures.
B	Explain socket programming with TCP.
C	Explain UDP and TCP protocol and make a comparison.

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from 15th June 2021
Program: **Electronics Engineering**
Curriculum Scheme: Rev2012
Examination: BE Semester VII
Course Code: EXC704 and Course Name: Computer Communication Networks

Time: 2 hour   Max. Marks: 80

===

Q1:

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	D
Q3.	A
Q4	C
Q5	C
Q6	A
Q7	C
Q8.	B
Q9.	A
Q10.	B
Q11.	A
Q12.	A
Q13.	A
Q14.	D
Q15.	C
Q16.	B
Q17.	C
Q18.	A
Q19.	D
Q20.	D

Q2 & Q3

No numericals. Only Descriptive questions.

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from 15th June 2021
Program: **Electronics Engineering**
Curriculum Scheme: Rev 2012
Examination: BE Semester VII
Course Code: EXC7051 and Course Name: Digital Image Processing (DIP)

Time: 2 hour   Max. Marks: 80

===

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Which one from the following is not the basic element of Image processing?
Option A:	Display
Option B:	Image storage
Option C:	Image processing
Option D:	Contrast Sensitivity
2.	The size of the image is
Option A:	N*M
Option B:	N*M*m
Option C:	N*m
Option D:	M*m
3.	Contrast stretching is
Option A:	Increasing the dynamic range of Image.
Option B:	Decreasing the dynamic range of Image.
Option C:	Splitting the grey level into two parts
Option D:	Inverting the grey level
4.	What is the sum of all components of a normalized histogram?
Option A:	1
Option B:	0
Option C:	-1
Option D:	∞
5.	A frequency domain filter of the corresponding filter in spatial domain can be obtained by applying which of the following operationon filter in spatial domain?
Option A:	Inverse Fourier transform
Option B:	Laplace Transform
Option C:	Walsh Transform
Option D:	Fourier transform
6.	_____ is the starting pixel of region growing process.
Option A:	seed pixel
Option B:	base pixel
Option C:	image

Option D:	original pixel
7.	Sobel is better than Prewitt in image
Option A:	blurring
Option B:	smoothing
Option C:	contrast
Option D:	sharpening
8.	_____ is process of partition the digital image in to multiple regions
Option A:	merging
Option B:	filling
Option C:	splitting
Option D:	transform
9.	thinning operation is used to remove the _____ pixels
Option A:	foreground
Option B:	back ground
Option C:	object
Option D:	image
10.	the theory of mathematical morphology is based on
Option A:	correlation
Option B:	probability
Option C:	set theory
Option D:	image size
11.	FFT can also be used for computation of
Option A:	DFT
Option B:	Laplace transform
Option C:	Direct Z transform
Option D:	In direct Z transform
12.	Asthe values of continuous variablesincreases, the spectrum of Fourier transform becomes
Option A:	expanded
Option B:	discrete
Option C:	contracted
Option D:	continuous
13.	Thebehavior of Walsh and Hadamard transforms are
Option A:	Sinusoidal
Option B:	Cosine
Option C:	non-sinusoidal
Option D:	cosine and sine
14.	The circular convolution of two sequences in time domain is equivalent to
Option A:	Summation of DFTs of two sequences
Option B:	Multiplication of DFTs of two sequences
Option C:	Difference of DFTs of two sequences

Option D:	Square of multiplication of DFTs of two sequences
15.	Forward and inverse Fourier transforms exist for the samples having ____ values
Option A:	Integers
Option B:	Infinite
Option C:	Finite
Option D:	Discrete
16.	Without losing quality, JPEG-2000 can achieve compression ratios of:
Option A:	2:1
Option B:	200:1
Option C:	2000:1
Option D:	20:1
17.	------ is used to transforms data to account for interpixel redundancies
Option A:	Mapper
Option B:	Quantizer
Option C:	Symbol Encoder
Option D:	Symbol Decoder
18.	In the coding redundancy technique, weuse-----
Option A:	fixed and variable lengthcode
Option B:	bit
Option C:	byte
Option D:	word
19.	IGS coding used for
Option A:	Image Enhancement
Option B:	Image Compression
Option C:	Image segmentation
Option D:	Image Erosion
20.	Which of the following block is not available in Predictive coding?
Option A:	Quantizer
Option B:	Symbol Encoder
Option C:	Predicator
Option D:	8 X 8 block generator

Q2	**Solve any Two. (10 Marks each)**	**20 Marks**
A	Find Thresholding, Digital negative and Binary image for given 4×4 image <table><tr><td>3</td><td>4</td><td>0</td><td>1</td></tr><tr><td>4</td><td>4</td><td>2</td><td>2</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>5</td><td>3</td><td>2</td></tr></table>	
B	Explain region growing method in detail	
C	Find Hadamard Transform for given image 4×4 image <table><tr><td>2</td><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td><td>0</td><td>1</td></tr><tr><td>2</td><td>1</td><td>2</td><td>3</td></tr></table>	

Q3	**Solve any Two. (10 Marks each)**	**20 Marks**
A	Perform erosion on given 10×10 image <table><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table>	

0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Using structuring element

①
1

B	Explain Sampling and Quantization
C	A source emits six symbols with probabilities as shown below | Symbol	a_1	a_2	a_3	a_4	a_5	a_6
---	---	---	---	---	---	---
probability	0.1	0.4	0.06	0.1	0.04	0.3	 Obtain the Huffman coding of the symbols.

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examination Commencing from 15th June 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

===

Q1:

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	B
Q3.	A
Q4	A
Q5	D
Q6	A
Q7	B
Q8.	C
Q9.	A
Q10.	C
Q11.	A
Q12.	C
Q13.	C
Q14.	B
Q15.	C
Q16.	B
Q17.	A
Q18.	A
Q19.	B
Q20.	D

Q 2.A   **Thresholding output   s=4**

0 7 0 0

7 7 0 0

0 0 0 0

0 7 0 0

Digital negative output s=L-r

3-bit image thus L=7

4 3 7 6

3 3 5 5

7 7 6 6

6 2 4 5

Binary Image

011 100 000 00

100 100 010 010

000 000 001 001

001 101 011 010

Q2. B. Theory question

Q2.C.Hadamard Matrix is

1	1	1	1
1	-1	1	-1
1	1	-1	-1
1	-1	-1	1

the final output of image is

16	2	0	6
-6	4	2	0
-4	2	4	-2
6	4	-2	0

Q3.A The eroded image is

0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	1	1	1	0	0	1	1	1	0
0	1	1	1	0	0	1	1	1	0
0	1	1	1	0	0	1	1	1	0
0	1	1	1	0	0	1	1	1	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Q3.B. Theory question

Q3.C. Huffman Coding

Huffman Coding Soln.

Step 1

Symbol	Probabilities	Descending order						
a_1	0.1	0.4	0.4	0.4	0.4	→	0.6	→ 1
a_2	0.4	0.3	0.3	0.3	0.3		0.4	
a_3	0.06	0.1	0.1	→ 0.2	→ 0.3			
a_4	0.1	0.1	0.1	0.1				
a_5	0.04	0.06	→ 0.1					
a_6	0.3	0.04						

Step 2 → Tree

Step - 3

Huffman codes are

a_1	0.1	110
a_2	0.4	0
a_3	0.06	11111
a_4	0.1	1110
a_5	0.04	11110
a_6	0.3	10

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from 15th June 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.	What is unsupervised learning?
Option A:	Feature of group explicitly stated
Option B:	Numbers of groups may be known
Option C:	Neither feature nor number of groups is known
Option D:	Feature of individual explicitly stated
2.	The function depicts neurotransmitter?
Option A:	They transmit the data directly at synapse to the other neuron
Option B:	They modify the conductance of the post synaptic membrane for certain ions
Option C:	Cause depolarization or polarization
Option D:	Both polarization and modify conductance of the membrane
3.	Hebb's law is supervised learning or it is of unsupervised type?
Option A:	Supervised
Option B:	Unsupervised
Option C:	Either supervised or unsupervised
Option D:	Can be both supervised & unsupervised
4.	The other name of Widrow &Hoff learning law is
Option A:	Hebb
Option B:	LMS
Option C:	MMS
Option D:	ANN
5.	Hamming network is suitable for which of the following
Option A:	Classification
Option B:	Association
Option C:	Pattern storage
Option D:	Precision machining
6.	Generalization feature of multi-layer feed forward network depends on which of the following factors?
Option A:	Architectural details
Option B:	Learning rate parameter
Option C:	Training samples
Option D:	Additive details

7.	The main objective of the pattern mapping problem is?
Option A:	Capture weights for a link
Option B:	To capture inputs
Option C:	To capture feedbacks
Option D:	To capture implied function
8.	Fuzzy Set theory defines the fuzzy operators. Choose the fuzzy operators from the following
Option A:	AND
Option B:	NOT
Option C:	OR
Option D:	The minimum, maximum, and complement operator
9.	_____ are the way to represent uncertainty. ?
Option A:	Fuzzy logic
Option B:	Probability
Option C:	Entropy
Option D:	Precision
10.	Imagine that there is a case of the robotic arm in an industry with the task of painting every bit of a machine part and minimize the quantity of paint wasted during the process. Which of the following learning techniques should be chosen to train such a robotic arm?
Option A:	Supervised learning
Option B:	Unsupervised learning
Option C:	Reinforcement learning
Option D:	Stochastic learning
11.	An auto-associative network is
Option A:	A neural network contains no loops
Option B:	A neural network contains feedback
Option C:	A neural network that has only one loop
Option D:	A single layer feed-forward neural network with pre-processing
12.	Neural Networks are the complex _____ with many parameters?
Option A:	Linear Functions
Option B:	Nonlinear Functions
Option C:	Discrete Functions
Option D:	Exponential Functions
13.	What is the objective of BAM?
Option A:	To store pattern pairs
Option B:	To recall pattern pairs
Option C:	To store the set of pattern pairs and they can then be recalled by giving either of the pattern as input
Option D:	Fault tolerance

14.	The basins of attraction is corresponding to
Option A:	Stable states
Option B:	Unstable States
Option C:	Neural States
Option D:	Non- Neural states
15.	What is the form of Fuzzy logic?
Option A:	Two-valued logic
Option B:	Crisp set logic
Option C:	Many-valued logic
Option D:	Binary set logic
16.	Example of the unsupervised feature map
Option A:	Text recognition
Option B:	Voice recognition
Option C:	Image recognition
Option D:	Pattern recognition
17.	The values of the set membership in fuzzy logic is represented by
Option A:	A discrete Set
Option B:	The degree of truth
Option C:	Probabilities
Option D:	Both the degree of truth & Probabilities
18.	In determination the weights by learning, for a noisy input vectors what kind of the learning rule should be employed
Option A:	Hebb learning rule
Option B:	Widrow learning rule
Option C:	Hoff learning rule
Option D:	No learning rule
19.	What do you understand by perceptron?
Option A:	A single layer feed-forward neural network with pre-processing
Option B:	An auto-associative neural network
Option C:	A double layer auto-associative neural network
Option D:	A neural network that contains feedback
20.	The network which involves the backward links from the output to input and hidden the layers is called
Option A:	Self organizing map
Option B:	Perceptrons
Option C:	Recurrent neural network

Option D:	Multi layered perceptron

Q2	**Solve any Two. (10 Marks each)**	**20 Marks**
A	Define learning. Differentiate between supervised, unsupervised and reinforcement learning with suitable examples.	
B	Find the weights required to perform the following classification using perceptron network. The vectors (1,1, 1, 1) and (-1, 1 -1, -1) are belonging to the class (so have target value 1), vectors (1, 1, 1, -1) and (1, -1, -1, 1) are not belonging to the class (so have target value -1). Assume learning rate as 1 and initial weights as 0 and threshold to be 0.2.	
C	What is a hetero-associative memory network? With a neat architecture, explain the training algorithm of a hetero-associative network.	

Q3	**Solve any Two. (10 Marks each)**	**20 Marks**
A	Write a brief note on Learning Vector Qquantization, it's variants and applications.	
B	What is meant by fuzzification. Explain any four methods of membership value assignments with examples.	
C	Write a detailed short note on fuzzy controller.	

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examination Commencing from 15th June 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:

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	C
Q2.	D
Q3.	B
Q4	B
Q5	A
Q6	A
Q7	D
Q8.	D
Q9.	C
Q10.	C
Q11.	B
Q12.	A
Q13.	C
Q14.	A
Q15.	C
Q16.	B
Q17.	B
Q18.	D
Q19.	A
Q20.	C

Important steps and final answer for the questions involving numerical example

Q2(B):

The truth table for the given vectors is given in Table

Input					
X_1	X_2	X_3	X_4	b	Target (t)
1	1	1	1	1	1
-1	1	-1	-1	1	1
1	1	1	-1	1	-1
1	-1	-1	1	1	-1

Given: w1=w2=w3=w4=b=0

Learning rate =1

Threshold =0.2

The activation function is

$$y = \begin{cases} 1 & \text{if } y_{in} > 0.2 \\ 0 & \text{if } -0.2 \le y_{in} \le 0.2 \\ -1 & \text{if } y_{in} < -0.2 \end{cases}$$

The net input is given by

$$y_{in} = b + x_1 w_1 + x_2 w_2 + x_3 w + x_4 w_4$$

Table 8

Inputs $(x_1$	x_2	x_3	x_4	$b)$	Target (t)	Net input (y_{in})	Output (y)	$(\Delta w_1$	Weight changes Δw_2	Δw_3	Δw_4	$\Delta b)$	Weights $(w_1$ $(0$	w_2 0	w_3 0	w_4 0	$b)$ $0)$
EPOCH-1																	
(1	1	1	1	1)	1	0	0	1	1	1	1	1	1	1	1	1	1
(-1	1	-1	-1	1)	1	-1	-1	-1	1	-1	-1	1	0	2	0	0	2
(1	1	1	-1	1)	-1	4	1	-1	-1	-1	1	-1	-1	1	-1	1	1
(1	-1	-1	1	1)	-1	1	1	-1	1	1	-1	-1	-2	2	0	0	0
EPOCH-2																	
(1	1	1	1	1)	1	0	0	1	1	1	1	1	-1	3	1	1	1
(-1	1	-1	-1	1)	1	3	1	0	0	0	0	0	-1	3	1	1	1
(1	1	1	-1	1)	-1	4	1	-1	-1	-1	1	-1	-2	2	0	2	0
(1	-1	-1	1	1)	-1	-2	-1	0	0	0	0	0	-2	2	0	2	0
EPOCH-3																	
(1	1	1	1	1)	1	2	1	0	0	0	0	0	-2	2	0	2	0
(-1	1	-1	-1	1)	1	2	1	0	0	0	0	0	-2	2	0	2	0
(1	1	1	-1	1)	-1	-2	-1	0	0	0	0	0	-2	2	0	2	0
(1	-1	-1	1	1)	-1	-2	-1	0	0	0	0	0	-2	2	0	2	0

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from 15th June 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

===

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	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;
2.	……..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
3.	Default value of register datatype is
Option A:	0
Option B:	X
Option C:	Z
Option D:	U
4.	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
5.	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
6.	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
7.	Verification ensures that RTL performance__?
Option A:	Correct function
Option B:	Correct task
Option C:	Correct work
Option D:	Correct value
8.	RTL stands for
Option A:	Register top level
Option B:	Register top level
Option C:	Register transfer level
Option D:	Register trail level
9.	Which of the following data types is new in system Verilog?
Option A:	Integer
Option B:	Logic
Option C:	Time
Option D:	Try
10.	In System Verilog, …. is called intelligent bundle of signals.
Option A:	Modport
Option B:	Class
Option C:	Event
Option D:	Interface
11.	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
12.	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
13.	DUT instance is created in
Option A:	Agent
Option B:	Environment
Option C:	Test
Option D:	Testbench top
14.	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

15.	What does R and C stand for
Option A:	Random constraint
Option B:	Random Custom
Option C:	Random Cyclic
Option D:	Random Call

16.	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

17.	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
18.	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
19.	Steps of verification process
Option A:	Plan , work , test
Option B:	Test , plan
Option C:	Specification , create plan , create test
Option D:	Plan , test
20.	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

Q2.	Solve any Two. (10 Marks each)	20 Marks
A	Explain the concept of an interface along with clocking block and modportusing suitable example and why it is used?	
B	Differentiate between Blocking and Non - blocking assignments in Verilog with proper example. Also describes various datatypes used in System Verilog.	
C	List out types of coverage in System Verilog. Explain in detail Functional and Code coverage.	

Q3.	Solve any Two. (10 Marks each)	20 Marks
A	Draw the layered testbench and explain the working of each of the blocks.	
B	What is difference between bounded and unbounded mailboxes? Explain with example how can we create unbounded mailboxes?	
C	Explain various Fork Join statements supported in System Verilog with proper examples.	

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examination Commencing from 15th June 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

===

Q1:

Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	B
Q3.	B
Q4	D
Q5	C
Q6	A
Q7	A
Q8.	C
Q9.	B
Q10.	D
Q11.	D
Q12.	A
Q13.	D
Q14.	C
Q15.	C
Q16.	A
Q17.	C

Q18.	D
Q19.	C
Q20.	A

Important steps and final answer for the questions involving numerical example

Q2 and Q3 are theory questions.

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from 15th June 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

===

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

Q1.	Multimode step index fiber has _____
Option A:	Large core diameter & large numerical aperture
Option B:	Large core diameter and small numerical aperture
Option C:	Small core diameter and large numerical aperture
Option D:	Small core diameter & small numerical aperture
Q2.	In single-mode fibres, the cladding diameter must be at least
Option A:	Five times the core diameter
Option B:	Thrice the core diameter
Option C:	Ten times the core diameter
Option D:	Twice the core diameter
Q3.	The term power budgeting in optical fiber communication refers to
Option A:	the cost of cables, connectors, equipment, and installation
Option B:	the loss of power due to defective components
Option C:	the total power available minus the attenuation losses
Option D:	the comparative costs of fiber and copper installations
Q4.	Optical fiber operates on the principle of
Option A:	Total internal reflection

Option B:	Tyndall effect
Option C:	Photo-electric effect
Option D:	Laser technology
Q5.	A_____ fiber is referred to as non-dispersive shifted fiber
Option A:	Coaxial cables
Option B:	Standard single mode fibers
Option C:	Standard multimode fibers
Option D:	Non zero dispersion shifted fibers
Q6.	The responsivity of a light detector is _____
Option A:	the time required for the signal to go from 10 to 90 percent of maximum amplitude
Option B:	the ratio of the diode output current to optical input power
Option C:	the ratio of output current to output power
Option D:	the ratio of output current to input current
Q7.	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
Q8.	_____ converts the received optical signal into an electrical signal.
Option A:	Detector
Option B:	Attenuator
Option C:	Laser
Option D:	LED

Q9.	The fraction of incident photons generated by photodiode of electrons generated collected at detector is known as _____
Option A:	Quantum efficiency
Option B:	Absorption coefficient
Option C:	Responsivity
Option D:	Anger recombination
Q10.	The behavior of laser occurring when current is increased above threshold particularly is?
Option A:	Mode hopping
Option B:	Auger recombination
Option C:	Frequency chirping
Option D:	Noise
Q11.	In order to access for end-to-end networking of optical channels to transparently convey information, the _____ is employed in the OTN structure.
Option A:	Presentation layer
Option B:	Session layer
Option C:	OPU
Option D:	OCh layer
Q12.	An advanced type of reconfigurable OTN is referred to as an _____
Option A:	Automatic OTN
Option B:	Auto-generated photon
Option C:	Automatically switched optical network
Option D:	Optical reimbursement

Q13.	The mapping of IP frames in SDH/SONET is accomplished in _____ stages.
Option A:	Four
Option B:	Two
Option C:	Three
Option D:	One
Q14.	WDM is an analog multiplexing technique to combine
Option A:	Magnetic Signals
Option B:	Electromagnetic Signals
Option C:	Digital Signals
Option D:	Optical Signals
Q15.	DWDM stands for:
Option A:	Digital Wavelength-Division Modulation
Option B:	Dense Wavelength-Division Modulation
Option C:	Double Wavelength-Division Modulation
Option D:	Dense Wavelength-Division Multiplexing
Q16.	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
Q17.	_____ is a multi-functional element of optical network.
Option A:	Hop

Option B:	Optical node
Option C:	Wavelength
Option D:	Optical attenuation
Q18.	When considering source-to-fiber coupling efficiencies, the _____ is an important parameter than total output power.
Option A:	Numerical aperture
Option B:	Radiance of an optical source
Option C:	Coupling efficiency
Option D:	Angular power distribution
Q19.	It is a device that distributes light from a main fiber into one or more branch fibers.
Option A:	Optical fiber coupler
Option B:	Optical fiber splice
Option C:	Optical fiber connector
Option D:	Optical isolator
Q20.	A _____ coupler comprises of a number of cascaded stages, each incorporating three or four-port FBT couplers to obtain a multiport output.
Option A:	Star
Option B:	Ladder
Option C:	WDM
Option D:	Three-port

Q2	Solve any Two. (10 Marks each) 20 Marks
A	Draw and explain the test-setup for measuring the chromatic dispersion.
B	Define the terms numerical aperture, critical angle, propagating modes and microbands in the context of an optical fiber.
C	Draw and explain block diagram of optical receivers along with various noise resources and relevant equations.

Q3	Solve any Two. (10 Marks each)	20 Marks
A	Why link power budget is important in the optical fibre communication system. Explain with an example.	
B	Describe the different types of preamplifiers used in optical receivers.	
C	Describe the intermodal delay and intramodal dispersion in optical fibre.	

University of Mumbai
Examination 2021 under Cluster 06
(Lead College: Vidyavardhini's College of Engg Tech)
Examinations Commencing from 15th June 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

===

Q.1

Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	C
Q3.	C
Q4	A
Q5	B
Q6	B
Q7	A
Q8.	A
Q9.	A
Q10.	A
Q11.	D
Q12.	C
Q13.	C
Q14.	D
Q15.	D

Q16.	A
Q17.	B
Q18.	B
Q19.	A
Q20.	A

Q2 & 3   N. A.