Watumull Institute of Electronics Engineering and Computer Technology
Program: EXTC
Curriculum Scheme: Rev2016
Examination: TE Semester V
Course Name: Microprocessor Sample Paper Jan 2021 Exam
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 following is not a feature of 8086
Option A:	16 bit data bus
Option B:	16 bit address bus
Option C:	6 byte queue
Option D:	16 bit registers
2.	CS=2000H,IP=0045H,calculate Physical address
Option A:	20004H
Option B:	20045H
Option C:	20450H
Option D:	20000H
3.	In the instruction ADC(Add with carry) the carry added is of
Option A:	the Current operation
Option B:	the next operation
Option C:	is of the previous operation
Option D:	is zero
4.	The following is not an addressing mode of 8086
Option A:	Immediate
Option B:	Intermediate
Option C:	Implied
Option D:	Indirect
5.	Which of the statement is incorrect in the given program:
Option A:	MOV AL,05H
Option B:	ROL AL,02H
Option C:	MOV CL,02H
Option D:	ROL AL,CL
6.	When both A0 and BHE'(active low) signals are set then 8086
Option A:	Transfers upper byte from odd address
Option B:	Does no operation
Option C:	Transfers whole word
Option D:	Transfers lower byte from even address
7.	In maximum mode of 8086 ALE is generated by
Option A:	8282 Latch
Option B:	8284 Clock Generator
Option C:	8286 Transceiver

Option D:	8288 Bus Controller
8.	Which is not a function of the execution unit
Option A:	fetches the instruction
Option B:	decodes the instruction
Option C:	generates operands if necessary
Option D:	Perform the operation specified by the instruction on operands
9.	When the µp is interrupted it stops current execution and calls subroutine to serve that particular interrupt This is called
Option A:	Interrupt Service Routine
Option B:	Subroutine
Option C:	Interrupt Routine
Option D:	Internal Service Routine
10.	When 8086 responds to an interrupt request it will 1st push_____ on the stack
Option A:	Code segment Register contents
Option B:	Flag Register
Option C:	Instruction pointer contents
Option D:	Extra segment contents
11.	In 8255 port c can be used for input/output data transfer in which mode
Option A:	Mode 0
Option B:	Mode 1
Option C:	Mode 2
Option D:	Mode 3
12.	Calculate BSR to set PC5
Option A:	09H
Option B:	07H
Option C:	06H
Option D:	08H
13.	In 8254 if we want to initialize counter 1 in mode 0,with a count of 7655H what will be the Control word
Option A:	50H
Option B:	60H
Option C:	70H
Option D:	80H
14.	DMA controller is used to transfer data between
Option A:	Processor and memory
Option B:	Memory and I/O
Option C:	Processor and I/O
Option D:	Memory and Memory
15.	In 8086 Memory design if the chip size is 32kb the number of address lines required are
Option A:	13
Option B:	14

Option C:	15
Option D:	16
16.	During interfacing of 8259 and 8086 if A1 bit is zero,it means we select
Option A:	ICW1
Option B:	ICW2
Option C:	Both the control words
Option D:	No word is selected
17.	The unit that executes all the numeric processor instructions in 8087 is
Option A:	ALU
Option B:	Control Unit
Option C:	Numeric Controller
Option D:	Numeric Extension Unit
18.	When 8087 is initialized, tag word = FFFF (all 1s) means
Option A:	All registers are empty
Option B:	All registers are full
Option C:	All registers have value zero
Option D:	The registers store some special number
19.	INT 3 is used for
Option A:	Single Steeping
Option B:	NMI
Option C:	Overflow
Option D:	Breakpoint
20.	In 8254 if we want to read the counter when the counting is in process in which method do we have to inhibit the counter
Option A:	Read Back Command
Option B:	Counter Latch Command
Option C:	simple read command
Option D:	Simple write command

Q2)	**Solve any Two Questions out of Three** **10 marks each**
A	Write a program to find strength of Even and Odd numbers among the series of 10 numbers.
B	Draw and Explain the interfacing of Math co-processor with 8086.
C	Explain various operating modes of 8255 PPI

Q3)	**Solve any Two Questions out of Three** **10 marks each**

A	Draw and explain the block diagram of microprocessor based system in detail
B	Explain Minimum mode of 8086. Draw timing diagram for Read operation in minimum mode
C	Design an 8086 based system with 32K ROM (2 chips of 16K). Draw the memory map of the system designed.

University of Mumbai

Examination 2020 under cluster __ (Lead College: _____)

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

Program: **Electronics and Telecommunication**

Curriculum Scheme: Rev 2016

Examination: TE Semester V

Course Code: ECCDLO5014 and Course Name: Data Compression & Encryption

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.	What is data compression?
Option A:	To convert one file to another.
Option B:	To reduce the size of data to save space.
Option C:	To minimize the time taken for the file to be downloaded.
Option D:	To compress something by pressing it very hard.
2.	In adaptive Huffman coding, fixed code is represented by the formula
Option A:	1 <= k< =2r
Option B:	1 < k
Option C:	k = >2r
Option D:	k > r
3.	Which of the following is not a measure of performance?
Option A:	Compression Ratio.
Option B:	Fidelity.
Option C:	Redundancy.
Option D:	Spatial compression.
4.	A string is given as {AABBCBAACA}. The initial dictionary is A = 1, B = 2, C = 3. Encoding the string by LZW method gives the code as.
Option A:	1, 2, 1, 2, 3, 2, 4, 6
Option B:	1, 1, 2, 2, 3, 2, 4, 3.
Option C:	1, 1, 2, 1, 3, 2, 4, 5.
Option D:	1, 2, 1, 2, 2, 3, 4, 5.
5.	Average information per message is 2.2209 bits / message and average codeword length is 2.3 bits / message. The efficiency calculated is
Option A:	95.66%
Option B:	97.59%
Option C:	96.56%
Option D:	98.01%
6.	In discrete wavelet transform the image is divided into following number of blocks.

Option A:	2
Option B:	4
Option C:	6
Option D:	8
7.	In JPEG 2000, the process of zero padding occurs at the stage of
Option A:	Level shifter
Option B:	Quantizer
Option C:	Zig zag encoder
Option D:	Segment generator.
8.	MPEG 2 is used for
Option A:	High quality DVD videos.
Option B:	CD-ROM quality videos
Option C:	Object oriented video compression.
Option D:	Broadcast TV formats.
9.	Aspect ratio of a conventional or standard TV is
Option A:	4 / 3
Option B:	3 / 4
Option C:	16 / 9
Option D:	5 / 4
10.	The tag in an audio file is a part of the file which contains
Option A:	Microdata
Option B:	Metadata
Option C:	Macrodata
Option D:	Minidata
11.	Which of the following is not an active cryptographic attack
Option A:	Replay attack.
Option B:	Denial of service.
Option C:	Modification of messages.
Option D:	Release of message.
12.	In asymmetric key cryptography, the private key is kept by _____
Option A:	sender
Option B:	receiver
Option C:	sender and receiver
Option D:	all the connected devices to the network
13.	Advance Data encryption (AES) does not support which key length?
Option A:	128 bits.
Option B:	164 bits.
Option C:	192 bits.
Option D:	256 bits.
14.	For RSA algorithm, ciphertext is represented as

Option A:	C = P^e mod n where P < n
Option B:	C = P_e mod n where P< n
Option C:	C = P (e mod n) where P < n
Option D:	C = P (e mod n) where P > n
15.	What is the Euler number of 20?
Option A:	8
Option B:	10
Option C:	13
Option D:	6
16.	Which of the following is not a goal of key distribution
Option A:	To ensure that it is not modified during transmission
Option B:	To ensure that the keys are distributed to intended recipients only.
Option C:	To ensure that the keys achieving confidentiality of recipient.
Option D:	To ensure that transmission mechanism is secure and intact.
17.	MAC stands for
Option A:	Media Access Control
Option B:	Message Authentication Code.
Option C:	Multiple Access Control.
Option D:	Message Authorization Code.
18.	The certificate _ request message in SSL alert protocol format includes one of the following parameters
Option A:	Certificate _ extension
Option B:	Certificate _ creation
Option C:	Certificate _ exchange
Option D:	Certificate _ type
19.	Kerberos provides authentication by issuing
Option A:	Passwords
Option B:	Ticket
Option C:	Digital signature
Option D:	Face recognition
20.	Which is not an objective of network security?
Option A:	Identification
Option B:	Authentication
Option C:	Access control
Option D:	Lock

Q2.	
A	**Solve any Two** **5 marks each**
i.	What are the various models used for data compression?
ii.	Explain the concept of CALIC.
iii.	What are the main features and limitations of MPEG – 1?
B	**Solve any One** **10 marks each**
i.	A source K = [a, b, c, d] has probabilities [0.7, 0.05, 0.15, 0.1] respectively. Generate the tag for the sequence [a c d b a] using arithmetic coding.
ii.	State the difference between JPEG and JPEG 2000.State the applications advantages and limitations of JPEG 2000, Name the file name extension.
Q3.	
A	**Solve any Two** **5 marks each**
i.	Explain Vernam cipher with a suitable example.
ii.	Explain Chinese Remainder theorem (CRT) with example.
iii.	Explain the various steps involved in PGP.
B	**Solve any One** **10 marks each**
i.	Explain the working of standard. DES with suitable diagram.
ii.	Explain Intrusion detection system.

University of Mumbai Examination 2020 under cluster ---------- (Lead college----------)

Program :EXTC

Curriculum Scheme:R2016

Examination:T.E

Semester: V

Course Code: ECC 502 and course Name : Digital Communication

Time : 2 Hour

Max Marks : 80

Q1	Choose the correct option for the following questions . All the questions are compulsory and carry equal marks
1	If A and B are two mutually exclusive events in a sample space with probabilities P(A) and P(B) respectively,then joint probability of of A and B P(A+B) is given by
A	P(A)- P(B)
B	P(A) +P(B)
C	P(A).P(B)
D	P(A)/P(B)
2	Which of the statement is not true for probability density function (pdf)
A	pdf is bounded between 0 and1
B	pdf is a nonnegative number
C	pdf is having value between 0 and infinity
D	Sum of all probability density function is unity
3	The mean and variance of gaussian probability density function given below

	within the range from -infinity to +infinity ,f(x) = $\frac{1}{\sqrt{(2\pi)}}$e$-(0.5x2)$
A	Mean =1 : variance =1
B	Mean= 0 ; Variance = 1
C	Mean = 1 ; Variance = 0
D	Mean = 0 ; Variance = 0
4	The information content of a source with four equiprobable symbols is given by
A	0
B	1
C	2
D	3
5	If a source produces 4 symbols with probability 0.125,0.125,0.375 and 0.375 with the corresponding code '00','01'.' 10'and '11' coding efficiency is given by (approx)
A	79.8
B	90.5
C	95.2
D	98.9
6	If the minimum distance of a linear block code is' 8' then the error correction capability of the code is is given by
A	3
B	4
C	7

D	2
7	Given a source of M equally likely messages with M>>1, which is generating information at a rate R. given a channel capacity C, then there exists a coding technique such that the output of the source may be transmitted over the channel with arbitarili low probability of error in the received message if-----
A	R$\geq C$
B	R$\leq C$
C	RC =1
D	R =C
8	Which of the following statement is wrong regarding syndrome decoding
A	The syndrome will zero if the received code word is valid code word
B	The syndrome will depend on the error pattern and not on the transmitted code word
C	All error pattern that differ at most by a code wordhave the same syndrome
D	The syndrome ‘s’ is the sum of the rows of matrix H corresponding to error location
9	Which of the statement is not a correct statement as far as cyclic code is concerned
A	An (n,k) cyclic code is having a generator polynomial of degree (n-k)
B	A (n,k) cyclic code is having a generator polynomial which is a factor of pn + 1
C	The parity polynomial is also a factor of pn + 1
D	The parity polynomial is also of degree equal to n-k
10	The systematic code for a (7,4) cyclic code with generator polynomial g(p)= p3 +p +1 for a message ‘m’ = [1100] given by
A	1100100

B	1100110
C	1100010
D	1100011
11	The convolution encoder with (n,k,K) will have a code rate equal to
A	k/n
B	n/k
C	1/n
D	k/K
12	The tree diagram is used to represent the encoder for
A	Block code
B	Hamming Code
C	Convolution code
D	Cyclic code
13	The measure of the amount of redundancy in the channel code is given by
A	Code length
B	Code weight
C	Code rate
D	Minimum distance
14	Vitterbi algorithm is used for decoding
A	Block codes
B	Convolution codes

C	Cyclic codes
D	Hamming codes
15	Intersymbol interference (ISI) is due to
A	Imperfections in the overall frequency response of the system
B	Additive white gaussian noise
C	Shape of the input waveform
D	The amplitude of the waveform
16	In the eye diagram ------- defines the time interval over which the received wave can be sampled without error from intersymbol interference
A	Height of the eye
B	Width of the eye
C	Rate of the closure of eye
D	Bit interval
17	The sensitivity of the system to the timing error is determined by
A	Height of the eye
B	Width of the eye
C	Rate of the closure of eye
D	Bit interval
18	Margin over noise is determined by
A	Height of the eye
B	Width of the eye
C	Rate of the closure of eye

D	Bit interval
19	If Fb is the bandwidth of the input baseband signal then band width of the Bpsk signal will be
A	Fb
B	2Fb
C	1.5 Fb
D	2,5 Fb
20	Which of the statement bis not correct as far as digital bandpass modulation is concerned
A	In BPSK symbol duration is same as bit duration
B	In QPSK symbol interval is equal to twice bit interval
C	in QPSK symbol interval is equal to half the bit interval
D	In DEPSK the bit error occur in pairs
Q2	Solve any Four out of six 5 mark each
A	Find the mean and variance of random variable X which is uniformly distributed between a and b where a< b
,B	The five source symbols of of a discr ete memoryless source are having probabilities given as 0.4 , 0.2 , 0.2 , 0.1 , 0.1. Using Huffman coding find the binary codeword for the source symbols, find the coding efficiency also
C	If the discrete memoryless source having eight symbols having probabilities as 0.5 , 0.125 , 0.125 , 0.0625 ,0.0625 ,0.0625 , 0.03125 , 0.03125 . Using Shannon Fano coding find the binary source code and coding efficiency
D	Consider a (7,4) systematic block code expressed as Cm = [$xm1$, $xm2$,$xm3$,$xm4$,$cm5$,$cm6$,$cm7$] where [xmj] represent the four information bits and [cmj] represent the three parity check bits given by $c_{m5}= x_{m1} + x_{m2} +x_{m3}$, $c_{m6}= x_{m2} + x_{m3} +x_{m4}$, $c_{m\,7}= x_{m1} + x_{m2} +x_{m4}$ Find the generator matrix and parity check matrix for the same. Find minimum

	weight of the code
E	For the (7,4) cyclic code with generator polynomial given by g(p) = p2 +p + 1, Find the code corresponding to message 1011
F	Consider the rate ⅓ convolutional encoder with generators given by g1=[1 0 0] g2 = [1 0 1] ang g3= [111} Draw the state diagram for the encoder
Q3	Solve any two out of three 10 mark each
A	Solve any two out of three 05 mark each
i	Draw the block diagram for the binary FSK Transmitter and receiver and explain briefly the operation
ii	Draw the block diagram of QPSK Transmitter and receiver and explain briefly its operation
iii	Compare ASK, PSK And FSK Modulation Scheme in terms ,complexity, error probability ,band width efficiency etc
B	Solve two out of three 05 mark each
i	Draw the binary data formats NRZ unipolar format, NRZ polar format,RZ polar format, Manchester coding for the data sequence 100110011
ii	Write a short note on eye pattern
ii	Draw the block diagram of an integrate and dump filter and briefly explain its operation

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University of Mumbai

Examination 2020 under cluster __ (Lead College: _____)

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: **__BE_____**

Curriculum Scheme: Rev2019

Examinatio-TESemester V

Course Code: _____ and Course Name: _DTSP___

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.	The DFT of sequence x(n)={1,1,0,0} is
Option A:	{ 4, 1+i , 0, 1+i }
Option B:	{ 4, 1-i , 0, 1-i }
Option C:	{ 4, 1-i , 0, 0}
Option D:	{ 0, 1-i , 2, 1+i }
2.	For N point DFT, number of complex additions and number of complex multiplications required are
Option A:	N^2-N , N^2
Option B:	N^2-1 , N^2
Option C:	N^2-N , N
Option D:	N^2-2N , N^2
3.	Multiplication of two sequences in frequency domain is
Option A:	Linear convolution
Option B:	Circular convolution
Option C:	Linearity
Option D:	Symmetry
4.	The condition of symmetry of impulse response of FIR system is
Option A:	h(n)=h(N-1)
Option B:	h(n)=h(N+1)
Option C:	h(n)=h(N-n)
Option D:	h(n)=h(N-1-n)
5.	Given that $W=e^{-i(2\pi/N)}$, where $N=3$. Then $F=W^N$ can be computed as F=
Option A:	0
Option B:	1
Option C:	-1
Option D:	∞

6.	A four point sequence x(n)={1,2,3,4) has DFT X(k) ,Find signal values which has DFT X(k-1).
Option A:	{1,-2j,-3, 4j}
Option B:	{-2j,1,-3,-4j}
Option C:	{-3,-4j,-2j,1}
Option D:	{-4j,1,-3,2j}
7.	For an analog LTI system to be stable, where should the poles of system function H(s) lie?
Option A:	Right half of s-plane
Option B:	Left half of s-plane
Option C:	On the imaginary axis
Option D:	At origin
8.	Find circular convolution of sequences x(n)={1, 2, 3, 1} and h(n)=(4, 3,2, 2)
Option A:	{17,19,19,22}
Option B:	{17,19,22,19}
Option C:	{19,17,19,22}
Option D:	{17,19,19,19}
9.	Which window is called as 'Raised –cosine window'
Option A:	Hanning
Option B:	Hamming
Option C:	Barlett
Option D:	Blackman
10.	Circular convolution of two sequences in time domain is equivalent to
Option A:	Multiplication of two signals in frequency domain
Option B:	Addition of two signals in frequency domain
Option C:	Subtraction of two signals in frequency domain
Option D:	Division of two signals in frequency domain
11.	DFT is applied to
Option A:	Infinite sequences
Option B:	Finite discrete sequences
Option C:	Continuous infinite signals
Option D:	Continuous finite sequences
12.	$W_N^{k+N} = W_N^k$ shows which property of twiddle factor
Option A:	Symmetric
Option B:	Anti-symmetric
Option C:	Non-periodic
Option D:	Periodic
13.	Prewarping of critical frequencies is done in

Option A:	Bilinear transformation method
Option B:	Impulse Invariant method
Option C:	Windowing Method
Option D:	Frequency sampling method
14.	If the Nyquist rate for x_a (t) is Ω_s what is the Nyquist rate for x_a (2t)
Option A:	$2\Omega_s$
Option B:	Ω_s
Option C:	$\Omega_s/2$
Option D:	$\Omega_s/4$
15.	For high bandwidth signal processing application……..can provide multiple MAC's to achieve the desired throughput
Option A:	FPGA Technology
Option B:	Nano Technology
Option C:	MEMS
Option D:	SEMS
16.	A quantizer operates at a sampling frequency of 16 kHz. What is its Nyquist limit?
Option A:	4 kHz
Option B:	8 kHz
Option C:	16 kHz
Option D:	32 kHz
17.	One of the zeros of causal linear phase FIR filter lines at z = $\frac{1}{2}$ .Find the location of other zero
Option A:	Z=0
Option B:	Z=1
Option C:	Z=2
Option D:	Z=3
18.	The linear phase FIR filter is identified by impulse response if it satisfied
Option A:	h(n) =h(N-1-n)
Option B:	h(n) =h(N-1+n)
Option C:	h(n) =h(N+1-n)
Option D:	h(n) =h(N+1+n)
19.	What is filter ?
Option A:	Amplitude selective circuit
Option B:	Frequency selective circuit
Option C:	Frequency Damping circuit
Option D:	Amplitude Damping circuit
20.	As the order of filter is increased ,the response of filter is
Option A:	close to ideal response
Option B:	away from ideal response
Option C:	in middle of ideal response

Option D:	All the above

Q2 . **(20 Marks Each)**	
A	**Solve any Two** **5 marks each**
i.	For the analog filter transfer function $H(s) = \frac{3}{(s+2)(s+3)}$ .Determine H(z) with sampling period T=0.1 sec using Impulse Invariant method
ii.	Find linear convolution using overlap-add method of the following sequences: x(n)={1,2,-1,2,3,-2,-3,-1,1,1,2,-1} h(n)={1,2,3}
iii.	If x(n)={1,2,3,2} and h(n)={1,0,2,0}.Find linear convolution using circular convolution.
B	**Solve any One** **10 marks each**
i.	Using bilinear Transformation ,design a butterworth filter which satisfy the following condition: $0.8 \leq \lvert H(e^{jw}) \rvert \leq 1$ $0 \leq w \leq 0.2\pi$ $\lvert H(e^{jw}) \rvert \leq 0.2$ $0.6 \leq w \leq \pi$
ii.	Find 8 point DFT of x (n) ={1,2,1,2,1,2,1,2 }using DITFFT Algorithms.

Q3. **(20 Marks Each)**	
A	**Solve any Two** **5 marks each**
i.	Derive properties 1) circular time shift property 2) circular frequency property
ii.	If H(Z)= 1- 5/2(Z^-1) -2/3 (Z^-2) .The value of Z1 and Z2
iii.	If H(z) = (Z-1/2)(Z-1/4)/(Z-1/3)(Z-1/5) .Determine stability and phase of filter.
B	**Solve any One** **10 marks each**
i.	Design a linear phase FIR low pass filter of length seventh with cutoff frequency 1rad/sec using rectangular window.
ii.	Using frequency sampling method, design a band pass filter with the following specifications. Sampling frequency=8000Hz Cutoff frequencies F_{c1}=1000Hz ,F_{c2}=3000Hz Determine the filter coefficients for N=7

Program: T.E **EXTC SAMPLE PAPER** ICE
Curriculum Scheme: Rev2019
Examination: Semester V
Course Code: ECC503 and Course Name: Electromagnetic Engineering
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.	If the dielectric material filled between the round plates of a microstrip line has a relative permittivity of 2.4, then the phase velocity is:
Option A:	$1.3*10^8$ m/s
Option B:	$1.9*10^8$ m/s
Option C:	$3*10^8$ m/s
Option D:	$2*10^8$ m/s
2.	Which mode of propagation is supported by a strip line?
Option A:	TEM mode
Option B:	TM mode
Option C:	TE mode
Option D:	TMM mode
3.	A (100-j 75) Ω load is connected to a co-axial cable of characteristic impedance 75 Ω and 12 GHz. In order to obtain best matching, which one of following will have to be connected?
Option A:	A short-circuited stub at load
Option B:	Inductance at load
Option C:	A capacitance at a specific distance at load
Option D:	A short-circuited is at some specific distance from load
4.	Which of following statement is correct? Short-circuited stubs are preferred to open circuited stub because the latter are
Option A:	More difficult to make and connect
Option B:	Made of transmission line with a different characteristic impedance
Option C:	Liable to radiate energy
Option D:	Incapable of giving full range of frequencies
5.	In the transmission line the reflection coefficient at the load end is given by $0.3\ e^{-j\ 30}$. What is reflection coefficient at a distance of 0.1 wavelength towards source?
Option A:	$0.3\ e^{-+j\ 30}$.
Option B:	$0.3\ e^{-+j\ 102}$
Option C:	$0.3\ e^{-+j\ 25}$
Option D:	$0.3\ e^{-j\ 66}$

6.	Which of following statement is correct? Short-circuited stubs are preferred to open circuited stub because the latter are
Option A:	More difficult to make and connect
Option B:	Made of transmission line with a different characteristic impedance
Option C:	Liable to radiate energy
Option D:	Incapable of giving full range of frequencies
7.	A generator of 50 ohm internet impedance an operating at 1GHz feeds a 75 ohm load via coaxial line of characteristic impedance 50 ohm . The VSWR on the feedline is
Option A:	0.5
Option B:	1.5
Option C:	2.5
Option D:	1.75
8.	What is the characteristic impedance Z_0 of a line having resistance R, inductance L, capacitance C and conductance G?
Option A:	$\sqrt{(R} + j\omega L)/(G + j\omega C)$
Option B:	$\sqrt{(G} + j\omega C)/(R + j\omega L)$
Option C:	R+ jωL-G/ωC
Option D:	$\mathrm{R} + \mathrm{j}\omega\mathrm{L} + \mathrm{G}/\omega C$
9.	Which of the following is characteristic impedance of lossless transmission line?
Option A:	√(R/G)
Option B:	√(L/G)
Option C:	√(L/C)
Option D:	√(R/C)
10.	A quarter wave impedance transformer is terminated by a short circuit. What would its input impedance be equal to?
Option A:	The line characteristic impedance
Option B:	Zero
Option C:	infinity
Option D:	Square root of the line characteristic impedance.
11.	For an electromagnetic wave incident on a conducting medium the depth of penetration
Option A:	Is directly proportional to the attenuation constant.
Option B:	Is inversely proportional to the attenuation constant.
Option C:	Has a logarithmic relationship with the attenuation constant
Option D:	Is independent of the attenuation constant.
12.	Continuity equation for time varying field is given by
Option A:	$\nabla \times J = 0$
Option B:	$\nabla . J = 0$
Option C:	$\nabla \times J = -\partial\rho/\partial t$

Option D:	$\nabla \times J = \partial\rho/\partial t$
13.	Faraday's law in differential form for time varying fields is
Option A:	$\nabla \times E = 0$
Option B:	$\nabla \times E = -\partial B/\partial t$
Option C:	$\nabla \times E = -B$
Option D:	$\nabla \times E = \partial B/\partial t$
14.	Modified form of Ampere's Law in differential form is
Option A:	$\nabla \times H = J$
Option B:	$\nabla . H = J + \partial D/\partial t$
Option C:	$\nabla \times H = \partial D/\partial t$
Option D:	$\nabla \times H = J + \partial D/\partial t$
15.	The electric field component of a wave in free space is given by $E=50\sin(10^7 t+kz)\,\hat{j}$. $\hat{j}$ is unit vector. Which one is correct statement that can be drawn from expression?
Option A:	The wave propagates along Y- axis
Option B:	The wavelength is 188.5m
Option C:	The wave number k=0.33 rad/m
Option D:	The wave attenuates as it travels
16.	A solid cylindrical conductor of radius R has a uniform current density. The magnetic field H inside the conductor at a distance r form axis of conductor is
Option A:	$1/2\pi r$
Option B:	$1/4\pi r$
Option C:	$I_r /2\pi r^2$
Option D:	$I_r /4\ \pi r^2$
17.	Two metal rings 1 and 2 are placed in uniform magnetic field which is decreasing with time with their planes perpendicular to the field. If the rings are identical except that ring 2 has a thin air gap in it, which of following statement is correct?
Option A:	No E.M.F is induced in ring 1
Option B:	An E.M.F is induced in both rings
Option C:	Equal joule heating occurs in both the rings
Option D:	Joule heating does not occur in either rings
18.	Which one of the following concepts is used to find the expression of radiated E and H field due to a magnetic current element?
Option A:	Concept of vector magnetic potential
Option B:	Concept of scalar electric potential
Option C:	Concept of scalar magnetic potential
Option D:	Concept of vector electric potential
19.	What is expression for capacitance of a solid infinitely conducting solid sphere of radius R in free space.
Option A:	$2\pi\varepsilon oR$

Option B:	$4\pi\varepsilon oR$
Option C:	$8\pi\varepsilon oR$
Option D:	$0.5\pi\varepsilon oR$
20.	A parallel plate capacitor of 5 PF capacitance has a charge of 0.1μC on its plates. What is the energy stored in capacitor?
Option A:	1mJ
Option B:	1μJ
Option C:	1nJ
Option D:	1pJ

Q2 .	**Solve any Two Questions out of Three** **10 marks each**
A	*Derive maxwell equation for time varying field*
B	*Derive boundary conditions for electric and magnetic field at dielectric-dielectric boundary*
C	*Four like charges are placed of 30 micro coulomb are placed at four corners or square, the diagonal of which measures 8 m. Find force on 150 micro coulomb charge located 3 m above center of square.*

Q3 .	**Solve any Two Questions out of Three** **10 marks each**
A	*Consider square loop of length 'a' through which current I is passing in clockwise direction .Find H at center of square loop*
B	*A normally incident electric filed has amplitude E=1 V/m in free space just outside the sea water in which relative permeability=1,relative permittivity=80,signma=2.5 S/m For a frequency of 30Mhz at what depth the amplitude of E=1mV/m*
C	*Find the flux density at point (6,4,-5) Caused by:* *(a) A point charge of 20 milli Coulomb at origin* *(b) A uniform line charge of 20 micro coulomb /m on z axix* *(c) A uniform line charge density of 60 micro coulomb /m.m at plane x=8*