

Comprehensive Question Preview

Questions	Choices
As per the uncertainty principle, $\Delta x \Delta p$ equal to	1. $h/2\pi$ 2. $h/4\pi$ 3. λ 4. Zero
Perturbation theory needs to have exact solution for	1. H 2. H^+ 3. He^+ 4. He
What is the physical significance of Planck's constant?	1. Orthogonality 2. Quantization 3. Angular Momentum 4. Normalization
1 eV of energy is equivalent to a photon with a wavelength about	1. 30 Å 2. 1200 Å 3. 12000 Å 4. 300 Å
Determine the order of the C_{2v} point group	1. E, C_3 , $3\sigma_v$ 2. E, C_2 , $2\sigma_v$ 3. E, C_2 , i, σ_h

Questions	Choices
	4. $E, S_4, 3C_2, 2\sigma_d$
Identify the point group to which the staggered ferrocene belongs	1. D_{5h} 2. C_{5h} 3. D_{5d} 4. C_{5d}
Both NMR and NQR spectra are observed in ----- region.	1. Radio-frequency 2. Microwave 3. X-ray 4. UV-Vis
The ESR spectrum of anthracene radical anion consists of	1. 75 2. 45 3. 60 4. 0
Which one of the following diatomic molecule does not give a rotational spectrum?	1. CO 2. HCl 3. HF 4. H_2
A compound shows a 1H NMR peak at 240 Hz downfield from the TMS peak in a spectrometer operating at 60 MHz. The chemical shift (in ppm) is	1. 2 2. 1 3.

Questions	Choices
	<p>4</p> <p>4.</p> <p>3</p>
If force constant, k , of a diatomic simple harmonic oscillator (SHO) is equal to	<p>1. $4\pi^2 c^2 \omega_e \mu$</p> <p>2. $4\pi^2 c^2 \omega_e \mu^2$</p> <p>3. $4\pi c^2 \omega_e \mu^2$</p> <p>4. $16\pi^2 c^2 \omega_e \mu^2$</p>
Which of the following is a multilayer adsorption isotherm model?	<p>1. Langmuir</p> <p>2. Freundlich</p> <p>3. BET</p> <p>4. Gibb's adsorption isotherm</p>
Frank Condon principle is used for the interpretation of the intensity of	<p>1. Pure rotational spectra</p> <p>2. Vibrational spectra</p> <p>3. Raman spectra</p> <p>4. Microwave spectra</p>
Polydispersity index of polymer is	<p>1. M_w/M_n</p> <p>2. M_n/M_w</p> <p>3. M_n+M_w</p> <p>4. M_n-M_w</p>
Optical properties of colloids can be explained by	<p>1. Electrophoresis</p> <p>2.</p>

Questions	Choices
	<p>Tyndall Effect</p> <p>3. Electro-Osmosis</p> <p>4. Brownian movement</p>
In a chemical reaction, a catalyst changes the	<p>1. Potential energy of the products</p> <p>2. Heat of the reaction</p> <p>3. Potential energy of the reactants</p> <p>4. Activation energy</p>
A crystal has the lattice parameters $a \neq b \neq c$ and $\alpha = \beta = \gamma = 90^\circ$, The crystal system is	<p>1. Tetragonal</p> <p>2. Monoclinic</p> <p>3. Orthorhombic</p> <p>4. Cubic</p>
Neel temperature is associated with ----- solids	<p>1. Diamagnetic</p> <p>2. Paramagnetic</p> <p>3. Ferromagnetic</p> <p>4. Anti-ferromagnetic</p>
Bragg's law in X-ray diffraction assumes ----- of X-rays from successive planes of atoms	<p>1. Reflection</p> <p>2. Transmission</p> <p>3. Absorption</p> <p>4. Rotation</p>

Questions	Choices
According to MO theory for the atomic species C_2	1. bond order is zero and it is paramagnetic 2. bond order is zero and it is diamagnetic 3. bond order is two and it is paramagnetic 4. bond order is two and it is diamagnetic

The overall rate of the following series of reactions is $A \rightarrow B \quad k_1 = 10 \text{ sec}^{-1}$ $B \rightarrow C \quad k_2 = 10^2 \text{ sec}^{-1}$ $C \rightarrow D \quad k_3 = 10^4 \text{ sec}^{-1}$	1. 10 2. 10^2 3. 10^4 4. 10^7
The lanthanide contraction is due to	1. Filling of $5d$ before $4f$ 2. Filling of $4d$ before $4f$ 3. Filling of $4f$ before $5d$ 4. Filling of $4f$ before $4d$
The bond order of O_2^+ is	1. 1.5 2. 2 3. 2.5 4. 3.5

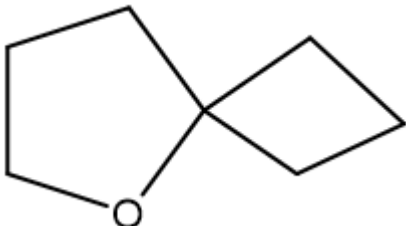
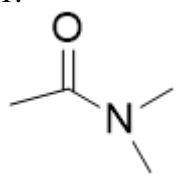
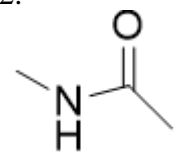
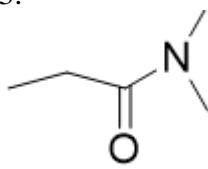
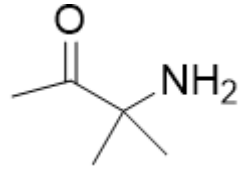
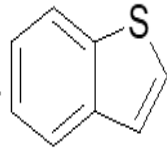
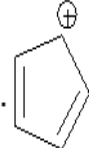


<p>If an isotope has a half-life of 30 years, how much of an original sample remains after 120 years?</p>	<p>1. 1/16</p> <p>2. 1/32</p> <p>3. 1/64</p> <p>4. 1/8</p>
<p>Electron transfer from $\text{Fe}(\text{H}_2\text{O})_6^{2+}$ to $\text{Fe}(\text{H}_2\text{O})_6^{3+}$ is likely occur <i>via</i></p>	<p>1. d-d transitions</p> <p>2. Inner sphere electron transfer</p> <p>3. $\text{S}_{\text{N}}1$ mechanism</p> <p>4. Outer sphere electron transfer</p>
<p>MnO_4^- is colored due to</p>	<p>1. Ligand to metal charge transfer</p> <p>2. Metal to ligand charge transfer</p> <p>3. <i>d-d</i> transitions</p> <p>4. <i>d-d</i> transitions and ligand to metal charge transfer</p>
<p>The spin-only magnetic moment of $\text{K}_3[\text{Fe}(\text{CN})_6]$ is</p>	<p>1. 1.73 BM</p> <p>2. 2.83 BM</p> <p>3. 4.90 BM</p> <p>4. 5.92 BM</p>
<p>The complex formed in the brown ring test for nitrates is</p>	<p>1. $[\text{Fe}(\text{H}_2\text{O})_5\text{NO}]^{3+}$</p> <p>2. $[\text{Fe}(\text{H}_2\text{O})_5\text{NO}]^{2+}$</p> <p>3. $[\text{Fe}(\text{H}_2\text{O})_4\text{NO}]^{2+}$</p> <p>4.</p>

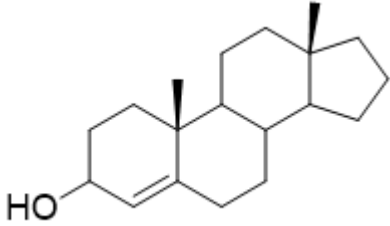
	$[\text{Fe}(\text{H}_2\text{O})_4\text{NO}]^{3+}$
The conjugate base of NH_4^+ is	1. NH_4OH 2. NH_3 3. OH^- 4. NH_2
The total number of metal-metal bonds in $\text{Ru}_3(\text{CO})_{12}$ and $\text{Co}_4(\text{CO})_{12}$ respectively, is	1. 3 and 6 2. 4 and 5 3. 0 and 4 4. 3 and 4
Ziegler-Natta catalysis is	1. Alkene hydrogenation 2. Alkene polymerization 3. Hydroformylation of alkenes 4. Alkyne metathesis
The reaction of $[\text{PtCl}_4]^{2-}$ with NH_3 gives rise to	1. $[\text{PtCl}_2(\text{NH}_3)_2]^{2-}$ 2. $\text{Trans}-[\text{PtCl}_2(\text{NH}_3)_2]$ 3. $[\text{PtCl}_2(\text{NH}_3)_2]$ 4. $\text{Cis}-[\text{PtCl}_2(\text{NH}_3)_2]$
Which one of the following will show closo structure?	1. B_5H_9 2. $\text{B}_{12}\text{H}_{12}^{2-}$ 3. B_4H_{10} 4.

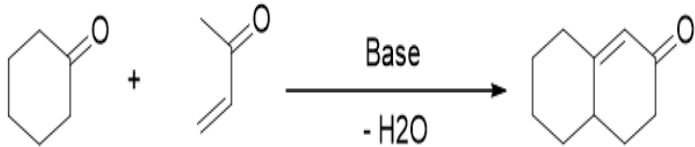
	B ₅ H ₁₁
[Co(CO) ₄] is isolobal with	1. CH ₄ 2. CH ₃ 3. CH 4. CH ₂
The ground state term symbol of V ³⁺ ion is	1. F ₂ 2. D ₀ 3. F ₄ 4. D _{5/2}
The property measured in derivative thermogravimetric (DTG) analysis is	1. Change in weight 2. Rate of change in weight 3. Heat evolved or absorbed 4. Change in temperature
Inorganic benzene is called	1. Borazine 2. Phosphazene 3. Phosphazane 4. Sulphur cluster
The red colour of oxyhaemoglobin is mainly due to the	1. d-d transition 2. Metal to ligand charge transfer transition 3.

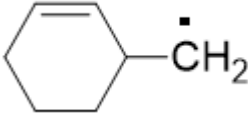
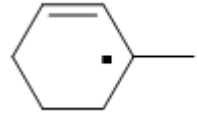
	Ligand to metal charge transfer transition 4. Intraligand π - π^* transition
The Lewis acidity of BF_3 is less than BCl_3 even though fluorine is more electronegative than chlorine. This is due to	1. Stronger 2p (B) – 2p (F) σ -bonding 2. Stronger 2p (B) – 2p (F) π -bonding 3. Stronger 2p (B) – 3p (Cl) σ -bonding 4. Stronger 2p (B) – 3p (Cl) π -bonding

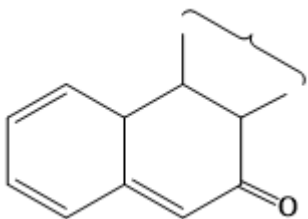
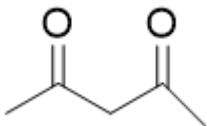
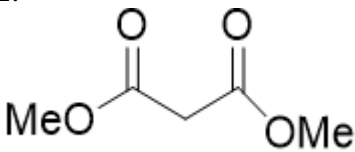
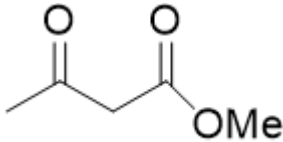
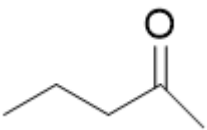
Questions	Choices
Arrange the following in increasing order of CO stretching I. $\text{V}(\text{CO})_6$ II. $\text{Cr}(\text{CO})_6$ III. $[\text{Mn}(\text{CO})_6]^+$ IV. CO	1. $\text{I} > \text{II} > \text{III} > \text{IV}$ 2. $\text{II} < \text{I} < \text{III} < \text{IV}$ 3. $\text{I} < \text{II} < \text{III} < \text{IV}$ 4. $\text{III} < \text{I} < \text{II} < \text{IV}$
Among the following diatomic molecules, the one that shows EPR signal is	1. Li_2 2. B_2 3. C_2 4. N_2
The correct IUPAC name of the spiro compound is	1. 1-oxaspiro [4, 3] octane 2. 5-oxaspiro [4, 3] octane 3.

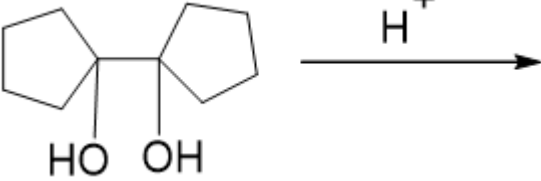
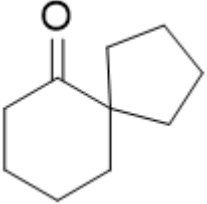
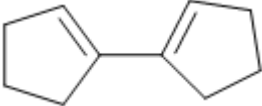
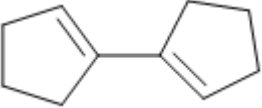
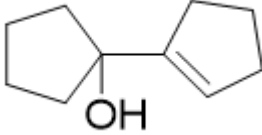
Questions	Choices
	<p>1-oxaspiro [3, 4] octane</p> <p>4.</p> <p>5-oxaspiro [3, 4] octane</p>
<p>Formula of N,N-dimethylethanamide is</p>	<p>1.</p>  <p>ANS=1</p> <p>2.</p>  <p>3.</p>  <p>4.</p> 
<p>Which of the following compound is not aromatic?</p> <p>A. </p> <p>B. </p> <p>C. </p> <p>D. </p>	<p>1. Compound B</p> <p>2. Compound A</p> <p>3. Compound D</p> <p>4. Compound C</p>
<p>Determine the reactant A in the following reaction</p>	<p>1.</p>

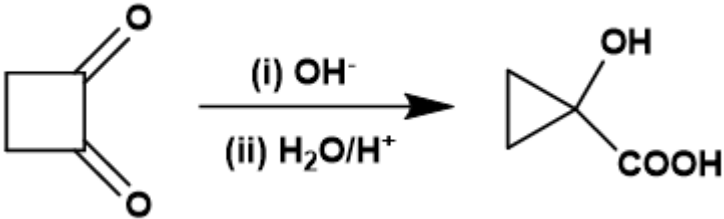
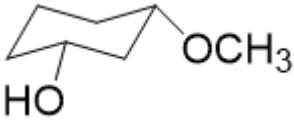
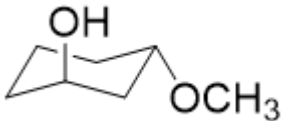
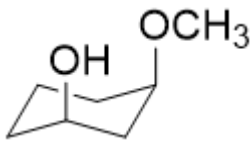
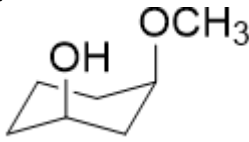
Questions	Choices
<div data-bbox="209 315 472 528"> <div style="border: 1px solid black; width: 150px; height: 80px; display: flex; align-items: center; justify-content: center;">A</div> </div> <div data-bbox="501 349 711 517" style="display: inline-block; vertical-align: middle;"> $\xrightarrow[\text{Diethyl ether}]{\text{H}_2\text{C}=\text{PPh}_3}$ </div> <div data-bbox="724 277 970 512">  </div>	<div data-bbox="1002 255 1394 479">  </div> <div data-bbox="970 528 995 562">2.</div> <div data-bbox="991 573 1382 797">  </div> <div data-bbox="970 831 995 864">3.</div> <div data-bbox="994 875 1385 1099">  </div> <div data-bbox="970 1144 995 1178">4.</div> <div data-bbox="991 1189 1350 1413">  </div>
<div data-bbox="213 1514 277 1783" style="display: inline-block; vertical-align: middle;"> $\begin{matrix} = \\ + \\ = \end{matrix}$ </div> <div data-bbox="376 1637 584 1671" style="display: inline-block; vertical-align: middle;"> \longrightarrow </div> <div data-bbox="639 1570 700 1659" style="display: inline-block; vertical-align: middle;"> <div style="border: 1px solid black; width: 30px; height: 30px;"></div> </div> <div data-bbox="743 1603 932 1648" style="display: inline-block; vertical-align: middle;">This process is</div>	<div data-bbox="970 1447 1302 1861"> <div>1. Thermally allowed</div> <div>2. Thermally not allowed</div> <div>3. Photo chemically allowed</div> <div>4. Both thermally and photo chemically allowed</div> </div>
Acetonitrile is a	<div data-bbox="970 1883 1222 2000"> <div>1. Polar protic solvent</div> <div>2.</div> </div>

Questions	Choices
	Polar aprotic solvent 3. Non-polar solvent 4. Hydroxylic solvent
The term “reversal of polarity” refers to	1. Umpolung 2. Dipole moment 3. Polarization 4. Equilibrium reaction
Both ϵ_0 and χ_c are dimensionless: The statement is _____ and _____ respectively	1. True and True 2. False and True 3. True and False 4. False and False
If $x(t)$ is even, then $X(j\Omega)$ is	1. Imaginary and even 2. Imaginary and Odd 3. Real and Even 4. Real and Odd
Which among the following is used to construct the binary code that satisfies the prefix condition?	1. Information Rate 2. Noiseless Channel 3. Channel Coding Theorem 4. Kraft Inequality
The following reaction is an example of 	1. Robinson annulation 2. Dieckmann condensation 3. Stobbe condensation

Questions	Choices
	<p>4. Aldol condensation</p>
Most stable free radical	<p>1. $\text{H}_2\text{C}=\dot{\text{C}}\text{H}$</p> <p>2. $\text{H}_2\text{C}=\underset{\text{H}}{\text{C}}-\dot{\text{C}}\text{H}_2$</p> <p>3. </p> <p>4. </p>
Diels-Alder reaction is a	<p>1. [2+2] thermal cyclization</p> <p>2. [4+2] photo addition</p> <p>3. [4+2] cyclo addition</p> <p>4. [3+3] cyclo addition</p>
Pyridine has a delocalized π -molecular orbital containing	<p>1. $4\pi\text{e}^-$</p> <p>2. $6\pi\text{e}^-$</p> <p>3. $8\pi\text{e}^-$</p> <p>4. $12\pi\text{e}^-$</p>
Proteins are biopolymers. The monomer unit present in them are	<p>1. Carbohydrates</p> <p>2. Amino acids</p> <p>3.</p>

Questions	Choices
	Fatty acids 4. Alkenes
The expected position of the λ_{\max} in the following trienone is 	1. 244 nm 2. 349 nm 3. 305 nm 4. 360 nm
Which of the following compound is expected to show a sharp singlet for one of its protons at $\delta \geq 8$ ppm in ^1H NMR spectrum, given that this signal remains unaffected on shaking the solution thoroughly with D_2O ?	1. CH_3COOH 2. $\text{CH}_3\text{CONHC}_6\text{H}_5$ 3. $n\text{-C}_6\text{H}_{13}\text{C}\equiv\text{CH}$ 4. $n\text{-C}_6\text{H}_{13}\text{CHO}$
Among the following compounds, the one that undergoes de-protonation most readily in the presence of base to form a carbanion is	1.  2.  3.  4. 
The electrophilic aromatic substitution proceeds through a	1.

Questions	Choices
	<p>Free radical</p> <p>2. Sigma complex</p> <p>3. Benzyne</p> <p>4. Carbene</p>
Fisher's indole synthesis involves	<p>1. [2, 3] sigmatropic shift</p> <p>2. [3, 3] sigmatropic shift</p> <p>3. [3, 2] sigmatropic shift</p> <p>4. [2, 2] sigmatropic shift</p>
<p>The major product of the reaction is</p>  <p>The reaction shows 1,2-cyclopentylidene-1,2-cyclopentanediol (a cyclopentane ring with two adjacent carbons each bonded to a hydroxyl group and a cyclopentylidene group) reacting with H^+ to form a product.</p>	<p>1. </p> <p>2. </p> <p>3. </p> <p>4. </p>
The following reaction is an example of	<p>1. Wolff rearrangement</p> <p>2. Benzylic acid rearrangement</p> <p>3.</p>

Questions	Choices
	Steven's rearrangement 4. Wagner-Meerwin rearrangement
Among the following, the most stable isomer for 3-methoxycyclohexanol is	1.  2.  3.  4. 
The size of nanoparticles is between-----nm	1. 100 to 1000 2. 0.1 to 10 3. 1 to 100 4. 0.01 to 1
Supramolecular chemistry is the study of	1. Strong bonds like covalent bonds 2. Magnetic properties 3. Hydrogen bonding and π-π interactions 4.

Questions	Choices
	Electronic transitions
Which of the following is used as a local anesthetic agent?	1. Diazepam 2. Procaine 3. Mescaline 4. Seconal
Pixels in the high definition T.V. monitors are made of	1. CsCl 2. LiF 3. ZnS 4. BaS
Cis-Platin is a well-known-----metal drug.	1. Antituberculosis 2. Anticancer 3. Antibacterial 4. Antifungal
Which of the following is/are not part of the Twelve Principles in green chemistry?	1. Use of catalysts 2. Recycling 3. Accident prevention 4. Use of less hazardous or no solvents
The envelop detector is an	1. Asynchronous detector 2. Synchronous detector 3. Coherent detector 4. Product demodulator
PAM signal can be demodulated by using a	1. Low Pass Filter (LPF) alone 2. Schmitt trigger followed by LPF

Questions	Choices
	3. Clipper circuit followed by a LPF 4. Differentiator followed by a LPF
Which technology has a longer handset battery life?	1. TDMA 2. FDMA/TDMA 3. CDMA 4. SDMA
In FHSS, spectrum of transmitted signal is spread	1. By a multiplicative factor N 2. Sequentially 3. Instantaneously 4. Additively
The capacity of an analog communication channel with 4kHz bandwidth and 15dB SNR is approximately	1. 16,000 bps 2. 8,000 bps 3. 20,000 bps 4. 10,000 bps
In a comparator with output bounding, what type of diode is used in the feedback loop?	1. zener 2. junction 3. shottky 4. varactor

Questions	Choices
If bit energy to noise density ratio is 10dB and feedback shift length is 10, then the jamming margin is approximately	1. 20dB 2. 30dB 3. 32dB 4. 26dB
ADSL Stands for	1. Asymmetric data subscriber loop 2. .Asymmetric data subscriber line 3. Asymmetric digital subscriber loop 4. Asymmetric digital subscriber line
The cellular technology that brings perfect real world wireless is called WWW : "World Wide Wireless Web" is	1. 3G 2. 4G 3. 1G 4. 2G
The Z-transform is a,	1. finite geometric series 2. geometric series 3. infinite power series 4. finite series
A current of $3+j4$ amperes is flowing through the circuit. The magnitude of the current is _____	1. 7 A 2. 1 A 3. 5 A 4. 1.33 A
If a signal $f(t)$ has an energy E, the energy of the signal $f(2t)$ is equal to	1. E

Questions	Choices
	<p>2. E/2</p> <p>3. 2E</p> <p>4. 4E</p>
. If the transfer function of a first-order system is $G(s)=1/(1+2s)$, then the time constant of the system is	<p>1. 10 seconds.</p> <p>2. 0.1second.</p> <p>3. 2 seconds.</p> <p>4. 0.5second.</p>
which of the following systems are invertible?	<p>1. $y(n) = nx(n)$</p> <p>2. $y(n) = x(n)x(n-1)$</p> <p>3. $y(t) = dx(t)/dt$</p> <p>4. $y(n) = x(1-n)$</p>
The discrete time system described by $y(n) = x(n^2)$ is	<p>1. causal, linear and time variant</p> <p>2. causal, linear, time invariant</p> <p>3. non-causal, linear, time invariant</p> <p>4. non-causal, linear, time variant</p>
Rectifier output polarity depends upon:	<p>1. cycles of input</p> <p>2. diode installation</p> <p>3. capacitor polarity</p> <p>4. half or full wave</p>
The system $y(n+2)+y(n+1) = x(n+2)$ is	<p>1. causal and memory less</p> <p>2. causal and has memory</p>

Questions	Choices
	3. is causal 4. is non-causal
Which of the following system is time invariant	1. $y(t) = x(2t)$ 2. $y(t) = x(t) + x(t-1)$ 3. $y(t) = x(t/2)$ 4. $y(t) = x(-t)$
The system $y(t) = x(3t-6)$ is	1. linear, time variant 2. linear, time invariant 3. non linear, time variant 4. non linear, time invariant
The system $y(t) = e^x x(t)$ is	1. stable, causal 2. non-causal, stable 3. non stable, causal 4. unstable, non causal
In CDMA, Reduction of co channel interference due to processing gain allows frequency reuse factor of _____.	1. One 2. Zero 3. Infinity 4. Ten
Assuming that the channel is noiseless, if TV channels are 8 kHz wide with the bits/sample = 3Hz and signaling rate = 16×10^6 samples/second, then what would be the value of data rate?	1. 16 Mbps 2. 24 Mbps 3. 48 Mbps 4. 64 Mbps

Questions	Choices
The impulse response of a linear time invariant system is given by $h(n) = u(n+3) + u(n-2) - 2u(n-7)$, where $u(n)$ is unit step sequence. The above system is	1. stable, but not causal 2. stable and causal 3. causal, but unstable 4. unstable, non causal
The system represented by $h(n) = 0.99^n u(n+2)$ is	1. unstable, because it is FIR system 2. stable, because it is an IIR system 3. unstable, because it does not obey BIBO stability criterion 4. stable, because it obeys BIBO stability criterion
The direct evaluation of DFT requires _____ complex multiplications.	1. $N(N-1)$ 2. N^2 3. $N(N+1)$ 4. $N(N-1)/2$
If $f(t) = f(-t)$ and $f(t)$ satisfies the Dirichlet's conditions, then $f(t)$ can be expanded in a Fourier series containing	1. Only sine terms 2. Only cosine terms 3. Cosine terms and constant term 4. Sine terms and a constant term

Questions	Choices
The Nyquist sampling rate for the signal $g(t) = 10 \cos(50\pi t) \cos^2(150\pi t)$, where t is in seconds is	1. 150 samples / sec 2. 200 samples/ sec 3. 300 samples / sec 4. 350 samples/ sec
Convolution of $x(t+5)$ with impulse function $\delta(t-7)$ is equal to	1. $x(t-12)$ 2. $x(t+12)$ 3. $x(t-2)$ 4. $x(t+2)$
The system with impulse response $h(t) = e^{-6 t }$ is	1. non-causal, stable 2. non-causal, unstable 3. causal, unstable 4. causal, stable
A good measure of similarity between two signals $x_1(t)$ and $x_2(t)$ is	1. convolution 2. correlation 3. power density spectrum 4. fourier transform
The trigonometric fourier series of an even function of time does not have the	1. DC term 2. Cosine term 3. Sine term 4.

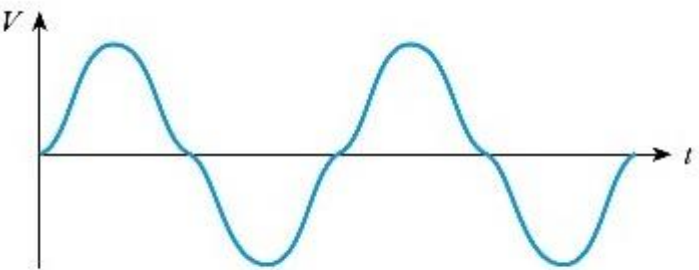
Questions	Choices
	Odd harmonic terms
If the Fourier series coefficients of $x(t)$ are c_n , then the Fourier series coefficients of $x(-t)$ is given by	1. c_n^* 2. c_{-n} 3. $c_n^*_{-n}$ 4. c_n
If the periodic signal has an even symmetry, then the Fourier series contains,	1. Only sine terms 2. Only cosine terms 3. Constant and cosine terms 4. Both sine and cosine terms
The Fourier series coefficients of the even part of $x(t)$ are	1. $j \operatorname{Im}\{x_n\}$ 2. $\operatorname{Re}\{c_n\}$ 3. Even $\{c_n\}$ 4. Odd $\{c_n\}$
If $x(t)$ is even, then its Fourier series coefficients must be	1. real and odd 2. imaginary and odd 3. real and even 4. imaginary and even
If $x(t)$ and $y(t)$ are two periodic signals, with Fourier series coefficients c_n and d_n respectively, then the Fourier series coefficients of $z(t) = x(t)y(t)$ are	1. $c_n d_n$ 2. $T c_n d_n$ 3. $c_n * d_n$

Questions	Choices
	4. $1/T$ c_n d_n
If $X(f)$ represents the Fourier transform of a signal $x(t)$, which is real and odd symmetric in time, then	1. $X(f)$ is complex 2. $X(f)$ is imaginary 3. $X(f)$ is real 4. $X(f)$ is real and non-negative
Continuous time non periodic signal has	1. Periodic continuous spectra 2. Aperiodic discrete spectra 3. Aperiodic continuous spectra 4. Periodic discrete spectra
If $x(t)$ is odd, then $X(j\omega)$ is	1. Imaginary and odd 2. Imaginary and even 3. Real and odd 4. Real and even
The amplitude spectrum of Gaussian pulse is	1. Uniform 2. Sine function 3. Gaussian function 4. An impulse function
A signal $x(t)$ has Fourier transform $X(j\omega)$. If $x(t)$ is a real and even function of t , then $X(j\omega)$ is	1. A real and even function of ω

Questions	Choices
	2. Imaginary and odd function of omega 3. An imaginary and even function of Omega 4. A real and odd function of Omega
The Fourier transform of odd signal is	1. Real and even 2. Imaginary and even 3. Imaginary and odd 4. Real and odd
The number of complex multiplications required to calculate N point DFT using radix-2 DIT-FFT algorithm is	1. $N \log_2 N$ 2. $N/2 \log_{10} N$ 3. $N \log_{10} N$ 4. $N/2 \log_2 N$
The Nyquist sampling frequency in Hz of a signal given by $6 \times 10^4 \text{ sinc}(400\pi t) \times 10^6 \text{ sinc}(100\pi t)$ is	1. 200 2. 300 3. 500 4. 1000
Fourier transform of impulse function is	1. 1 2. -1 3. 2 4.

Questions	Choices
	Can not be found
Fourier transform of $u(t)$ is	1. $2/(j \omega)$ 2. $1/(j \omega)$ 3. $-1/(j \omega)$ 4. 1
_____ PORT in 8051 is requiring external pull up resistor network	1. PORT12 2. PORT3 3. PORT0 4. PORT1
The transient response of a system is mainly due to:	1. Friction 2. Inertia forces 3. Internal forces 4. Stored energy
Which modulation technique is not suitable for audio, video but is used for transmission of telephone signals?	1. SSB-SC 2. VSB-SC 3. AM 4. DSB-SC
Superposition theorem is applicable only to networks that are:	1.linear. 2.time-invariant. 3.nonlinear. 4.passive.
The acceptable VSWR level of the antenna is upto	1. 10 2. 0.1 3. 1 4. 2
The radiation pattern we measure for a horn antenna is of E-plane type. At what condition we will say it is an E-plane type.	1. The electric field of the radiating horn is perpendicular to ground. 2. The magnetic field of the radiating horn is in circular direction 3. The electric field of the radiating horn is parallel to ground. 4. The magnetic field of the radiating horn is parallel to ground
In broadcast super heterodyne receiver, the	1. local oscillator operates below the signal frequency 2. mixer input must be tuned to the signal frequency 3. local oscillator frequency is normally double the IF

Questions	Choices
	4. RF amplifier normally works at 455KHz above the carrier frequency
The largest frequency that will be returned to earth when transmitted vertically under given ionosphere conditions is called the_____.	1. hop frequency 2. Critical frequency 3. LUF 4. MUF
Why would a delay gate be needed for a digital circuit?	1.to provide for setup times and hold times 2.to provide for hold times 3.to provide for setup times4.A delay gate is never needed.
The system characterized by the equation $y(t)=ax(t)+b$ is	1. linear if $b<0$ 2. linear for any value of b 3. non-linear 4. linear if $b>0$
A super heterodyne receiver with an IF of 450KHz is tuned to a signal at 1200KHz. The image frequency is	1. 750 KHz 2. 900 KHz 3. 2100 KHz 4. 1650 KHz
Generally, the gain of a transistor amplifier falls at high frequencies due to the	1. Skin effect 2. Coupling capacitor at the output 3. Coupling capacitor at the input 4. Internal capacitance of the device
Yagi antenna is	1. broadside array 2. circular array 3. planar array 4. end fire array
Determine odd parity for each of the following data words: 1011101;11110111; 1001101	1. $P = 1, P = 1, P = 0$ 2. $P = 0, P = 0, P = 1$ 3. $P = 0, P = 0, P = 0$ 4. $P = 1, P = 1, P = 1$
If the radiation from the antenna is expressed in terms of the field strength(either E or H) then the radiation pattern is called as	1. Voltage pattern 2. field pattern 3. current pattern 4. reflection pattern
A sinusoidal signal is passed through an amplifier and results in the following waveform. What form of distortion is predominant?	1. Barrel distortion 2. Crossover distortion 3. Clipping 4.

Questions	Choices
	Harmonic distortion
“A” register of 8051 is of ___ bit wide and it is loaded with the default value of ___ after reset.	1. 16,00 2. 16,0000 3. 8,07 4. 8,00
Dynamic RAM consumes _____ Power and _____ then the Static RAM	1. less, faster 2. more, faster 3. less, slower 4. more, slower
Bit-addressable memory locations are:	1. 20H through 2FH 2. 30H through 3FH 3. 40H through 4FH 4. 10H through 1FH
The 8051 can handle _____ interrupt sources.	1. 3 2. 4 3. 5 4. 6
_____ and _____ are the two 16 bit registers in 8051	1. PC and ACC 2. PC and DPTR 3. IE and PC 4.

Questions	Choices
	ACC and B
. In 8051, what indicates when EA is connected to ground?	1. Program code is stored in on-chip RAM 2. DATA is stored in on-chip RAM 3. Program code is stored in external ROM 4. Program code is stored in on-chip ROM
The 8051 has _____ 16-bit counter/timers	1. 1 2. 2 3. 3 4. 4
Which is the non-maskable interrupt in 8051?	1. INT0 2. INT1 3. TIMER0 4. RESET
What is the maximum size of the memory that can be interfaced with 8051?	1. 16K 2. 32K 3. 64K 4. 128K
What is the alternative function of P3.2 in 8051?	1. INT 0 2. INT 1 3. COUNTER 4.

Questions	Choices
	TIMER INTERRUPT
Odd one out the following	1. MOV PC,#0022h 2. MOV DPTR,#0022H 3. MOVC A,@A+DPTR 4. MOV A,R0
RETI instruction clears the following flags	1. TF0,RI 2. TF0,TI 3. TF0,IE0 4. RI,TI
Serial data bits being received are initially stored in	1. R0 2. ACCUMULATOR 3. SBUF 4. TF0
To interface LCD to 8051 we need	1. 3 PORTS 2. 2 PORTS 3. 1 PORTS 4. 4 PORTS
What is the address range of SFR Register bank?	1. 00H-77H 2. 40H-80H 3.

Questions	Choices
	80H-7FH 4. 80H-FFH
Point charges 30nC,-20nC and 10nC are located at (-1,0,2),(0,0,0) and (1,5,-1), respectively. The total flux leaving a cube of side 6m centered at the origin is	1.20nC 2.10nC 3.30nC 4.-20nC
The purpose of using more directors in Yagi Uda antenna is to achieve	1. less gain 2. more gain 3. less bandwidth 4. more bandwidth
Bandwidth of broad band antennas is	1. infinity 2. 10:1 ratio 3. 0:1 ratio 4. 2:1 ratio
Suppose a uniform electric field exists in the room in which you are working, such that the lines of force are horizontal and at right angles to one wall. As you walk toward the wall from which the lines of force emerge into the room, are you walking toward	1.Points of different potential. 2.Points of the same potential (equipotential line)? 3.Points of lower potential? 4.Points of higher potential?
A collector characteristic curve is a graph showing ____	1. emitter current (I_E) versus collector-emitter voltage (V_{CE}) with (V_{BB}) base bias voltage held constant 2. collector current (I_C) versus collector-emitter voltage (V_C) with (V_{BB}) base bias voltage held constant 3. collector current (I_C) versus collector-emitter voltage (V_{CC}) with (V_{BB}) base bias voltage held constant 4. collector current (I_C) versus collector-emitter voltage (V_{CE}) with (V_{BB}) base bias voltage held constant

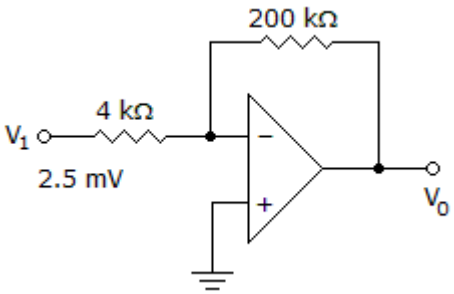
Questions	Choices
What is PSRR value of an ideal op-amp?	1. Zero 2. Unity 3. Infinite 4. Unpredictable

Questions	Choices
The direction of electric field due to positive charge is	1. perpendicular to the charge 2. parallel to the charge 3. towards the charge 4. away from the charge
Total emitter current is	1. $I_B - I_C$ 2. $I_E - I_C$ 3. $I_B + I_C$ 4. $I_C + I_E$
If the sheet of a bakelite is inserted between the plates of an air capacitor, the capacitance will	1. become zero 2. increase 3. decrease 4. remains unchanged
The internal RAM memory of the 8051 is:	1. 32 bytes 2. 64 bytes 3. 128 bytes 4. 256 bytes
For Maximum gain amplifier design, what kind of matching been proposed?	1. Conjugate matching 2. Complex matching 3. Resistive matching 4. lattice matching.
The 8051 has _____ parallel I/O ports.	1. 2 2. 3 3. 4 4. 5
How are the bits of the register PSW affected if we select Bank2 of 8051?	1. PSW.5=0 and PSW.4=1 2. PSW.2=0 and PSW.3=1 3. PSW.3=1 and PSW.4=1 4. PSW.3=0 and PSW.4=1

Questions	Choices
How many bytes of bit addressable memory is present in 8051 based micro controllers?	1. 8 bytes 2. 32 bytes 3. 16 bytes 4. 128 bytes
The contents of the accumulator after the following operation MOV A,#0BH ANL A,#2CH will be	1. 11010111 2. 11011010 3. 00001000 4. 00101000
Which of the following statements will add the accumulator and register 3?	1. ADD @R3, @A 2. ADD @A, R3 3. ADD R3, A 4. ADD A, R3
Which of the following commands will move the number 27H into the accumulator?	1. MOV A, P27 2. MOV A, #27H 3. MOV A, 27H 4. MOV A, @27
Which of the following commands will copy the contents of location 4H to the accumulator?	1. MOV A, 04H 2. MOV A, L4 3. MOV L4, A 4.

Questions	Choices
	MOV 04H, A
When 8051 wakes up then 0x00 is loaded to which register?	1. DPTR 2. SP 3. PC 4. PSW
When the micro controller executes some arithmetic operations, then the flag bits of which register are affected?	1. PSW 2. SP 3. DPTR 4. PC
When any interrupt is enabled, then where does the pointer moves immediately after this interrupt has occurred?	1. to the next instruction which is to be executed 2. to the first instruction of ISR 3. to the first location of the memory called the interrupt vector table 4. to the end of the program
Which of the following comes under indexed addressing mode?	1. MOVX A, @DPTR 2. MOVC @A+DPTR,A 3. MOV A,R0 4. MOV @R0,A
What is the disadvantage of a level triggered pulse?	1. a constant pulse is to be maintained for a greater span of time 2.

Questions	Choices
	<p>difficult to analyse its effects</p> <p>3. it is difficult to produce</p> <p>4. another interrupt may be caused, if the signal is still low before the completion of the last instruction</p>
Which instruction is used to check the status of a single bit?	<p>1. MOV A,P0</p> <p>2. ADD A,#05H</p> <p>3. JNB PO.0, label</p> <p>4. CLR P0.05H</p>
Which addressing mode is used in pushing or popping any element on or from the stack?	<p>1. immediate</p> <p>2. direct</p> <p>3. indirect</p> <p>4. register</p>
Which operator is the most important while assigning any instruction as register indirect instruction?	<p>1. \$</p> <p>2. #</p> <p>3. @</p> <p>4. &</p>
Determine the output voltage for this circuit with a sinusoidal input of 2.5 mV.	<p>1. - 0.25 V</p> <p>2. - 0.125 V</p> <p>3. 0.25 V</p> <p>4. 0.125 V</p>

Questions	Choices
	
A MOD-12 and a MOD-10 counter are cascaded. Determine the output frequency if the input clock frequency is 60 MHz?	1. 2000kHz 2. 1500kHz 3. 500kHz 4. 1000kHz
The electric and magnetic fields (components) radiated from an antenna form the _____ field.	1. radiation 2. magnetic 3. electro-magnetic 4. induction
A source of angular frequency 1 rad/sec has source impedance consisting of 1Ω resistance in series with 1H inductance. The load that will obtain the maximum power transfer is:	1. 1Ω resistance 2. 1Ω resistance in parallel with 1H inductance 3. 1Ω resistance in parallel with 1F capacitor 4. 1Ω resistance in series with 1F capacitor
if the differential mode voltage gain and the common mode voltage gain of the differential amplifier are 48dB and 2 dB respectively, then its common mode rejection ratio is ____	1. 25dB 2. 23dB 3. 46dB 4. 50dB
Which performance parameter of a regulator is defined as the change in regulated load voltage due to variation in line voltage in a specified range at a constant load current?	1. Temperature stability factor 2. Line regulation 3. Load regulation 4. Ripple rejection
A digital-to-analog converter is an application of the	1. adjustable bandwidth circuit 2. voltage-to-current converter 3. noninverting amplifier 4. scaling adder
Thigh and Tlow for astable mode operation of IC555 are	1. $t_{high} = 0.695 R_A C$ $t_{low} = 0.695 R_B C$ 2. $t_{low} = 0.695 (R_A + R_B) C$ $t_{high} = 0.695 R_B C$ 3. $t_{high} = 0.695 (R_A + R_B) C$ $t_{low} = 0.695 (R_A + 2R_B) C$ 4. $t_{high} = 0.695(R_A + R_B)C$ $t_{low} = 0.695 R_B C$
	1. integrator 2. comparator 3. differentiator 4. summing amplifier

Questions	Choices
In a _____, when the input voltage exceeds a specified reference voltage, the output changes state.	
In a flash A/D converter, the priority encoder is used to	1. select the last input. 2. select the lowest value input. 3. select the highest value input. 4. select the first input.
The 8-bit address bus allows access to an address range of:	1. 0 to FH 2. 00 to FFH 3. 000 to FFFH 4. 0000 to FFFFH
The vast majority of registers in 8051 are _____ bits	1. 8 2. 16 3. 32 4. 64
SP of 8051 is of ____ wide and it is loaded with the default value of ____ after reset	1. 4 bit, 00H 2. 8 bit, 07H 3. 8 bit, 00H 4. 32 bit, 00H
MOV A, @ R1 will	1. copy R1 to the accumulator 2. copy the accumulator to R1 3. copy the contents of memory whose address is in R1 to the accumulator 4. copy the accumulator to the contents of memory whose address is in R1
Which of the following instructions will load the value 35H into the high byte of timer 0?	1. MOV TH0, #35H 2. MOV TH0, 35H 3.

Questions	Choices
	MOV T0, #35H 4. MOV T0, 35H
How is the status of the carry, auxiliary carry and parity flag affected if write instruction MOV A,#9C ADD A,#64H	1. CY=0,AC=0,P=0 2. CY=1,AC=1,P=0 3. CY=0,AC=1,P=0 4. CY=1,AC=1,P=1
Which register is used to make the pulse a level or a edge triggered pulse?	1. TCON 2. IE 3. IPR 4. SCON
Which of the ports act as the 16 bit address lines for transferring data through it?	1. PORT 0 and PORT 1 2. PORT 1 and PORT 2 3. PORT 0 and PORT 2 4. PORT 1 and PORT 3
Which type of gate can be used to add two bits?	1. NOR 2. EX-NAND 3. EX-OR 4. EX-NOR
One of the major drawbacks to the use of asynchronous counters is that:	1. Asynchronous counters do not have propagation delays, which limits their use in high-frequency applications. 2. low-frequency applications are limited because of internal propagation delays 3. Asynchronous counters do not have major drawbacks and are suitable for use in high- and low-frequency counting applications

Questions	Choices
	4. high-frequency applications are limited because of internal propagation delays
Information rate basically gives an idea about the generated information per _____ by source	1. Hour 2. Distance 3. Second 4. Minute
If a noiseless channel bandlimited to 5 kHz is sampled every 1msec, what will be the value of sampling frequency?	1. 500 samples/sec 2. 800 samples/sec 3. 1000 samples/sec 4. 250 samples/sec
On which factor/s do/does the channel capacity depend/s in the communication system?	1. Decibel 2. Signal to Noise Ratio 3. Bandwidth and SNR 4. Bandwidth
For a (6,4) block code where $n = 6$, $k = 4$ and $d_{\min} = 3$, how many errors can be corrected by this code?	1. 1 2. 2 3. 0 4. 3
In Repetition Code, how many information bit/s is/are present in addition to $n-1$ parity bits?	1. One 2. Two 3. Four 4. Eight
Consider the assertions related to decoding process of cyclic code. Which among the following is a correct sequence of steps necessary for the correction of errors? A. Syndrome determination after the division of $r(x)$ & $g(x)$ B. Addition of error pattern to received code word C. Selection of error pattern corresponding to the syndrome D. Preparation of table comprising error patterns and syndromes	1. D,A,C,B 2. C,B,D,A 3. B,A,D,C 4. A,B,C,D

Questions	Choices
Symbols 1 and 0 are represented by pulse of equal positive and negative amplitudes is called as	1. NRZ- Polar 2. RZ- Polar 3. NRZ- Unipolar 4. RZ- Unipolar
If the spacing between received pulses deviated from its assigned value a ----- is introduced into the regenerated pulse position.	1. Bit error 2. interference 3. Data rate 4. Jitter
Which one is channel coding technique?	1. Arithmetic coding 2. Convolutional Codes 3. Shannon Coding 4. Huffman coding
Which coding technique/s exhibit/s the usability of fixed length codes?	1. Turbo Code 2. Huffman 3. Lempel Ziv 4. Convolution code
The output is zero for zero input, and the idle channel noise is correspondingly Zero	1. uniform 2. Non Uniform 3. Mid-tread 4. Mid-riser
Which of the following combinations cannot be combined into K-map groups?	1. Overlapping combinations 2. Diagonal corners 3. Corners in the same row 4. Corners in the same column
Which one of the following is used to detect the unknown signal	1. Coherent BPSK 2. DPSK 3. QPSK 4. Coherent BFSK

Questions	Choices
QPSK requires -----transmission bandwidth of the BPSK	1. twice 2. 1/3 3. 1/2 4. 1/4
Transmitted signal energy per symbol is twice the signal energy per bit. Identify the system	1. $P_e = \frac{1}{2} \text{erfc}(\sqrt{E_b/N_0})$ 2. $P_e = \frac{1}{2} \text{erfc}(\sqrt{E_b/2N_0})$ 3. $P_e = \frac{1}{2} \text{erfc}(\sqrt{E_b/4N_0})$ 4. $P_e = \text{erfc}(\sqrt{E_b/N_0})$
A carrier is amplitude modulation to depth of 40%. The increase in power is	1. 40 % 2. 20 % 3. 8 % 4. 16 %
Which of the following analog modulation scheme requires the minimum transmitted power and minimum bandwidth?	1. DSB-SC 2. AM 3. SSB 4. VSB
In FDM system used for telephone, which modulation scheme is adopted?	1. FM 2. AM 3. DSB-SC 4. SSB
In amplitude modulated system, the total power is 600W and the power in carrier is 400W, then the modulation index is	1. 1 2. 0.75 3. c) 0.90 4. 0.5
The modulating frequency in frequency modulation is increased from 10 kHz to 20 kHz. The bandwidth is	1. Increased by 20 kHz 2.

Questions	Choices
	doubled 3. Halved 4. Increase tremendously
A sinusoidal 400 Hz modulating signal of 2V amplitude frequency modulates a carrier and produces 70 kHz frequency deviation. The frequency sensitivity is given by	1. 35 kHz/V 2. 70 kHz/V 3. 140 kHz/V 4. 72 kHz/V
Which one of the following blocks is not common in both AM and FM receiver?	1. IF amplifier 2. Mixer 3. RF amplifier 4. Slope detector
The Nyquist sampling rate for a signal band limited 5 kHz is	1. 2.5 kHz 2. 20 kHz 3. 5 kHz 4. 10 kHz
Johnson noise is	1. White for all practical frequencies 2. Depends on temperature. 3. Never white 4. Always white
A system has a receiver noise resistance of 50 ohm. It is connected to an antenna with an input resistance of 50 ohm. The noise figure of the system is	1. 101 2. 2 2

Questions	Choices
	3. 1 4. 50
If the number of bits per sample in PCM system is increased from n to $n + 1$, then the improvement in signal to quantization noise ratio will be	1. 3 db 2. 10 db 3. 6 db 4. 8db
Three analog signals, having bandwidths 1200 Hz, 600 Hz, and 600 Hz are sampled at their respective Nyquist rates, encoded with 12 bit words, and time division multiplexed. The bit rate for the multiplexed signal is	1. 57.6 Kbps 2. 100 Kbps 3. 27.6 Kbps 4. 10.2 Kbps
The peak amplitude of one signal level is 0; the other is the same as the amplitude of the carrier frequency	1. FSK 2. QPSK 3. BPSK 4. ASK
Thermal noise has a power spectral density which is quite uniform upto frequencies in the order of	1. 10^{13} Hz 2. 10^{10} Hz 3. 10^{11} Hz 4. 10^{12} Hz

Questions	Choices
Which of the following is the main advantage of PCM system	1. Lower power 2. High power 3. Lower Bandwidth 4. Lower noise
What are the primary resources of an communication system	1. Channel Bandwidth 2. noise 3. power and Bandwidth 4. Transmitted Power
Which modulation technique transmits at higher data rate	1. QPSK 2. 32PSK 3. BPSK 4. 16-PSK
How many carrier frequencies are used in BFSK	1. 1 2. 2 3. 4 4. 3
Which code is used to spread the signal across the places	1. Walsh code 2. randaom noise 3. Fast code 4. Pseudo-noise code

Questions	Choices
Block calls held condition specified the held probability at a time period equal to an average holding time.	1. Erlang C 2. Erlang B a) Erlang B b) Erlang C c) Erlang D d) D. Poisson 3. Erlang D 4. Poisson
Number of channels for GSM	1. 666 2. 248 3. 124 4. 333
It is the functional entity from which the operator monitors and controls the mobile communication system.	1. Gateway Mobile Switching Center 2. Operation and Maintenance System 3. Mobile Switching Center 4. Operation and Support System
The _____ of radio receiver amplify weak signal and produce a desirable intelligence at the output speaker.	1. fidelity 2. selectivity 3. sensitivity 4. reliability
What is the number of channels of a cellular system with an allocated spectrum of 25 MHz and with a channel of 30 kHz bandwidth?	1. 833 2. 1000 3. 666 4. 240
GSM uses what digital modulation technique?	1. GMSK 2. GFSK

Questions	Choices
	3. QAM 4. BPSK
The combination of the mobile cellular phone and the cell-site radio equipment is known as	1. base station controller 2. air interface 3. forward link 4. base transceiver station
A multiple access technique used in GSM cellular system.	1. TDMA 2. FDMA 3. CDMA 4. TACS
In a cellular system, _____ is used to measure the spectrum efficiency.	1. Diversity 2. Radio capacity 3. Radio efficiency 4. Frequency reuse
The mobile-to-base station frequency assignment for GSM system is	1. 935-960 MHz 2. 825-845 MHz 3. 870-890 MHz 4. 890-915 MHz
The center frequency of a band-pass filter is always equal to the	1. -3 dB frequency 2. geometric average of the critical frequencies 3. bandwidth divided by Q 4.

Questions	Choices
	bandwidth
A zero-level detector is a	1. limiter 2. comparator with a sine-wave output 3. peak detector 4. comparator with a trip point referenced to zero
Transmission of power to a load over a transmission line achieves optimum value when standing-wave ratio (SWR) becomes	1. 1:1 2. 2:1 3. 1:3 4. 1:2
The EM field and current are concentrated close to the surface of the conductor. The phenomenon is called	1. Ohm's effect 2. Skin effect 3. Faraday's effect 4. EM concentration effect
The Poynting Vector has the dimensions of	1. Power/Unit area 2. Volts 3. Power 4. Volt/Unit length
An electric potential field is produced in air by point charges $1\mu\text{C}$ and $4\mu\text{C}$ located at $(-2,1,5)$ and $(1,3,1)$ respectively. The energy stored in the field is	1. 2.57mJ 2. 5.14mJ 3. 10.28mJ 4. 12.5mJ
Laplacian of a scalar function V is	1. Gradient of V 2. Divergence of V 3. Gradient of the gradient of V 4. Divergence of the gradient of V
For an electromagnetic wave incident on a conducting medium, the depth of penetration	1. Is independent of the attenuation constant. 2. Has logarithmic relationship with the attenuation constant 3. Is directly proportional to the attenuation constant 4. Is inversely proportional to the attenuation constant
Stokes theorem relates	1. surface integral and line integral 2. surface integral and volume integral 3. volume integral and contour integral 4. line integral and volume integral
For free space,	1. $J=0$ 2. $\sigma = 0$

Questions	Choices
	3. $\sigma = \text{infinity}$ 4. $\mu_r = 0$
In a binary PCM system, the output signal-to-quantizing-noise ratio is to be held to a minimum of 40dB. Determine the number of required bits for the quantizer to satisfy the above requirement.	1. 7 2. 5 3. 4 4. 8
An FM station is operating at 100 MHz. Maximum frequency deviation is 75 kHz. If the highest modulating frequency is limited to 15 kHz, find the modulation index and approximate bandwidth required by the system?	1. 10, 180kHz 2. 10, 150kHz 3. 5, 180kHz 4. 5, 150kHz
In the envelope of an AM wave, given $V_{\text{max}} = 30$ volts and $V_{\text{min}} = 10$ volts. Determine the modulation index and message signal amplitude?	1. 0.25, 10V 2. 0.25, 20V 3. 0.5, 10V 4. 0.5, 20V
Radio channel used for transmission of information from the mobile to the base station is called as _____	1. Reverse Control Channel 2. Reverse Voice Channel 3. Forward Voice channel 4. Forward Control Channel
The process of transferring a mobile station from one base station to another is _____	1. Switching 2. Channel Borrowing 3. Call Setup 4. Handoff
To which one of the following generations does CDMA belong?	1. Third generation 2. Second generation 3. Fourth generation 4. First generation
The cell having the same number in the adjacent cluster using the same set of RF channels are termed as	1. Co channel cell 2. Macro cell 3. Selective Cell 4. Adjacent cell
The remote and sparsely populated areas will be covered by	1. Pico Cell 2. Macro Cell 3. Micro Cell 4. pentagon cell
Real audio/video signal is a/an	1. Power Signal 2. Periodic Signal 3. Energy Signal 4. Deterministic Signal
The type of access used in GSM technology is	1. SDMA 2. CDMA 3. OFDMA 4. FDMA/TDMA

Questions	Choices
Internal antenna for mobile handset is	1. Planar Inverted-F antenna 2. Dish antenna 3. Horn antenna 4. Spiral antenna
For real time voice transmission the suitable multiple access type is	1. Dynamic access 2. Fixed assignment based access 3. Random access 4. Reservation access
In which of the following multiple access schemes, the frequency reuse concept is utilized?	1. SDMA 2. FDMA 3. TDMA 4. CDMA
Consider a repetition code where code words are formed by repeating each bit five times. What is the minimum Hamming distance for this code?	1. 1 2. 4 3. 5 4. 3
Consider a repetition code where code words are formed by repeating each bit five times. Suppose we wish to detect and correct errors in each received code word. What is the maximum number of bit errors that we can correct?	1. 4 2. 3 3. 2 4. 1
Free space loss	1. does not consists of loss to due to diffraction, reflection and niose etc., 2. does consists of loss to due to diffraction, reflection and niose etc., 3. reflection loss due to tall buildings 4. reflection due to ionosphere
Suppose we sample a signal at frequency F_s . If we collect 1500 samples in 5 seconds, what is F_s in Hz?	1. 350 2. 400 3. 300 4. 4500
Which is the higher gain provided by a C-E configuration?	1. voltage 2. Power 3. current 4. resistance
If wet soil has $\sigma = 10^{-2}$ mho/m, $\epsilon_r = 15$, $\mu_r = 1$, $f = 60$ Hz, it is a	1. Good conductor 2. semi- conductor 3. good dielectric 4. magnetic material
A dielectric material must be	1. semi conductor 2. insulator 3. resistor 4. good conductor
Conductor loss in Microstrip line will be less if	1. width of line is large 2. width of line small 3. height of substrate is more 4. height of substrate is less

Questions	Choices
The electric susceptibility of a dielectric is 4, its permittivity is	1. $2.26 \times 10^{-9} \text{ F/m}$ 2. $4.42 \times 10^{-7} \text{ F/m}$ 3. 5 F/m 4. $1.26 \times 10^{-3} \text{ F/m}$
The bit sequence 0010 is serially entered (right-most bit first) into a 4-bit parallel out shift register that is initially clear. What are the Q outputs after two clock pulses?	1. 0000 2. 0010 3. 1000 4. 1111
_____ and _____ equations are necessary in a communication system to calculate the ratio between the Rx power and TX power.	1. ampere, Helmholtz 2. Maxwell, faraday 3. Nyquist, sampling 4. Friss, radar range
Using four cascaded counters with a total of 16 bits, how many states must be deleted to achieve a modulus of 50,000	1.25,536 2.65,536 3.50,000 4.15,536
Synchronous construction reduces the delay time of a counter to the delay of	1.a single gate 2.all flip-flops and gates after a 3 count 3.all flip-flops and gates 4.a single flip-flop and a gate
With a 12 V supply, a silicon diode, and a 370-ohm resistor in series, what voltage will be dropped across the diode?	1. 0.3 V 2. 0.9 V 3. 1.4 V 4. 0.7 V
Solving $-11 + (-2)$ will yield which two's-complement answer?	1.1111 0011 2.1111 1001 3.1110 1001 4.1110 1101
With a half-wave rectified voltage across the load resistor, load current flows for what part of a cycle?	1. 90 degrees 2. 360 degrees 3. 180 degrees 4. 0 degrees
The voltage where current may start to flow in a reverse-biased pn junction is called the _____	1. breakdown voltage 2. barrier potential 3. forward voltage 4. biasing voltage
The area at the junction of p-type and n-type materials that has lost its majority carriers is called the _____	1. barrier potential 2. p region 3. depletion region 4. n region
When two counters are cascaded, the overall MOD number is equal to the _____ of their individual MOD numbers	1.Reciprocal 2.Log 3.Sum 4.Product
A triangular-wave oscillator can consist of an op-amp comparator, followed by _____	1. integrator 2. amplifier 3. differentiator 4. multivibrator
How many flip-flops are required to produce a divide-by-128 device?	1. 7 2. 1

Questions	Choices
	3. 4 4. 6
If the ac supply is 50 Hz, what will be the ripple frequency out of the full-wave rectifier?	1. 50 Hz 2. 100 Hz 3. 60 Hz 4. 120 Hz
The wavelength of visible light extends from	1. 0.8 to 1.0 nm 2. 400 to 750 nm 3. 200 to 660 nm 4. 700 to 1200 nm
A _____ filter significantly attenuates all frequencies below f_c and passes all frequencies above f_c .	1. high-pass 2. band-stop 3. band-pass 4. low-pass
Use Boolean algebra to find the most simplified SOP expression for $F = ABD + CD + ACD + ABC + ABCD$.	1. $F = AC + AD$ 2. $F = ABD + ABC + CD$ 3. $F = CD + AD$ 4. $F = BC + AB$
Another name for a unity gain amplifier is	1. Integrator 2. Inverting Amplifier 3. Differentiator 4. Voltage follower
What is the unit of magnetic charge?	1. A-m 2. Ampere 3. A-m ² 4. Coulomb
How many exclusive-NOR gates would be required for an 8-bit comparator circuit?	1. 4 2. 6 3. 8 4. 10
To operate properly, a transistor's base-emitter junction must be forward biased with reverse bias applied to which junction?	1. collector-emitter 2. collector-base 3. base-emitter 4. base-collector
To reduce the effects of noise resulting in erratic switching of output states of a comparator, you can use	1. the upper trigger point. 2. hysteresis. 3. nonzero-level detection. 4. the lower trigger point.
For a 4-bit twisted ring counter, the maximum no of states possible are:	1. 4 2. 2 3. 8

Questions	Choices
	4. 16
For a 8-bit ring counter, the maximum no of states possible are :	1. 16 2. 8 3. 4 4. 2
A ripple counter's speed is limited by the propagation delay of:	1. each flip-flop 2. all flip-flops and gates 3. the flip-flops only with gates 4. only circuit gates
Synchronous counters eliminate the delay problems encountered with asynchronous (ripple) counters because the:	1. input clock pulses are applied simultaneously to each stage 2. input clock pulses are not used to activate any of the counter stages d) input clock pulses are applied simultaneously to each stage 3. input clock pulses are applied only to the last stage . 4. input clock pulses are applied only to the first and last stages.
The simplification of Boolean expression $(a'bc)' + (ab'c)'$ is	1. a 2. bc 3. 0 4. 1
The voltage across R and L in a series RL circuit is found to be 200 V and 150 V respectively. The rms value of the voltage across the series combination is ___ V	1. 450 2. 200 3. 250 4. 360
What is the major factor for determining whether a medium is free space, lossless dielectric, lossy dielectric or good conductor?	1. Attenuation Constant 2. Loss tangent 3. Complex permittivity 4. Reflection Coefficient.
With a PNP circuit, the most positive voltage is probably _____	1. V_{cc} 2. ground 3. V_c 4. V_{BE}
A transistor may be used as a switching device or as a _____	1. fixed resistor 2. variable resistor 3. tuning device 4. rectifier

Questions	Choices
In sky wave propagation, the shortest distance covered by the single frequency untouched to the ground is called as_____.	1. Line of sight 2. skip distance 3. transmitted distance 4. 2 – ray distance
When a silicon diode is forward biased, what is V_{BE} for a C-E configuration?	1. emitter voltage 2. voltage-divider bias 3. 0.4 V 4. 0.7 V
What is the current gain for a common-base configuration where $I_E = 4.2$ mA and $I_C = 4.0$ mA?	1. 1.05 2. 16.80 3. 0.95 4. 0.20
Which of the following is not the condition for existence of Fourier transform	1. $x(t)$ must be absolutely integrable 2. $x(t)$ must have finite number of minima and maxima 3. $x(t)$ must have finite number of discontinuous points 4. $x(t)$ must be even signal
A T-section low pass filter has series inductor 80 mH and shunt capacitance 0.022 μ F. What is the cut-off frequency?	1. 8 kHz. 2. 7.8 kHz. 3. 7.58 kHz. 4. 7 kHz.
The Relaxation time of mica ($\sigma = 10^{-15}$ mho/m, $\epsilon_r = 6$) is	1. 10^{-6} s 2. 15 Hours 3. 5×10^{-10} s 4. 5 Hours
The force between two charges is 120 N. If the distance between the charges is doubled, the force will be	1. 15 N 2. 30 N 3. 40 N 4. 60 N
In a certain CS amplifier, $V_{DS} = 3.2 V_{rms}$ and $V_{GS} = 280mV_{rms}$. The voltage gain is	1. 8.75 2. 1 3. 3.2 4. 11.4

Questions	Choices
Given field $\mathbf{A} = 3x^2yz \mathbf{a}_x + x^3z \mathbf{a}_y + (x^3y - 2z) \mathbf{a}_z$, it can be said that \mathbf{A} is	1. Divergenceless 2. Harmonic 3. Conservative 4. Solenoidal
An increase in the base recombination of a BJT will increase	1. the unity-gain cut-off frequency f_T 2. the common emitter dc current gain β 3. the transconductance g_m 4. the breakdown voltage BV_{CEO}
The potential which exists in a p-n junction to cause drift of charge carriers is called ____	1. contact potential 2. diffusion potential 3. ionisation potential 4. threshold potential
Divergence theorem is applicable for a ____ that is bounded by a ____.	1. surface volume 2. line, surface 3. volume, surface 4. surface, line
Plane $y = 0$ carries a uniform current of $30\mathbf{a}_x$ mA/m. At $(1, 10, -2)$, the magnetic field intensity is _____	1. $15\mathbf{a}_x$ mA/m 2. $15\mathbf{a}_y$ mA/m 3. $-15\mathbf{a}_x$ mA/m 4. $-15\mathbf{a}_y$ mA/m
The lines of force due to charged particles are	1. sometimes curved 2. always straight 3. not straight 4. always curved
Most of the electrons in the base of an NPN transistor flow	1. out of the base lead 2. into the base supply 3. into the emitter 4. into the collector
The electric field at a point situated at a distance d from straight charged conductor is	1. inversely proportional to d 2. proportional to d 3. inversely proportional to H 4. proportional to H
The total electric flux through any closed surface surrounding charges is equal to the amount of the charge enclosed". The above statement is associated with	1. Gauss's law 2. Maxwell's first law 3. Coulomb's square law 4. Maxwell's second law
The phenomenon of an uncharged body getting charged merely by the nearness of a charged body is known as	1. chemical effect 2. magnetic effect 3. photoelectric effect 4. induction
The diffusion potential across a PN junction	1. Increases with decreasing band gap 2. Increases with increase in doping concentrations

Questions	Choices
	3. Decreases with increasing doping concentration 4. Does not depend on doping concentration
Electric displacement is a _____ quantity.	1. curl 2. vector 3. scalar 4. divergenceless
The magnetic field intensity (in A/m) at the centre of a circular coil of diameter 1 metre and carrying current of 2 A is	1. 3 2. 4 3. 2 4. 8
In a P-N junction diode under reverse bias, the magnitude of electric field is maximum at	1. The edge of the depletion region on N side 2. The centre of the depletion region on the N side 3. The P-N junction 4. The edge of the depletion region on P side
2's complement representation of a 16 bit number (one sign bit and 15 magnitude bits) is FFFF. Its magnitude in decimal representation is	1. 1 2. 65535 3. 32767 4. 0
In a dielectric-conductor boundary (interface), the tangential component of electric field is	1. infinity 2. E_i 3. zero 4. $2E_i$
No of ripple counter IC is	1. 7865 2. 7654 3. 7492 4. 7493
The intrinsic impedance of free space is	1. 75 ohm 2. 73 ohm 3. 120 ohm 4. 377ohm
Which of the following is NOT associated with a PN junction?	1. Charge storage capacitance 2. Depletion capacitance 3. Channel length modulation 4. Junction capacitance
A combinational logic circuit which generates a particular binary word or number is	1. Multiplexer 2. Decoder 3. Data Selector 4. Data Distributor
Convert BCD 0001 0111 to binary.	1. 10010 2. 11000 3. 10001

Questions	Choices
	4. 10101
Laplacian of a Scalar function F is	1. gradient of F 2. divergence of gradient of F 3. divergence of F 4. gradient of gradient of F
A silicon PN junction is forward biased with a constant current at room temperature. When the temperature is increased by 10°C, the forward bias voltage across the PN junction	1. Increases by 60 mV 2. Decreases by 60 mV 3. Increases by 25 mV 4. Decreases by 25 mV
Electric Flux inside a conducting sphere is	1. maximum 2. zero 3. uniform 4. minimum
A Zener diode when used in voltage stabilization circuits, is biased in	1. Forward bias region 2. Forward bias constant current mode 3. Reverse breakdown region 4. Reverse bias region below the breakdown voltage
For small signal ac operation, a practical forward biased diode can be modeled as	1. Resistance and capacitance in series 2. Ideal diode and resistance in parallel 3. Resistance 4. Resistance and ideal diode in series
How many flip-flops are required to make a MOD-32 binary counter	1. 6 2. 5 3. 3 4. 4
The depth of penetration of a wave in a lossy dielectric increase with increasing	1. permeability 2. conductivity 3. wavelength 4. permittivity
In which of the following are operational amplifiers (op-amps) used?	1. Filters 2. Instrumentation circuits 3. Oscillators 4. All of the above
The parallel wire transmission line is an example of	1. an unbalanced line 2. a balanced line 3. lossy line 4. lossless
For lossless line	1. $\alpha=0$, $\beta \neq 0$ 2. $\alpha \neq 0$, $\beta \neq 0$ 3. $\alpha=0$, $\beta=0$ 4. $\alpha \neq 0$, $\beta=0$
A BJT is said to be operating in the saturation region, if	1. Base emitter junction is in forward biased, and base collector junction is reverse biased 2. Both the junctions are forward biased

Questions	Choices
	3. Base emitter junction is in reverse biased, and base collector junction is forward biased 4. Both the junctions are reverse biased
The characteristic impedances Z_0 of a transmission line is given by, (where R, L, G, C are the unit length parameters)	1. $(R + j\omega L)(G + j\omega C)$ 2. $(R + j\omega L)^2 / (G + j\omega C)$ 3. $[(R + j\omega L) / (G + j\omega C)]^{1/2}$ 4. $(R + j\omega L) / (G + j\omega C)$
The reflection coefficient over the normalized Z_L	1. $(Z_L - 1) / (Z_L + 1)$ 2. $(Z_L + 1) / (Z_L - 1)$ 3. $(Z_L - 1) / (Z_L + 1)$ 4. 0
In the left half of the Smith chart, the resistance and reactance values are	1. less than 1 2. 2 3. more than 1 4. Zero
If a transistor is operating with both of its junctions forward biased, but with the collector base forward bias greater than the emitter base forward bias, then it is operating in the	1. Reverse saturation mode 2. Reverse active mode 3. Forward active mode 4. Forward saturation mode
A long transmission line is energized at then sending end and is kept open circuited at the receiving end. The magnitudes of the sending end voltage V_s and of the receiving end voltage V_r satisfy the following relationship:	1. V_s is greater than V_r 2. V_s is less than V_r 3. 0 4. $V_s = V_r$
The surge impedance of a double-circuit power transmission line is	1. 40 ohms 2. 800 ohms 3. 400 ohms 4. 200 ohms
The current gain of a bipolar transistor drops at high frequencies because of	1. Parasitic inductance effects 2. The Early Effect 3. High current effects in the base 4. Transistor capacitances
The velocity factor of a transmission line depends on	1. Temperature 2. Doppler effect 3. skin effect 4. Relative permittivity of dielectric
Which of the following lines is non-radiating?	1. parallel wire 2. waveguide 3. Open two wire 4. Coaxial

Questions	Choices
In MOSFET devices, the N-channel type is better than the P-channel type in the following respects	1. It has better drive capability 2. It is TTL compatible 3. It has better noise immunity 4. It is faster
A quarter wave line open circuited at far end behaves as	1. Inductance 2. L and C in series 3. Capacitance 4. L and C in parallel
The effective channel length of a MOSFET in saturation decreases with increase in	1. Drain voltage 2. Body voltage 3. Source voltage 4. Gate voltage
A line is excited by a 100 V dc source. If reflection coefficients at both ends are 1 each then	1. there will be only 1 or 2 oscillations on line 2. the oscillations will continue indefinitely 3. there will be a finite number of oscillations on line 4. there will be no oscillations on line
An infinite length of uniform line charge has $\rho_l = 10\text{pC/m}$ and it lies along the z axis. Determine the electric field E at (4, 3, 3)	1. $1.8\text{ }\mu\text{V/m}$ 2. $180\text{ }\mu\text{V/m}$ 3. $18\text{ }\mu\text{V/m}$ 4. $280\text{ }\mu\text{V/m}$
The bandwidth of an amplifier is _____ by a negative feedback	1. unaffected 2. attenuated 3. maintained 4. augmented
A point charge, $Q = 10\text{nC}$ is at the origin. The estimated potential difference at A (1,0,0) with respect to B (2,0,0) is	1. 45 V 2. 50 V 3. 30 V 4. -45 V
When the input is symmetrical, to operate the BJT in active region, the quiescent point is chosen	1. at the bottom edge of the load line 2. can be chosen any where on the load line 3. at the centre of the load line 4. at the top edge of the load line

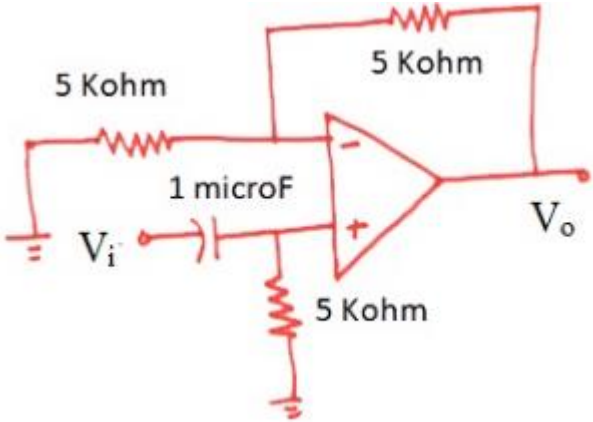
Questions	Choices
1. If the flux density is 10 Wb/m^2 and the area of the coil is 2 m^2 , the flux is	1. 1 Wb 2. 20 Wb 3. 10 Wb 4. 40 Wb
The intrinsic impedance of the medium whose $\sigma = 0$, $\epsilon_r = 9$, $\mu_r = 1$ is	1. $120 \pi \Omega$ 2. 9Ω 3. $60 \pi \Omega$ 4. $40 \pi \Omega$
AC load line is also known as _____	1. dynamic load line 2. quiescent load line 3. variable load line 4. active load line
Boundary conditions for normal component in magnetostatic field is	1. $B_{1n} \times B_{2n} = 0$ 2. B_{1n} / B_{2n} 3. $B_{1n} = B_{2n}$ 4. $B_{1n} + B_{2n}$
Two thin parallel wires are carrying current along the same direction. The force experienced by one due to other is	1. Perpendicular to the lines and attractive. 2. Parallel to the lines 3. Perpendicular to the line and repulsive 4. Zero
The electric flux density on a spherical surface $r=b$ is the same for a point charge Q located at the origin and for the charge Q uniformly distributed on surface $r=a$ ($a < b$)	1. It will be higher 2. Not necessarily 3. No 4. yes
For a (8, 4, 3) block code, which one of the following statements is incorrect?	1. The code rate is 0.5 2. Each codeword contains 4 message bits 3. We can detect and correct 1 bit errors 4. We can detect 3 bit errors
The wavelength of a wave with a propagation constant $= 0.1\pi + j 0.2\pi$	1. 10 m 2. 25 m 3. 30 m 4. 20 m

Questions	Choices
The Poynting Vector physically denotes the power density leaving or entering a given volume in a time varying field.	1. Not always true 2. True 3. false 4. Not always false.
Which one of these statements is not characteristic of static magnetic field:	1. It is conservative 2. Magnetic flux lines are always closed. 3. It is solenoidal 4. It has no sinks or sources
The unit of Electric Field is	1. N-C 2. N 3. C/N 4. N/C
Given $A = -6a_x + 3a_y + 2a_z$, the projection of A along a_y is	1. 3 2. 7 3. -12 4. -3
Plane $z = 10\text{m}$ carries charge 20nC/m^2 . The electric Field intensity at the origin is	1. $-360\pi a_z$ 2. $-10a_z \text{ V/m}$ 3. $-18\pi a_z \text{ V/m}$ 4. $-72\pi a_z \text{ V/m}$
Of the following, the incorrect relation is	1. $D = \epsilon E$ 2. $B = \mu H$ 3. $J = \sigma E$ 4. $B = \mu D$
Which of the concepts is used to find the expression of related E and H field due to a magnetic current element?	1. Concept of scalar electric potential 2. Concept of vector magnetic potential 3. Concept of scalar magnetic potential 4. Concept of vector electric potential
The minimum number of comparators required to build a 8-bit flash type ADC is	1. 8 2. 255 3. 256 4. 63
If each character in a 45 character text message is encoded using an 8-bit ASCII code, how many bits would be required to encode the entire message?	1. 420 2. 360 3. 440 4. 480
Under electrostatic conditions where does the excess charge lies?	1. The excess charge on a conductor doesn't reside. 2. The excess charge on a conductor resides on its outer surface

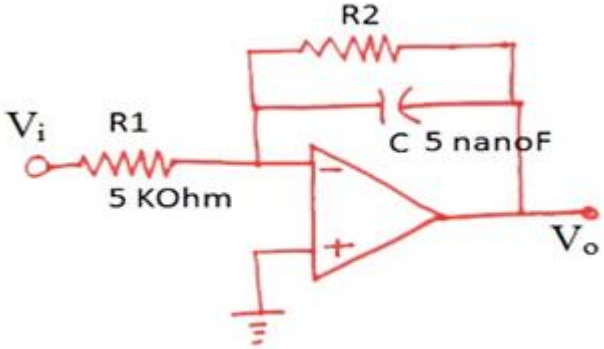
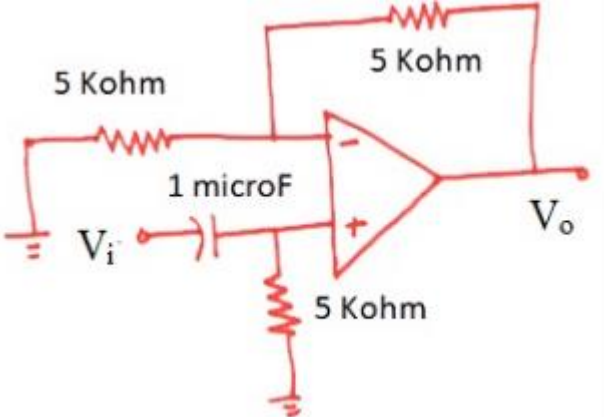
Questions	Choices
	3. The excess charge on a conductor resides on its inner surface 4. The excess charge on a conductor resides in its middle surface

Consider a system that uses 8-bit ASCII codes to encode letters. How long will it take to transmit the bit sequence encoding "Good Morning" (not including quotation marks) if we use a bit time of 4 samples per bit, and transmit samples at a rate of 1MHz? Represent the answer in micro seconds.	1. 384 2. 484 3. 300 4. 458
A distortion less line has	1. Constant imag characteristic impedance 2. vanishing attenuation constant 3. Constant velocity 4. high G
What is VSWR for short-circuited transmission lines	1. 10 2. 5 3. 1 4. infinity
Which statement is false for Admittance smith chart.	1. Left of the smith chart is open circuit end 2. VSWR at centre of smith chart is 2 3. Right of the smith chart is short circuit end 4. Reflection coefficient at centre of smith chart is 1
For the transfer function given below find the gain at very low frequencies (assume DC). $T(s) = \frac{10^{14}(s)(s+100)}{(s+10)(s+1000)(s+10^5)(s+10^6)}$	1. 100 2. 0 3. 10 4. 1
Consider a repetition code where code words are formed by repeating each bit five times. Suppose we receive the following bitstream. 0000111100001111110110001110011111000001 If we assume that we can both detect and correct errors, what was the original bit stream?	1. 01010110 2. 11010110 3. 01010111 4. 01010100

Which mode is known as dominant mode for Rectangular waveguide	1. TM ₁₀ and TE ₁₀ 2. TM ₁₀ 3. TM ₁₁ 4. TE₁₀
Which of these transmission line supports Quasi-TEM mode	1. Microstrip line 2. Strip line 3. Microstrip line and Stripline Both 4. Parallel Plate waveguide
What is the theoretical range of VSWR	1. 1 to infinity 2. 0 to 1 3. - infinity to + infinity 4. -1 to 1
What is the range of magnitude of reflection coefficient due to passive load	1. 0 to 1 2. 1 to infinity 3. 0.5 to 1 4. 0 to infinity
In a GSM system, eight channels co-exist in 200 kHz bandwidth using TDMA. A GSM based cellular operator is allocated 5 MHz bandwidth. Assuming a frequency reuse factor of 1/5 (five-cell repeat pattern), the maximum of simultaneous channels that can exist in one cell is	1. 40 2. 100 3. 50 4. 200
What is the highest frequency content of a triangle wave of 30-V peak-to-peak amplitude that can be exactly reproduced by an op amp whose slew rate is 10 V/μs? Also For a sine wave of the same frequency what is the maximum amplitude of output signal that remain un-distorted?	1. 250 kHz, 6.37 V 2. 146 kHz, 5.45 V 3. 300 KHz, 3.54 V 4. 167 KHz, 9.53 V
Which of the matching network is having higher bandwidth for a given load.	1. Quarter wave matching 2. Single stub shunt matching 3. Single stub series matching 4. Double stub matching
A 741 op-amp has a gain bandwidth product of 1 MHz. A non inverting amplifier using this op-amp and having a voltage gain of 40 dB will exhibit a 3 dB bandwidth of how much?	1. 100 kHz 2. 300 kHz 3. 10 kHz 4. 500 kHz
An additive white Gaussian process X(t) is passed through an ideal bandpass filter of center frequency 100 MHz and	1. $10^6 N_0$ 2. $2 \times 10^6 N_0$ 3. N_0

bandwidth 2 MHz. Let $X(t)$ have a power spectral density of $N_0/2$ and the output of BPF is $P(t)$. The variance of $P(t)$ is	4. $N_0/2$
<p>The op- amp circuit shown below is a certain class of filter. Find the type of the filter</p> 	<ol style="list-style-type: none"> 1. High Pass Filter 2. Low Pass Filter 3. Band Reject Filter 4. Band Pass filter
Diversity technique is a method for improving which of the following message signal by utilizing two or more communication channels with different characteristics?	<ol style="list-style-type: none"> 1. All are Correct 2. Reliability 3. Error detection capability 4. Error correction capability
An amplifier using an op-amp with a slew rate of $1V/\mu$ has a gain of 60 dB. If the amplifier has to faithfully amplify the sinusoidal signals from DC to 40 KHz without introduced any slew rate induced distortion, then the input signal must not exceed what value?	<ol style="list-style-type: none"> 1. 25.53 mV 2. 3.98 mV 3. 34.4 mV 4. 32.89 mV
A rate $1/2$ convolution code with $d_{\text{free}} = 10$ is used to encode a data requence occurring at a rate of 1 kbps. The modulation is binary PSK. The DS spread spectrum sequence has a chip rate of 10 MHz. The coding gain is	<ol style="list-style-type: none"> 1. 7 dB 2. 12 dB 3. 14 dB 4. 24 dB
One of the advantages of base modulation over collector modulation of a transistor class C amplifier	<ol style="list-style-type: none"> 1. the lower the modulating power required 2. high power output per transistor 3. better efficiency 4. better linearity
Amplitude modulation is used for broadcasting because	<ol style="list-style-type: none"> 1. it is more noise immune than other modulation system 2. compared with other system it requires less transmitting power 3. its use avoids receiver complexity 4. no other modulation system can provide the necessary bandwidth for high fidelity

In a CD player, the sampling rate is 44.1 kHz and the samples are quantized using a 16-bit/sample quantizer. The resulting number of bits for a piece of music with a duration of 50 minutes is	1. 1.39×10^9 2. 4.23×10^9 3. 8.46×10^9 4. 12.23×10^9
A receiver is operated at a temperature of 300 K. The transistor used in the receiver has an average output resistance of 1 k Ω . The Johnson noise voltage for a receiver with a bandwidth of 200 kHz is	1. 1.8 μV 2. 12.6 μ V 3. 4.3 μ V 4. 0.8 μ V
Amplitude modulation is the process of	1. frequency shift and phase shift 2. superimposing a low frequency on a high frequency 3. superimposing a high frequency on a low frequency 4. carrier interruption
One of the following types of noise becomes a great importance at high frequencies	1. Impulse Noise 2. Shot Noise 3. Transit Time Noise 4. Random Noise
The value of the resistor creating thermal noise is doubled. The noise power generated is therefore	1. Unchanged 2. Halved 3. Quadrupled 4. Doubled
Indicate the noise whose source is in a category different from that of the other three	1. Galactic Noise 2. Cosmic Noise 3. Atmospheric Noise 4. Solar Noise
Which of the following is the most reliable measurement for comparing amplifier noise characteristics?	1. Thermal Noise Agitation 2. Shot Noise 3. Signal to Noise ratio 4. Noise Factor
The modulation index of an AM is changed from 0 to 1. The transmitted power is	1. Increase by 50% 2. Unchanged 3. Halved 4. Doubled
In the spectrum of a frequency modulated wave	1. the carrier frequency cannot disappear 2. the total number of side-bands not depend on the modulation index 3. the carrier frequency disappears when the modulation index is large 4. the amplitude of any sideband depends on the modulation index
For the given circuit below for the cut off frequency of 3 kHz find the value of R2	1. 4.5 kOhm 2.

	<p>10.61 kOhm</p> <p>3. 3.4 kOhm</p> <p>4. 1.9 kOhm</p>
<p>Find the cut off frequency for the filter circuit given below</p> 	<p>1. 1000 rad/sec</p> <p>2. 2000 rad/sec</p> <p>3. 200 rad/sec</p> <p>4. 100 rad/sec</p>
<p>An amplifier for which design was done with $A = 100$ and $\beta = 0.01$ is manufactured using an amplifier with half the intended gain. Find the sensitivity of the closed loop to open loop gain in dB?</p>	<p>1. 55.25%</p> <p>2. 70%</p> <p>3. 13%</p> <p>4. 67%</p>
<p>Which of the following is not the property of Region of convergence</p>	<p>1. ROC can not have a pole</p> <p>2. ROC is right side of right most pole if $x(t)$ is causal</p> <p>3. ROC can not have a zero</p> <p>4. ROC is left side of left most pole if $x(t)$ is anti causal</p>
<p>Indicate the false statement regarding the Armstrong modulation system</p>	<p>1. Frequency multiplications must be used</p> <p>2. AFC is not needed, as the crystal oscillator is used</p>

	<p>3. the system is basically phase and not frequency modulation</p> <p>4. Equalization is unnecessary</p>
$x(t)*u(t)$ is equivalent to	<p>1. differentiating $x(t)$</p> <p>2. $x(t) - x(t-1)$</p> <p>3. accumulating $x(t)$</p> <p>4. $x(t) + x(t+1)$</p>
The difference between the phase and frequency modulation	<p>1. is too great to make the two system compatible</p> <p>2. is purely theoretical because they are the same in practice</p> <p>3. lies in the different definitions of the modulation index</p> <p>4. lies in the poorer audio response of the phase modulation</p>
The Fourier transform of the exponential signal $e^{j\omega_0 t}$ is	<p>1. an impulse</p> <p>2. a constant</p> <p>3. a rectangular gate</p> <p>4. a series of impulses</p>
When the modulating frequency is doubled, the modulation index is halved, and the modulating voltage remains constant. The modulation system is	<p>1. Frequency Modulation</p> <p>2. phase shift keying modulation</p> <p>3. Phase Modulation</p> <p>4. Amplitude Modulation</p>
The unit impulse response of a linear time invariant system is the unit step function $u(t)$. For $t > 0$, the response of the system to an excitation $e^{-at} u(t)$, $a > 0$, will be	<p>1. $1 - e^{-at}$</p> <p>2. $a(1 - e^{-at})$</p> <p>3. ae^{-at}</p> <p>4. $(1 - e^{-at})/a$</p>
Indicate the false statement. The super heterodyne receiver replaced the TRF receiver because the latter suffered from	<p>1. inadequate selectivity at high frequencies</p> <p>2. insufficient gain and sensitivity</p> <p>3. gain variation over the frequency coverage range</p> <p>4. instability</p>
The image frequency of a super heterodyne receiver	<p>1. is not rejected by the IF tuned circuits</p> <p>2. is due to insufficient adjacent channel rejection</p> <p>3. is created within the receiver itself</p> <p>4. is independent of the frequency to which the receiver is tuned</p>

The local oscillator of a broadcast receiver is tuned to a frequency higher than the incoming frequency	1. to help the image frequency rejection 2. to permit easier tracking 3. to allow adequate frequency coverage without switching 4. because otherwise an intermediate frequency could not be produced
If the intermediate frequency is very high (indicate the false statement)	1. the local oscillator need to be extremely stable 2. image frequency rejection is very good 3. the selectivity will be poor 4. tracking will be improved
$dy(t)/dt + 2ty(t) = t^2 x(t)$ is for a	1. linear, time varying, dynamic system 2. linear system 3. linear, time varying, static system 4. non-linear system
If a signal $x(t)$ is differentiated 'm' times to produce an impulse then its Fourier coefficients will be proportional to,	1. $1/n^m$ 2. $1/n^{m-1}$ 3. n^{m-1} 4. n^m
The signals $x_1(t)$ and $x_2(t)$ are both band limited to $(-\omega_1, +\omega_1)$ and $(-\omega_2, +\omega_2)$ respectively. The Nyquist sampling rate for the signal $x_1(t)x_2(t)$ will be	1. $(\omega_1 + \omega_2)/2$ 2. $2\omega_2$ if $\omega_1 < \omega_2$ 3. $2\omega_1$ if $\omega_1 > \omega_2$ 4. $2(\omega_1 + \omega_2)$
Most significant bit of arithmetic addition is called	1. overflow 2. Carry 3. Output 4. Zero Bit
Which of the following circuit can be used as parallel to serial converter ?	1. Digital counter 2. Decoder 3. Demultiplexer 4. Multiplexer
A band pass signal extends from 1 KHz to 2 KHz. The minimum sampling frequency needed to retain all information in the sampled signal is	1. 2 KHz 2. 1 KHz 3. 4 KHz 4. 3 KHz
The carry propagation can be expressed as	1. $C_p = AB$ 2. $C_p = A + B$ 3. $C_p = A \wedge B$ 4. $C_p = A+B'$
A MOD-16 ripple counter is holding the count 1001_2 . What will the count be after 31 clock pulses?	1. 1000 2. 1010 3. 1001 4. 1011

The binary numbers A = 1100 and B = 1001 are applied to the inputs of a comparator. What are the output levels?	1. $A > B = 1, A < B = 0, A = B = 1$ 2. $A > B = 0, A < B = 1, A = B = 0$ 3. $A > B = 1, A < B = 0, A = B = 0$ 4. $A > B = 0, A < B = 1, A = B = 1$
With a 200 kHz clock frequency, eight bits can be serially entered into a shift register in	1. 40 μs 2. 400 μ s 3. 40 ms 4. 4 μ s
A 4-bit up/down binary counter is in the DOWN mode and in the 1100 state. To what state does the counter go on the next clock pulse?	1. 1101 2. 1011 3. 1111 4. 0000
Choose the function $f(t)$, $-\infty < t < +\infty$, for which a Fourier series cannot be defined	1. $4 \cos(20t+3) + 3 \sin(10t)$ 2. $\exp(- t)\sin(25t)$ 3. $3 \sin(25t)$ 4. 1
Code conversion circuits mostly uses	1. AND-OR gates 2. AND gates 3. OR gates 4. XOR gates
If $G(f)$ represents the Fourier transform of a signal $g(t)$ which is real and odd symmetric in time, then	1. $G(f)$ is real 2. $G(f)$ is complex 3. $G(f)$ is imaginary 4. $G(f)$ is real and non-negative
The ROC of the sequence $x(n) = u(-n)$ is,	1. $ z > 1$ 2. $z < 1$ 3. No ROC 4. $-1 < z < 1$
In a 2-terminal network containing at least one inductor and one capacitor, resonance condition exists only when the input impedance of the network is:	1. purely resistive 2. purely reactive 3. infinite 4. finite
The Q-factor of a parallel resonance circuit consisting of an inductance of value 1mH, capacitance of value 10^{-5} F and a resistance of 100 ohms is	1. 1 2. 10 3. 20 4. 100
An LTI system with impulse response, $h(n) = (-a)^n u(n)$ and $-a < -1$ will be,	1. unstable system 2. stable system 3. anticausal system 4. neither stable nor causal
What is the ROC of the Z-transform of $x(n) = -(0.5)^n u(-n-1) + (0.2)^n u(n) + (0.8)^n u(n)$?	1. ROC does not exist 2. $ z > 0.8$ 3. $ z < 0.5$ 4. $ z > 0.5$ and $ z < 0.8$

Fourier transform of unit impulse at origin is	1. 1 2. 0 3. infinity 4. undefined
The property of Fourier Transform which states that the compression in time domain is equivalent to expansion in the frequency domain is	1. Frequency Shifting 2. Scaling 3. Time Scaling 4. Duality
The trigonometric Fourier series of an even function of time does not contain	1. Sine term 2. Cosine term 3. Odd harmonic term 4. DC term
Continuous functions are sampled to form a	1. Digital image 2. Fast Fourier series 3. Fourier transform 4. Fourier series
Sum of many infinitely many periodic impulses is called	1. aperiodic impulse 2. periodic impulse 3. impulse train 4. summation
To reduce effect of aliasing, high frequencies are	1. accentuated 2. attenuated 3. removed 4. reduced
If $f(x,y)$ is imaginary, then its Fourier transform is	1. antihermition 2. hermition 3. symmetry 4. Conjugate symmetry
Any function whose Fourier transform is zero for frequencies outside finite interval is called	1. High pass function 2. Low pass function 3. Band limited function 4. Band pass function
Forward and inverse Fourier transforms exist for samples having values	1. finite 2. discrete 3. infinite 4. integers
Greater, values of continuous variables, spectrum of Fourier transform will be	1. contracted 2. discrete 3. continuous 4. expanded
Impulse has property called	1. rotating property 2. additive property 3. shifting property 4. additive inverse
Sampled frequency less than nyquist rate is called	1. critical sampling 2. nyquist sampling 3. under sampling 4. over sampling
Effect caused by under sampling is called	1. aliasing

	<ul style="list-style-type: none"> 2. summation 3. sharpening 4. smoothing
Most common example of temporal aliasing is	<ul style="list-style-type: none"> 1. ringing effect 2. image sharpening 3. wagon wheel effect 4. blurring
Which among the following assertions represents a necessary condition for the existence of Fourier Transform of discrete time signal (DTFT)?	<ul style="list-style-type: none"> 1. Discrete time signal should be absolutely multipliable 2. Discrete time signal should be absolutely differentiable 3. Discrete time signal should be absolutely integrable 4. Discrete time signal should be absolutely summable
Which are the only waves that correspond/ support the measurement of phase angle in the line spectra?	<ul style="list-style-type: none"> 1. Cosine waves 2. Triangular waves 3. Square waves 4. Sine waves
Double-sided phase & amplitude spectra _____	<ul style="list-style-type: none"> 1. Possess an odd & even symmetry respectively 2. Both possess an odd symmetry 3. Both possess an even symmetry 4. Possess an even & odd symmetry respectively
Which type/s of Fourier Series allow/s to represent the negative frequencies by plotting the double-sided spectrum for the analysis of periodic signals ?	<ul style="list-style-type: none"> 1. Exponential Fourier Series 2. Trigonometric Fourier Series 3. All types specified 4. Polar Fourier Series
Which phenomenon occurs due to an increase in the channel bandwidth during the transmission of narrow pulses in order to avoid any intervention of signal distortion?	<ul style="list-style-type: none"> 1. Expansion in frequency domain 2. Compression in frequency domain 3. Compression in time domain 4. Expansion in time domain
<p>Which among the below assertions is precise in accordance to the effect of time scaling ?</p> <p>A : Inverse relationship exists between the time and frequency domain representation of signal</p> <p>B : A signal must be necessarily limited in time as well as frequency domains</p>	<ul style="list-style-type: none"> 1. Both A & B are true 2. A is false & B is true 3. Both A & B are false 4. A is true & B is false
What is the nature of Fourier representation of a discrete & aperiodic signal?	<ul style="list-style-type: none"> 1. Continuous & periodic 2. Continuous & aperiodic 3. Discrete & periodic 4. Discrete and aperiodic
What are the number of samples present in an impulse response called as?	<ul style="list-style-type: none"> 1. length 2. string 3. array

	4. element
A parallel plate capacitor of 5pf capacitance has a charge of 0.1μC on its plates. What is the energy stored in the Capacitor?	1. 1mJ 2. 1 nJ 3. 1pJ 4. 1μJ
For a series R-C circuit excited by a d-c voltage of 10V, and with time-constant t, s, the voltage across C at time t = t is given by	1. 10(1-e⁻¹) V 2.10-e ⁻¹ V 3.10(1-e) V 4.1-e ⁻¹ V
The rms value of the sinusoidal wave is given by__	1.Vm/2 2.1.414 Vm 3.2Vm 4.v_m/1.414
The average power in the RL circuit is _____ the average power in a pure resistive circuit	1. Equal to 2.Greater than 3.less than 4.greater or equal to
The power factor is _____ for a pure resistor	1.0 2.1 3.Between 0 and 1 4.>1
For a RL circuit, the power factor is _____	1.0 2.1 3.Between 0 and 1 4.>1
For a RC circuit, the power factor is _____	1.0 2.1 3.between 0 and 1 4.>1
v ₁ (t)=20 cos(wt+30),v ₂ =30 sin(wt+45)	1.v ₂ leads v ₁ by -75 2.v ₁ leads v ₂ by 75 3.v₂ leads v₁ by 15 4.v ₁ leads v ₂ by 15
When a circuit is in resonance,the impedance of the circuit is_____	1.XC 2.2R 3.XL 4.R
In a pure inductive circuit,	1.voltage leads the current 2.voltage lags the current 3.current and voltage are in phase 4.no relation between current and voltage
In a pure capacitive circuit,	1.current and voltage are in phase 2.voltage lags the current 3.voltage leads the current 4.no relation between current and voltage
The defining equations for analyzing a two-port network in terms of its impedance (z) parameters are:	1. $I_1 = y_{11} V_1 + y_{12} V_2$ and $I_2 = y_{21} V_1 + y_{22} V_2$ 2. $V_1 = z_{11} I_1 + z_{12} I_2$ and $V_2 = z_{21} I_1 + z_{22} I_2$ 3. $V_1 = h_{11} I_1 + h_{12} V_2$ and $I_2 = h_{21} I_1 + h_{22} V_2$ 4. $V_1 = t_{11} V_2 - t_{12} I_2$ and $I_1 = t_{21} V_2 - t_{22} I_2$
The defining equations for analyzing a two-port network in terms of its admittance (y) parameters are:	1. $I_1 = y_{11} V_1 + y_{12} V_2$ and $I_2 = y_{21} V_1 + y_{22} V_2$ 2. $V_1 = z_{11} I_1 + z_{12} I_2$ and $V_2 = z_{21} I_1 + z_{22} I_2$ 3. $V_1 = t_{11} V_2 - t_{12} I_2$ and $I_1 = t_{21} V_2 - t_{22} I_2$ 4. $V_1 = h_{11} I_1 + h_{12} V_2$ and $I_2 = h_{21} I_1 + h_{22} V_2$

<p>The defining equations for analyzing a two-port network in terms of its transmission (t) parameters (also called the ABCD parameters) are:</p>	<ol style="list-style-type: none"> 1. $V_1 = h_{11}I_1 + h_{12}V_2$ and $I_2 = h_{21}I_1 + h_{22}V_2$ 2. $V_1 = z_{11}I_1 + z_{12}I_2$ and $V_2 = z_{21}I_1 + z_{22}I_2$ 3. $I_1 = y_{11}V_1 + y_{12}V_2$ and $I_2 = y_{21}V_1 + y_{22}V_2$ 4. $V_1 = t_{11}V_2 - t_{12}I_2$ and $I_1 = t_{21}V_2 - t_{22}I_2$
<p>A short circuit has a _____ drop across its terminals, and the current is limited only by the surrounding network.</p>	<ol style="list-style-type: none"> 1. 5 V 2. 0 V 3. Infinity 4. 1 V
<p>Zero initial condition for a system means</p>	<ol style="list-style-type: none"> 1. input reference signal is zero 2. zero stored energy 3. initial movement of moving parts 4. system is at rest and no energy is stored in any of its components
<p>What would be the power factor for an RLC circuit that acts inductively?</p>	<ol style="list-style-type: none"> 1. +90 degrees leading 2. one 3. zero 4. -90 degrees lagging
<p>What is the approximate phase angle in a series RLC circuit when $V_c = 117$ V, $V_R = 14.5$ V, and $V_L = 3.3$ V?</p>	<ol style="list-style-type: none"> 1. -45.0 degrees 2. -90.0 degrees 3. -82.7 degrees 4. -172.7 degrees
<p>Which statement best describes reactance in a series RLC circuit?</p>	<ol style="list-style-type: none"> 1. The larger of the two reactance is dominant 2. Resistance is always dominant 3.

	<p>Inductive reactance is always dominant</p> <p>4. Capacitive reactance is always dominant</p>
The impedance of a 10-F capacitor is:	<p>1. 1/10s</p> <p>2. 10/s</p> <p>3. s/10</p> <p>4. 10s</p>
We can usually obtain the Thevenin equivalent in the time domain.	<p>1. True</p> <p>2. False</p> <p>3. Some times</p> <p>4. Incomplete Question</p>
A series resonant circuit and a parallel resonant circuit are equivalent if	<p>1. $R_p = R_s(1 + Q^4)$ and $X_p = X_s(1 + Q^{-4})$</p> <p>2. $R_p = R_s(1 + Q^3)$ and $X_p = X_s(1 + Q^{-3})$</p> <p>3. $R_p = R_s(1 + Q^2)$ and $X_p = X_s(1 + Q^{-2})$</p> <p>4. $R_p = R_s(1 - Q^2)$ and $X_p = X_s(1 - Q^{-2})$</p>
A circuit which has $\omega_0 = 10^6$ rad / sec (ω_0 = resonant frequency) $C = 10$ pF and $Q = 100$, must have a resistance of _____ k Ω .	<p>1. 5</p> <p>2. 1</p> <p>3. 10</p> <p>4. 100</p>
When port 1 of a two-port circuit is short-circuited, $I_1 = 4I_2$ and $V_2 = 0.25I_2$. Which of the following is true?	<p>1. $y_{21} = 16$</p> <p>2. $y_{12} = 16$</p> <p>3. $y_{11} = 4$</p> <p>4. $y_{22} = 0.25$</p>
A two-port is described by the following equations: $V_1 = 50I_1 + 10I_2$, $V_2 = 30I_1 + 20I_2$ then which of the following is not true?	<p>1. $B = 50$</p> <p>2. $h_{12} = 0.5$</p> <p>3. $Z_{12} = 10$</p> <p>4. $y_{12} = -0.0143$</p>

<p>If a two-port is reciprocal, which of the following is not true?</p>	<ol style="list-style-type: none"> $h_{21} = h_{12}$ $AD = BC + 1$ $y_{21} = y_{12}$ $z_{21} = z_{12}$
<p>The circuits in homes are connected in parallel rather than series because it is</p>	<ol style="list-style-type: none"> Economical easy to do possible to get same current possible to get same voltage
<p>A current of 4 A flows in an AC circuit when 100 V DC is applied to it whereas it takes 250 V AC to produce the same current the power factor of the circuit is</p>	<ol style="list-style-type: none"> 0.8 0.6 0.4 1
<p>When $XC = XL$ the circuit:</p>	<ol style="list-style-type: none"> draws minimum current draws maximum current applied voltage is zero is at resonance
<p>A series circuit consists of $R = 20\ \Omega$, $L = 20\text{ mH}$, and AC supply 60 V with $f = 100\text{ Hz}$. The current in R is</p>	<ol style="list-style-type: none"> 5.08 A 10.16 A 1.27 A 2.54 A
<p>If the percentage reactance of an element is 20 % and the full load current is 50 A, the short circuit current will be</p>	<ol style="list-style-type: none"> 200 A.

	<p>300 A.</p> <p>3. 250 A.</p> <p>4. 350 A</p>
For the resonance circuit $\omega_0 = 105$, $Q = 50$, $R = 400 \Omega$ the value of C is	<p>1. 125 pF</p> <p>2. 1000 pF.</p> <p>3. 250 pF.</p> <p>4. 500 pF.</p>
A practical DC current source provides 20 kW to a 50Ω load and 20 kW to a 200Ω load. The maximum power that can draw from it is	<p>1. 22.5 kW</p> <p>2. 30.3 kW</p> <p>3. 40 kW</p> <p>4. 45 kW</p>
What is the V_s for a series RLC Circuit when $I_r = 3 \text{ mA}$, $V_L = 30\text{V}$, $V_C = 18\text{V}$, and $R = 1\text{K}\Omega$	<p>1. 34.98 V</p> <p>2. 48.00 V</p> <p>3. 3.00 V</p> <p>4. 12.37 V</p>
How much current will flow in a 100 Hz series RLC circuit if $V_s = 20 \text{ V}$, $R_r = 66 \text{ ohms}$ and $X_r = 47 \text{ ohms}$?	<p>1. 1.05 A</p> <p>2. 303 mA</p> <p>3. 107 mA</p> <p>4. 247 mA</p>
Resistors may be represented in the frequency domain by an impedance having the _____	<p>1. same magnitude</p> <p>2. opposite in magnitude</p> <p>3. complex in magnitue</p> <p>4. negative complex in magnitue</p>
The voltage through a resistor with current $i(t)$ in the s-domain is $sRI(s)$.	<p>1. False</p> <p>2. Sometimes</p> <p>3. Incomplete Question</p>

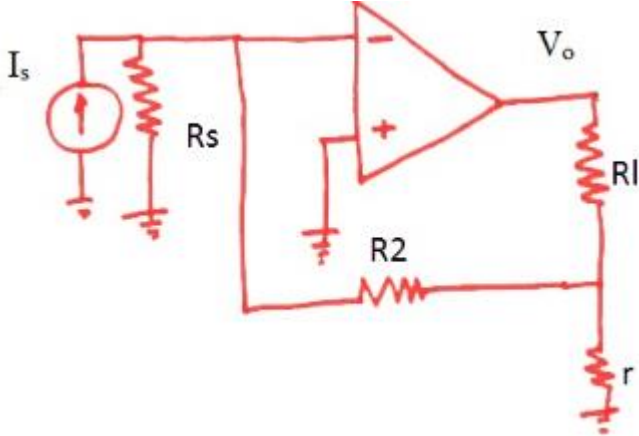
	4. True
A 2 port network using Z parameter representation is said to be reciprocal if	<p>1. $Z_{12} = Z_{21}$</p> <p>2. $Z_{11} = Z_{22}$</p> <p>3. $Z_{12} = -Z_{21}$</p> <p>4. $Z_{11}Z_{22} - Z_{12}Z_{21} = 1$</p>
Inductors may be represented in the frequency domain by an impedance as _____	<p>1. $1/sL$</p> <p>2. $-sL$</p> <p>3. sL</p> <p>4. $-1/sL$</p>
If the initial current is nonzero, then the impedance must be placed in series with a voltage source	<p>1. $Li(0^+)$</p> <p>2. $-Li(0^+)$</p> <p>3. $-Li(0^-)$</p> <p>4. $Li(0^-)$</p>
The impulse response of a LTI system is a unit step function, then the corresponding transfer function is	<p>1. 1</p> <p>2. $1/s^2$</p> <p>3. $1/s$</p> <p>4. s</p>
The final value of $x(t) = [2 + e^{-3t}]u(t)$ is	<p>1. e^{-3t}</p> <p>2. 3</p> <p>3. 2</p> <p>4. 0</p>
If the Nyquist plot of the loop transfer function $G(s)H(s)$ of a closed-loop system encloses the $(-1, j0)$ point in the $G(s)H(s)$ plane, the gain margin of the system is	<p>1. less than zero 2. greater than zero 3. Zero 4. infinity</p>
A system with gain margin close to unity or a phase margin close to zero is	<p>1. highly stable 2. unstable</p> <p>3. relatively stable 4. oscillatory</p>
Final value of $X(s) = 1/(s-2)$ is	<p>1. 1</p> <p>2. 0</p> <p>3. 2</p> <p>4. Infinity</p>
If the gain margin of a certain feedback system is given as 20 dB, the Nyquist plot will cross the negative real axis at the point	<p>1. $s = -0.05$</p> <p>2. $s = -0.2$</p> <p>3. $s = -0.1$</p> <p>4. $s = -0.01$</p>
In force-current analogy, electrical analogous quantity for displacement (x) is	<p>1. voltage</p>

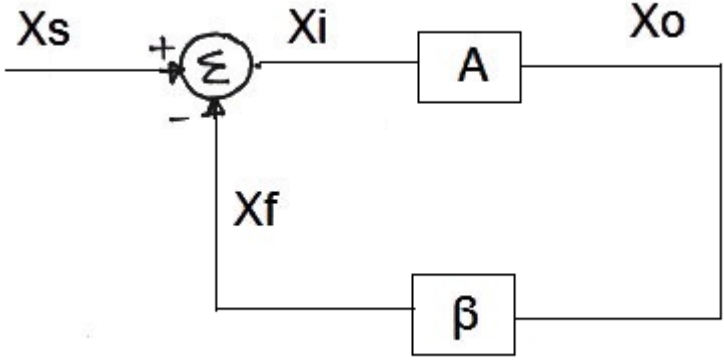
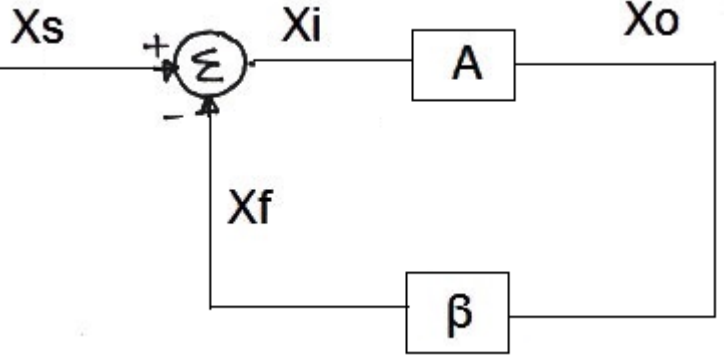
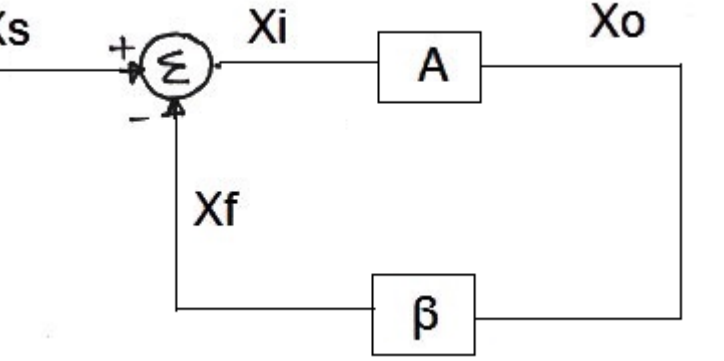
	2. inductance 3. capacitance 4. flux
The open loop transfer function of a unity feedback control system is given by $G(s) = k/s(s+1)$. If gain k is increased to infinity, then damping ratio will tend to become	1. infinite 2. 0.707 3. unity 4. zero
Consider a network function $H(s) = 2(s+3)/((s+2)(s+4))$. What is the steady state response due to step input?	1. 4/3 2. 1/2 3. 1 4. 3/4
The open loop transfer function for unity feedback system is given by $5(1+0.1s) / (s(1+5s)(1+20s))$ Find the steady state error for a step input of magnitude 10 is equal to	1. 0 2. 2 3. infinite 4. 5
The input-output relationship of a linear time invariant continuous time system is given by $r(t) = d^2c(t)/dt^2 + 3 dc(t)/dt + 2 c(t)$ Where $r(t)$ and $c(t)$ are input and output respectively. What is the transfer function of the system equal to?	1. $1/(s^2 + s + 2)$ 2. $1/(s^2 + 3s + 2)$ 3. $2/(s^2 + 3s + 2)$ 4. $2/(s^2 + s + 2)$

Number of roots in left hand half of s plane if characteristic equation is $s^3 - 4s^2 + s + 6 = 0$?	1. 1 2. 2 3. 3 4. 0
The second order system is defined by $25 / (s^2 + 5s + 25)$ is given step input. The time taken for the output to settle with in 2 % of input is	1. The second order system is defined by $25 / (s^2 + 5s + 25)$ is given step input. The time taken for the output to settle with in 2 % of input is 2. 1.2 sec. 3. 2 sec. 4. 0.4 sec.
The dc gain of a system represented by the transfer function $12 / \{(s + 1)(s + 3)\}$ is	1. 1 2. 2 3. 5 4. 10
The transfer function of a system given by $T(s) = -\frac{100}{s^2 + 20s + 100}$ The system is	1. an over damped. 2. a critically damped. 3. an under damped. 4. a unstable.
A unity feedback control system has an open loop transfer function $G(s) = k/(s(s^2 + 7s + 12))$ The gain k for which $s = -1 + j1$ will lie on the root locus of the system is	1. 4 2. 6.5

	3. 5 4. 10
The characteristic equation of a control system is given by $s(s + 4)(s^2 + 2s + 1) + k(s + 1) = 0$. Find the angle between the asymptotes?	1. 60° 2. 360° 3. 120° 4. 180°
The phase margin of a system having the loop transfer function $G(s)H(s) = 2\sqrt{3}/s(s+1)$ is	1. 45° 2. 30° 3. 60° 4. 80°
The value of 'a' to give phase margin = 45° will be $G(s) = (as+1)/s^2$	1. 0.707 2. 1.414 3. 1.18 4. 0.9
A open loop transfer function is given as $G(s) = (s+2)/(s+1)(s-1)$. Find the number of encirclements about $-1+j0$?	1. 1 2. 0 3. 2 4. 3
The system function $H(z) = (z^3 - 2z^2 + z)/(z^2 + 0.25z + 0.125)$ is,	1. Causal 2. Unstable but causal 3. Cannot be defined 4. Noncausal
In differential-mode,	1. opposite polarity signals are applied at the inputs 2.

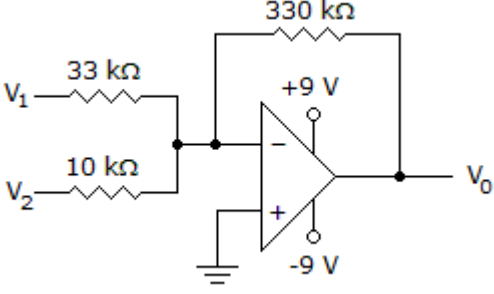
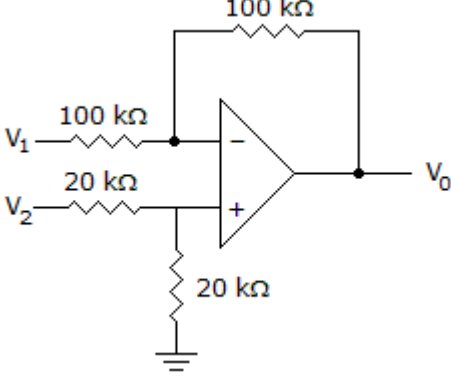
	<p>the gain is one</p> <p>3. the outputs are of different amplitudes</p> <p>4. only one supply voltage is used</p>
If the initial voltage is nonzero, then the impedance must be placed in series with a voltage source _____	<p>1. $v(0^-)/s$</p> <p>2. $-v(0^-)/s$</p> <p>3. $-v(0^-)/s$</p> <p>4. $v(0^-)/s$</p>
A network function can be completely specified by:	<p>1.Real parts of zeros 2.Poles and zeros 3.Real parts of poles</p> <p>4.Poles, zeros and a scale factor</p>
In a double tuned circuit, consisting of two magnetically coupled, identical high-Q tuned circuits, at the resonance frequency of either circuit, the amplitude response has	<p>1.a peak, always 2.a dip, always</p> <p>3.either a peak or a dip 4.neither a peak nor a dip</p>
The rms value of the a-c voltage $v(t) = 200 \sin 314 t$ is:	<p>1.200 V 2.157.23 V 3.314 V</p> <p>4.141.42 V</p>
In the solution of network differential equations, the constants in the complementary function have to be evaluated from the initial conditions, and then the particular integral i is to be added. This procedure is	<p>1.correct. 2.incorrect 3.the one to be followed for finding the natural response 4.the one to be followed for finding the natural and forced responses</p>
If a network function has zeros only in the left-half of the s-plane, then it is said to be	<p>1.a stable function. 2.a non-minimum phase function 3.a minimum phase function. 4.an all-pass function.</p>
A network N is to be connected to load of 500 ohms. If the Thevenin's equivalent voltage and Norton's equivalent current of N are 5Volts and 10mA respectively, the current through the load will be	<p>1.10mA 2.2.5mA 3.5mA 4.1mA</p>
A unit impulse voltage is applied to one port network having two linear components. If the current through the network is 0 for $t < 0$ and decays exponentially for $t > 0$ then the network consists of	<p>1.R and L in series 2.R and L in parallel 3.R and C in parallel 4.R and C in series</p>
$V_r = 10 \cos(300 t)$, $R = 5$ ohms; $I_r =$ _____	<p>1.2/_0 2.10/_0 3.5/_0 4.60</p>
$w = 200$; $L = 0.5$, the value of $Z_L =$ _____	<p>1.100 2.-100j 3.100j 4.j/100</p>
The condition for maximum power transfer to take place in a ac circuit is _____	<p>1.$Z_L = -Z_{TH}$ 2.$Z_L = Z_{TH}^*$</p> <p>3.$Z_L = Z_{TH}$ 4.$Z_L = 0$</p>
Z_{th} is $50 + 30 j$; what should be the load resistance connected for maximum power transfer to take place?	<p>1.$50 + 30 j$ 2.50-30 j 3.-50-30j 4.-50+30j</p>
The system function $H(z) = (z^3 - 2z^2 + z)/(z^2 + 0.25z + 0.125)$ is,=	<p>1. Causal</p> <p>2. Unstable but causal</p> <p>3.</p>

	<p>Noncausal</p> <p>4. Cannot be defined</p>
$\delta[n] =$	<p>1. $u[n]$</p> <p>2. $u[n]-u[n-1]$</p> <p>3. $u[n-1]$</p> <p>4. $u[-n]$</p>
<p>Damped sinusoids are _____</p>	<p>1. sinusoid signals multiplied by growing exponentials</p> <p>2. sinusoid signals divided by decaying exponentials</p> <p>3. sinusoid signals divided by growing exponentials</p> <p>4. sinusoid signals multiplied by decaying exponentials</p>
<p>For the circuit given below find out what type of feedback configuration it is. Also find out the feedback factor (assume that $r=5\text{ k}$ and $R_2= 10\text{ K}$)</p> 	<p>1. Series-Series, 0.25</p> <p>2. Series-Shunt, -0.25</p> <p>3. Shunt-Series, -0.5</p> <p>4. Shunt-Shunt, 0.5</p>
<p>A feedback arrangement is shown in figure below. If $X_o = 4.0\text{ V}$, $X_f = 0.9\text{ V}$, $X_s = 1.00\text{ V}$. Find β.</p>	<p>1. 0.25</p> <p>2. 0.225</p> <p>3. 0.3</p> <p>4. 0.4</p>

	
<p>A feedback arrangement is shown in figure below. If $X_o = 4.0\text{ V}$, $X_f = 0.9\text{ V}$, $X_s = 1.00\text{ V}$. Find the amount of feedback.</p> 	<ol style="list-style-type: none"> 10 1 100 90
<p>Consider the figure given below. The given amplifier is showing nonlinear behavior with $A = 10^4\text{ V/V}$ for $V_o \leq 0.2\text{ V}$, $A = 10^3\text{ V/V}$ for $0.2\text{ V} < V_o < 1\text{ V}$ but it hard limits at $V_o = 1\text{ V}$. The β of feedback loop is 0.01. Find the closed loop gain when $0.2\text{ V} \leq V_o \leq 1\text{ V}$.</p> 	<ol style="list-style-type: none"> 90.9 91.9 99 89.9
<p>The comparator using op-amp with input sine waveform gives</p>	<ol style="list-style-type: none"> triangular waveform square form

	3. cos waveform 4. sine waveform
Pre-emphasis in FM systems involves	1. Compression of the modulating signal 2. Expansion of the modulating signal 3. Amplification of lower frequency components of the modulating signal 4. Amplification of higher frequency components of the modulating signal
A capacitor circuit does not allow to pass _____ component.	1. d.c. 2. current 3. a.c. 4. voltage
If an op-amp comparator has a gain of 100,000, an input difference of 0.2 mV above reference, and a supply of 12 V, the output will be	1. 20V 2. 12V 3. 15V 4. 10V
A Closed- loop system is unstable if	1. Gain margin is negative and phase margin is positive 2. Both gain margin and Phase margin are negative 3. Gain margin is positive and phase margin is negative 4. Both gain and phase margin are positive
Find the zero of the transfer function given $H(s) = \frac{6s^2 + 18s + 12}{2s^3 + 10s^2 + 16s + 12}$	1. (-1,-2) 2. (1,2) 3. (2,-1) 4. (1,4)
An op-amp integrator has a square-wave input. The output should be	1. a triangle wave. 2. a square wave. 3. pure dc 4. a sine wave.

Specifications of butterworth low pass filter are given as $f_p = 30\text{kHz}$, $A_{\max} = 1\text{ dB}$, $f_s = 40\text{kHz}$, $A_{\min} = 20\text{ dB}$. What is the order of filter N?	1. 6 2. 11 3. 10 4. 14
A log amplifier may use the _____ junction of a BJT in the feedback loop.	1. base-collector 2. emitter-collector 3. base-emitter 4. emitter-ground
Specifications of Butterworth low pass filter are given as $f_p = 30\text{kHz}$, $A_{\max} = 1\text{ dB}$, $f_s = 40\text{kHz}$, $A_{\min} = 20\text{ dB}$. What attenuation is provided at 35 KHz ?	1. 13.1 dB 2. 14.2 dB 3. 9.3 dB 4. 40 dB
. Which one of the following is an example of open-loop system?	1. Air conditioner 2. Light switch 3. Automatic electric iron 4. Water level controller
On which of the following factors does the sensitivity of a closed loop system to gain changes and load disturbances depend ?	1. Frequency 2. Loop gain 3. All of the above 4. Forward gain
How many op-amps are required to implement this equation? $V_o = - \left(\frac{R_f}{R_2} V_2 - \frac{R_f}{R_3} \frac{R_f}{R_1} V_1 \right)$	1. 2 2. 3. 3. 4. 4. 1
Calculate the output voltage if $V_1 = -0.2\text{ V}$ and $V_2 = 0\text{ V}$.	1. 0 V 2. - 6.6 V 3. - 4 V 4.

	<p>2 V</p>
<p>Determine the output voltage when $V_1 = -V_2 = 1$ V.</p> 	<ol style="list-style-type: none"> 1. 0 V 2. - 2 V 3. 1 V 4. 2 V
<p>Two systems with impulse responses $h_1(t)$ and $h_2(t)$ are connected in cascade. Then the overall impulse response of the cascaded system is given by</p>	<ol style="list-style-type: none"> 1. convolution of $h_1(t)$ and $h_2(t)$ 2. sum of $h_1(t)$ and $h_2(t)$ 3. Product of $h_1(t)$ and $h_2(t)$ 4. subtraction of $h_1(t)$ and $h_2(t)$
<p>In the common mode,</p>	<ol style="list-style-type: none"> 1. both the inputs are grounded. 2. the outputs are connected together 3. an identical signal appears on both the inputs 4. the output signals are in phase
<p>The output of a particular Op-amp increases 8V in 12μs. The slew rate is</p>	<ol style="list-style-type: none"> 1. 90 V/μs 2. 0.67 V/μs 3. 1.5 V/μs 4. 0
<p>The input stage of an Op-amp is usually a</p>	<ol style="list-style-type: none"> 1. differential amplifier 2. class B push pull amplifier 3. CE amplifier

	4. Swamped Amplifier
Calculate the cutoff frequency of a first-order low-pass filter for $R_1 = 2.5 \text{ k}\Omega$ and $C_1 = 0.05 \text{ }\mu\text{F}$.	1. 1.273 kHz 2. 12.73 kHz 3. 127.3 kHz 4. 127.30 Hz
A carrier is simultaneously modulated by two sine waves with modulation indices of 0.4 and 0.3.	1. 1.0 2. 0.35 3. 0.5 4. 0.7
The system characterized by the equation $y(t) = ax(t) + b$ is	1. linear for any value of b 2. linear if $b > 0$ 3. linear if $b < 0$ 4. non-linear
Assuming zero initial condition, the response $y(t)$ of the system given $U(s) \rightarrow 1/s \rightarrow Y(s)$ to a unit step input $u(t)$ is	1. $u(t)$ 2. $e^{-tu(t)}$ 3. $t^{2/2} * u(t)$ 4. $tu(t)$
Two sequences $x_1(n)$ and $x_2(n)$ are related by $x_2(n) = x_1(-n)$. In the Z-domain, their ROCs are	1. same 2. reciprocal of each other 3. negative of each other 4. complement of each other
The Fourier Transform of a conjugate symmetric function is always	1. real 2. conjugate symmetry 3. Imaginary 4. conjugate anti-symmetric
How many 3-to-8 line decoders with an enable input are needed to construct a 6-to-64 line decoder without using any other logic gates?	1. 7 2. 8 3. 9 4. 10
For a type one system, the steady – state error due to step input is equal to	1. 0.5 2. infinite 3. 0.25 4. zero
If the modulation index of an AM wave is changed from 0 to 1, the transmitted power	1. Remains unaffected 2. Increase by 100% 3. Increase by 75% 4. Increase by 50%
An FM wave uses a 2 - 5V 1500Hz modulating frequency and has a modulation index of 10. The deviation is	1. 2500Hz 2. 1250Hz 3. 1000Hz 4. 5000Hz
Quantization bit rate for a an analog i/p signal with a bandwidth of 3.4 kHz in a delta modulator with a signal to quantization noise ratio of 25dB, will be	1. 58 kb/s 2. 68 kb/s 3. 78 kb/s 4. 48 kb/s

A TDM link has 20 signal channels and each channel is sampled 8000 times/sec. Each sample is represented by seven binary bits and contains an additional bit for synchronization, the total bit rate for the TDM link is	1. 1180 kbps 2. 1280 kbps 3. 1280 Mbps 4. 1180 Mbps
The number of bits in a binary PCM system is increased from n to $n+1$. As a result, the signal to quantization noise ratio will improve by a factor.	1. $2^{(n+1)/n}$ 2. Which is independent of n 3. $(n+1)/n$ 4. $2^{2(n+1)/n}$
In commercial TV transmission in India, picture and speech signal are modulated respectively as	1. VSB and FM 2. VSB and VSB 3. VSB and SSB 4. FM and VSB
In an SSB transmitter one is most likely to find	1. Class - C audio amplifier 2. Class - B RF amplifier 3. Tuned modulator 4. Class- AB power amplifier
For an FM wave, the maximum frequency deviation is 75kHz, if the frequency sensitivity is 3 kHz/V and the modulating signal has an amplitude of 9V then the percentage modulation is	1. 36% 2. 33% 3. 100% 4. 277%
A frequency multiplier using PLL has VCO output frequency f_0 is given by	1. f_s/N 2. f_s 3. Nf_s 4. $1/Nf_s$
A FM signal has a carrier swing of 100 kHz when the modulating signal has a frequency of 8 kHz. The modulation index is	1. 6.25 2. 12.5 3. 7.5 4. 15
For an ideal transformer,	1.both z and y parameters exist. 2.neither z nor y parameters exist. 3.z-parameters exist, but not the y-parameters. 4.y-parameters exist, but not the z-parameters.
The period of the output waveform of mono-stable multivibrator using 555 Timer with $R_A=7.5\text{ k}\Omega$ and $C = 0.1\text{ }\mu\text{F}$ when triggered by a negative pulse is	1. 1.5 ms 2. 0.825 ms 3. 0.75 ms 4. 0.525 ms
If n is the +ve frequency power density , the power density of white noise $d(\omega)$ is equal to	1. $2n$ 2. $n/2$ 3. $1/n$ 4. n
For self-sustain oscillations, the conditions to be satisfied for op-amp oscillators are	1. $A_v\beta > 1$, Phase Shift 0° 2. $A_v\beta < 1$, Phase Shift 90° 3. $A_v\beta = 1$, Phase Shift 0° 4. $A_v\beta = 1$ only

A communication channel with additive white Gaussian noise, has a bandwidth of 4 kHz and an SNR of 15, its channel capacity is	1. 32kbps 2. 16kbps 3. 256kbps 4. 20kbps
A communication channel distributed by additive white Gaussian noise has a bandwidth of 4 kHz and SNR of 15. The highest transmission rate that such a channel can support (in k-bits/sec) is	1. 16 2. 1.6 3. 3.2 4. 60
For $V_d > \pm 4V_T$, the function of differential amplifier will be	1. Switch 2. Limiter 3. Automatic gain control 4. Linear Amplifier
Change in value of common mode input signal in differential pair amplifier make	1. Change in voltage across collector 2. Slight change in collector voltage 3. Emitter voltage decreases to zero 4. Collector voltage decreases to zero
Which one of the following statements regarding the signal: $X(t) = 5\sin(2\pi 10^4 t)\sin(2\pi 10^6 t)$ is correct?	1. Upper side band frequency is 1001000 2. Lower side band frequency is 999000 3. $X(t)$ is a DSB ? SC signal 4. All of these
A certain inverting amplifier has a closed-loop voltage gain of 25. The Op-amp has an open-loop voltage gain of 100,000. If an Op-amp with an open-loop voltage gain of 200,000 is substituted in the arrangement, the closed-loop gain	1. remains at 25 2. drops to 12.5 3. doubles 4. increases slightly
A 60kHz carrier is amplitude modulated by the speech band of 300 to 3000 Hz. The range of upper side band will be	1. 57 to 59.7 kHz 2. 60 to 59.7 kHz 3. 60.3 to 63 kHz 4. 56.7 to 56.3 kHz
The Maximum power efficiency of an AM modulator is	1. 25% 2. 75% 3. 50% 4. 100%
Synchronization is an important aspect in	1. Time Division Multiple Access 2. Code Division Multiple Access

	3. Space Division Multiple Access 4. Frequency Division Multiple Access
gain in dBi is with reference to	1. isotropic 2. hertzian dipole 3. dipole 4. milliwatt power
For an AM signal the bandwidth is 20 kHz and the highest frequency component present is 800kHz. The carrier frequency used for this AM signal is.	1. 790kHz 2. 710kHz 3. 700kHz 4. 705kHz
In VCO IC 566, the value of charging & discharging is dependent on the voltage applied at _____.	1. Triangular input 2. Modulating input 3. Square wave output 4. Triangular wave output
Shannon's law relates	1. Frequency to antenna gain 2. Antenna gain to transmission losses 3. Information carrying capacity to S/N ratio 4. Antenna gain to bandwidth
Which of the following pulse modulation is analog?	1. Differential PCM 2. PWM 3. Delta 4. PCM
In phase modulation, frequency deviation is	1. Inversely proportional to the modulated signal frequency 2. Inversely proportional to the square root of the modulation frequency 3. Independent of the modulated signal 4. Directly proportional to the modulated signal frequency
Time Division Multiplexing requires	1. Transmission of data at random 2. Transmission of data of only one measured 3. Constant data transmission 4. Transmission of data samples
Laser light is very bright because it is	1. Monochromatic 2. Coherent 3. White 4. Pure
The primary disadvantage of the flash analog-to digital converter (ADC) is that:	1. a large number of comparators is required to represent a reasonable sized binary number

	2. a long conversion time is required 3. a large number of output lines is required to simultaneously decode the input voltage 4. it requires the input voltage to be applied to the inputs simultaneously
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1 kW carrier is modulated to a length of 60%. The total power in the modulated carrier is	1. 1.06 KW 2. 1KW 3. 1.6 KW 4. 1.18 KW
When compared a 1st order LPF with a 2nd order LPF has	1. Higher cut off frequency 2. Faster drop in filter response 3. Lower voltage gain. 4. Higher voltage gain.

The admittance and impedance of the following kind of network have the same properties:	1.LC 2.RL 3.PLC 4.RC
On-off keying is the modulation scheme used for the majority of optical-fiber communication systems. This scheme is an example of	1. Binary phase shift keying 2. Binary frequency shift keying 3. Continuous-phase frequency shift keying 4. Binary amplitude shift keying
Speech is coded at low bit rates	1. to remove quantization noise 2. to provide high quality of reproduction 3. to secure transmission over channels having low capacity 4. to increase SNR
A PN sequence generator using feedback shift register of length, $m=4$. Chip rate is 10M chips per second. Determine the PN sequence length.	1. 16 2. 12 3. 20 4. 15
A network has 7 nodes and 5 independent loops. The number of branches in the network is:	1.13 2.12 3.11 4.10
Which type of fiber optic cable is best for very high speed data?	1. single-mode step-index 2. multimode step-index 3. single-mode graded-index 4. multimode graded-index
Antipodal signals differ in phase by	1. 90 degree 2. zero degree 3. 180 degree 4. 45 degree
Which modulation scheme has the lowest probability of error?	1. QPSK 2. Non-coherent FSK 3. DPSK 4. Coherent FSK
To analyze the effect of intersymbol interference, eye pattern is used. The width of the eye defines	1. distortion at sampling times 2. best sampling instant 3. margin over noise 4. sensitivity of system to timing error
To combat interference, duobinary signaling is used. 'Duo' implies	1. Reducing error propagation by factor two 2. Doubling channel bandwidth 3. Doubling transmission capacity 4. Doubling the symbol duration
Advantage of Manchester Coding	1. Low bandwidth 2. Ternary signaling 3. Most of power lies between DC and bit rate 4. No DC component
In a pure inductive circuit with $V=10 \sin(1000 t)$ and $L=0.05 \text{ H}$, the current in ampere is ____	1.-0.2 $\cos(1000 t)$ 2.0.2 $\cos(1000 t)$ 3.-0.2 $\sin(1000 t)$ 4.0.2 $\sin(1000 t)$

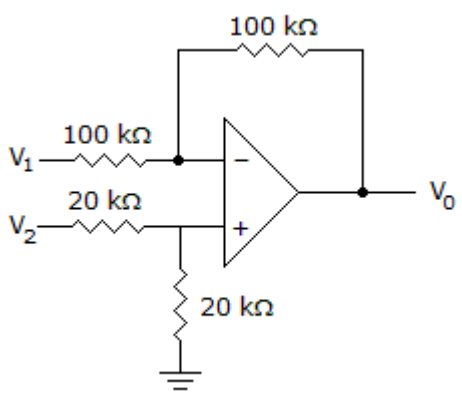
The average power in a resistive circuit is given by _____	1.0 2. $V_m I_m$ 3. $V_m I_m / 1.414$ 4. $V_m I_m / 2$
The average power in a pure inductive load is _____	1. $V_m I_m / 2$ 2. $V_m I_m / 1.414$ 3. $V_m I_m$ 4.0
the power factor value is equal to 1 for a pure _____	1.resistor 2.capacitor 3.inductor 4.voltage source
One of the following is not a characteristic of light detectors	1. Responsitivity 2. Spectral response 3. Transmit time 4. Dispersion
$V_m = 150 \cos(200\pi t - 30^\circ)$. The rms value is _____	1.128 2.106.1 3.156 4.110
What is the unit of responsitivity?	1. Ampere/watt 2. Ampere/Volt 3. Watt/Ampere 4. Votl/Ampere
The power factor is _____ for a pure inductor	1.0 2.1 3.between 0 and 1 4.>1
In a pure inductive circuit,	1.voltage leads the current 2.voltage lags the current 3.current and voltage are in phase 4.no relation between current and voltage
How many longitudinal modes can fall within a laser's gain bandwidth?	1. 2 2. 5 3. 9 4. No fixed limit, dependent on bandwidth and mode spacing
Which of the following is the fastest light sensor	1. PIN photodiode 2. Photo voltaic photodiode 3. Avalanche photodiode

	4. Photo transistor
What is the spectral width of a standard LED?	1. 20 to 40nm 2. 30 to 50 nm 3. 40 to 60nm 4. 10 to 50nm
The speed of light in plastic compared to the speed of light in air is	1. Slower 2. . Faster 3. The same 4. Either lower or faster
Differential coding produces an output in which the information is contained in differences between successive bits such that the output changes state if the input bit is a 1 otherwise the output remains the same. Assuming the initial condition for the output is 0, the differential coding for the input sequence 1100101 is	1. 1000110 2. 1100100 3. 1011101 4. 1010101
An example of temporal speech coder is	1. Model based coding 2. Subband coding 3. Differential PCM 4. Adaptive transform coding
In a PCM system, amplitude levels transmitted in 6 bits.Sampling done at 10kHz.Bandwidth should be	1. 40kHz 2. 45kHz 3. 30kHz 4. 35kHz
If a sinusoidal modulating signal is uniformly quantized with a (SNR) _q of 20dB, determine the number of bits required per sample	1. 4 2. 2 3. 3 4. 5
Consider a linear delta modulator system designed to accomdate a sinusoid of amplitude 1V, frequency 800Hz.Sampling rate is 64kHz. Minimum value of step size to avoid overload is	1. 75.5mV 2. 60.5mV 3. 70.5mV 4. 78.5mV
The output S/N ratio of a matched filter, fed at its input by a rectangular pulse of energy A and duration T is given as (assume N ₀ as noise power spectral density)	1. 2AT/No 2. AT 3. A/No 4. A/T
Source encoding of digital data is performed	1. suitable signaling format for transmission over channel 2. for reliable transmission through the channel 3. for the efficient use of channel

	4. for more robust transmission
For a transmitted signal of unknown phase, which of the following receiver is used to get maximum SNR?	1. Envelope Detector 2. Correlator 3. Matched Filter 4. Coherent detector
The most bandwidth efficient scheme is	1. OFDM 2. TDM 3. CDM 4. FDM
An important impairment to digital signals in a communication system is the irregularities in timing caused by imperfections in clock extraction and waveform regeneration. This effect is known as	1. Fading 2. Aliasing 3. Attenuation 4. Jitter
Arrange the following in chronological order a) Alec Reeves invention of PCM b) Shannon's Mathematical theory of Communication c) D.O. North's Matched Filter d) Harry Nyquist's theory of Signal transmission in telegraphy	1. d a c b 2. d b a c 3. a b c d 4. c d a b
Why GMSK is preferred over MSK in Wireless Communication?	1. Constant Envelope property 2. Time spread of frequency-shaping pulse 3. Better out-of band spectral characteristics 4. Wider bandwidth
Adaptive equalization is used to combat the effect of	1. Improper synchronization 2. Distortions due to jitter 3. Channel noise and Intersymbol interference 4. Phase distortion
Reducing the cell size to increase capacity is called as -----.	1. Top down approach 2. Microcell Approach 3. Intelligent cell approach 4. Bottom up approach
Companding is used	1. In PCM transmitters, to allow amplitude limiting in receivers 2. To overcome quantizing noise 3. To protect small signals in PCM from quantizing distortion 4. To overcome impulse noise
Wiener-Khinchine relationship is between	1. Energy Spectral Density and Fourier transform of a signal 2. Fourier transform of a signal and its autocorrelation 3. Power Spectral Density and Auto-correlation function of a random process 4. Power Spectral Density and Energy Spectral density of a random process

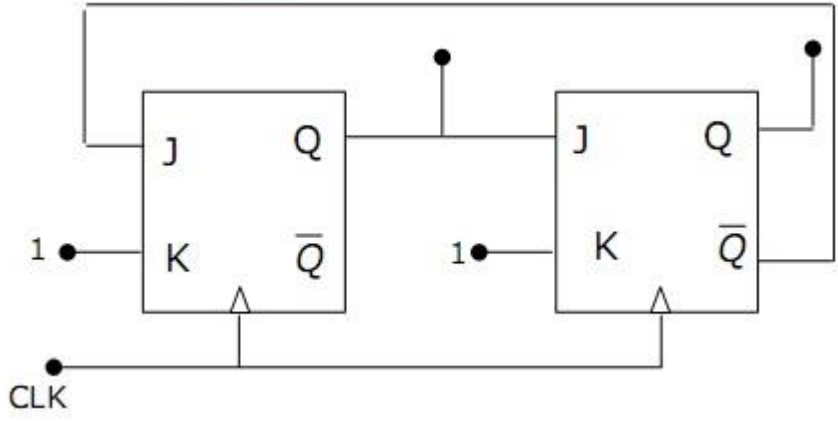
In a time multiplexed switching system, one speech sample appears every	1. 20ms 2. 125ms 3. 125microsec 4. 100ms
Typical human voice is centered around	1. 200-400Hz 2. 280-3000Hz 3. 400-600Hz 4. 1400-1800Hz
If BPSK modulation is used for transmission of data, the required minimum bandwidth is 9600Hz. To reduce the transmission bandwidth to 2400Hz, the modulation scheme adapted should be	1. 8-ary PSK 2. Minimum Shift Keying 3. Quadrature Phase Shift Keying 4. 16-ary PSK
Process of converting plaintext into ciphertext	1. Encryption 2. Decryption 3. compression 4. Authentication
The type of multiple access technique used in GSM is	1. FDMA 2. FDMA/TDMA 3. CDMA 4. SDMA
Reason for call drop is	1. External Noise 2. Handoff 3. Channel Assignment 4. Co-channel Interference
Which is the type of antenna used in OFDM technique?	1. Smart Antenna 2. Micro Strip Antenna 3. Log Periodic 4. Yagi Uda
Cable modem is capable of delivering up to	1. 56 kbps 2. 30-40 mbps 3. 2 mbps 4. 256 kbps
In CDMA, the system uses _____ for the Forward and Reverse links	1. TDD 2. TDMA 3. FDD 4. FDD and TDD
Unlike GSM, in WCDMA there is _____ dedicated transport channel, DCH	1. two 2. one 3. three 4. four
If a system requires 4 kHz of bandwidth to continuously send 8000 binary digits/sec, the bandwidth efficiency will be _____	1. 2 bits/s/Hz 2. 1 bits/s/Hz 3. 32 bits/s/Hz 4. 0.5 bits/s/Hz
Which of these Controls call processing and status management of the BTS, as the highest-level processor within the BTS.	1. TFPA 2. GPS-R 3. BSPA 4. TFBB
Which of this Controls FSU power during call?	1. Order wire

	2. APC Channel 3. Traffic Channels 4. Access Channel
The closed loop power control also uses an outer loop power control. This method measures the _____ both by the mobile and the base station and then adjusts the power according to whether it is acceptable.	1. Frame Error Rate (FER) 2. Bit Error Rate (BER) 3. Signal to Noise Ratio 4. Power ratio
Walsh codes are used only by the base station and in this fashion, it is a _____ CDMA on the forward link, whereas on the return link it is _____ CDMA,	1. synchronous, asynchronous 2. synchronous, synchronous 3. asynchronous, asynchronous 4. asynchronous, synchronous
Sectorization Reduces Interference and adds a Gain to the system which is called _____	1. FER 2. Sectorization removal 3. Cell breathing 4. Sectorization Gain
The core concept used in Cellular technology is	1. Frequency Reuse 2. FDM 3. Code reuse 4. TDM
The _____ is a database that contains information about the identity of mobile equipment that prevents calls from stolen, unauthorized, or defective mobile stations.	1. XME 2. HLR 3. EIR 4. AUC
The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by	1. BSC 2. MSC 3. MS 4. BTS
The signal $\cos \omega_c t - 0.5 \cos \omega_m t \sin \omega_c t$	1. FM only 2. AM only 3. both AM and FM 4. neither AM or FM
Width of the main spectral lobe, where most of the signal power is contained.	1. Half Power Bandwidth 2. Null to Null Bandwidth 3. Absolute Bandwidth 4. Full Power Bandwidth
Signal travel through various paths and arrives at receivers at different time multi path propagation.	1. Additive noise Channel 2. Linear Filter Channel. 3. Linear Time-Variant Filter Channel. 4. Linear Time Invariant Filter

<p>Determine the output voltage when $V_1 = -V_2 = 1\text{ V}$.</p> 	<ol style="list-style-type: none"> 1. 2 V 2. -2 V 3. 1 V 4. 0 V
<p>How many op-amps are required to implement this equation?</p> $V_o = - \left(\frac{R_f}{R_2} V_2 - \frac{R_f}{R_3} \frac{R_f}{R_1} V_1 \right)$	<ol style="list-style-type: none"> 1. 4 2. 1 3. 2 4. 3
<p>A low pass filter circuit is basically</p>	<ol style="list-style-type: none"> 1. Integrator with larger time constant 2. <ol style="list-style-type: none"> a. Integrator with low time constant 3. Differentiator with low time constant 4. Differentiator with larger time constant
<p>Which of the following potential expression does satisfy Laplace's Equation:</p>	<ol style="list-style-type: none"> 1. $V_i = \rho z \sin \phi + \rho^2$ 2. $V_i = x^2 + y^2 + 5z^2 - 10$ 3. $V_i = x^2 + y^2 - 2z^2 + 10$ 4. $V_i = 2x^2 + 5$
<p>Stack is _____Memory</p>	<ol style="list-style-type: none"> 1. Volatile RAM 2. Non Volatile ROM 3. Volatile ROM 4. Non Volatile RAM
<p>The inverting amplifier is a</p>	<ol style="list-style-type: none"> 1. Voltage shunt feedback amplifier 2. Current shunt feedback amplifier 3. Current series feedback amplifier 4. Voltage series feedback amplifier
<p>The maximum efficiency of full wave rectification is</p>	<ol style="list-style-type: none"> 1. 85.6% 2. 81.2% 3. 100% 4. 40.6%
<p>Step size can be made smaller for smaller signals and larger for larger signals</p>	<ol style="list-style-type: none"> 1. ADM 2. DM 3. DPCM

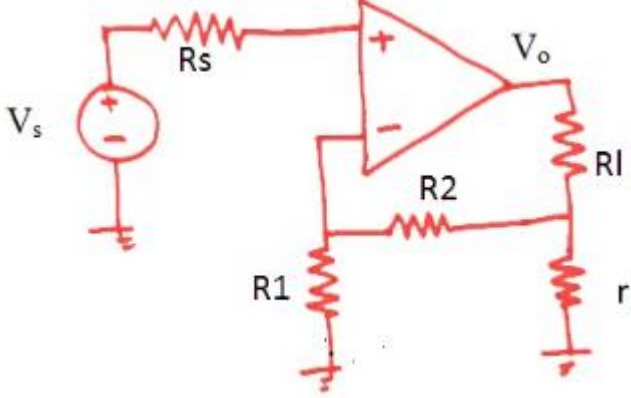
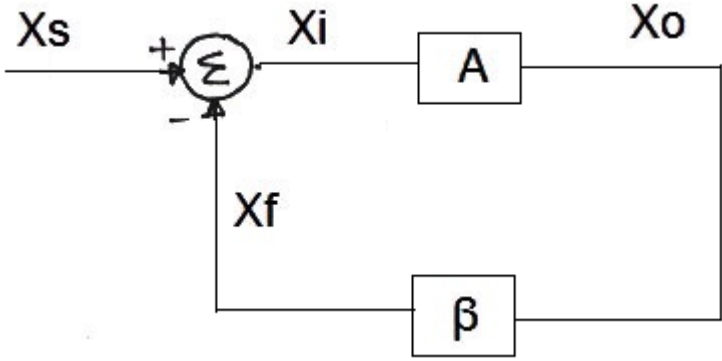
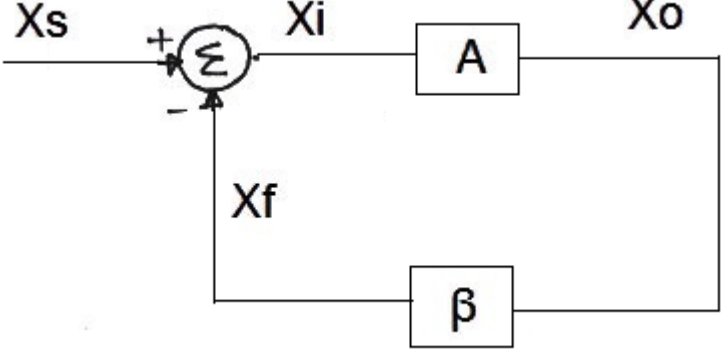
	4. PCM
Which of the following is true about the AM and FM systems?	1. BW of FM < BW of AM; power FM > power AM; noise FM > noise AM 2. BW of FM < BW of AM; power FM < power AM; noise FM < noise AM 3. BW of FM < BW of AM; power FM > power AM; noise FM < noise AM 4. BW of FM > BW of AM; power FM < power AM; noise FM < noise AM
Which of the following methods can be used for generating SSB-SC signals?	1. Ring Modulator 2. Frequency Discrimination Method 3. Switching modulator 4. Square-law modulator
With respect to the envelopes of the AM and FM modulated waves, which of the following is true?	1. Both vary according to the shape of the message signal 2. Envelope of AM is constant, FM is variable 3. Both are of constant amplitude 4. Envelope of AM varies and FM envelope is constant
Find the value of Quantization noise in Watts, in a Pulse code modulation system when a signal of 0-16 volts amplitude is quantized using 3-bit quantization.	1. $\frac{1}{4}$ 2. $\frac{1}{12}$ 3. $\frac{1}{6}$ 4. $\frac{1}{3}$
The velocity of an EM wave	1. Inversely proportional to β 2. Directly proportional to α 3. inversely proportional to α 4. directly proportional to β
A uniform plane electromagnetic wave incident normally on a plane surface of a dielectric material is reflected with a VSWR of 3 .what is the percentage of incident power that is reflected ?	1.10% 2.25% 3.75% 4.50%
Voltage-divider bias provides	1. an unstable Q point 2. a stable Q point 3. a Q point that is stable and easily varies with changes in the transistor's current gain 4. a Q point that easily varies with changes in the transistor's current gain
When transistors are used in digital circuits they usually operate in the _____	1. linear region 2. active region 3. breakdown region 4. saturation and cutoff regions

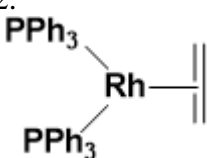
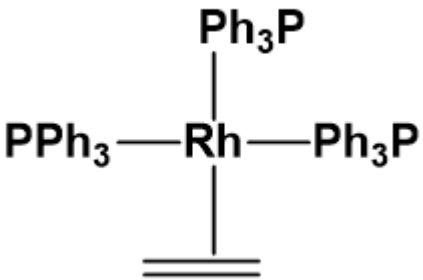
The Circuit which converts unidirectional flow to D.C. is called _____	1. filter circuit 2. Eliminator 3. Rectifier circuit 4. Converter circuit
In a power supply diagram, which block indicates a pulsating dc output?	1. regulator 2. filter 3. rectifier 4. transformer
A comparison between ring and johnson counters indicates that:	1. a Johnson counter has an inverted feedback path 2. a ring counter has an inverted feedback path 3. a Johnson counter has fewer flip-flops but requires more decoding circuitry 4. a ring counter has fewer flip-flops but requires more decoding circuitry
In a modulo-16 ripple counter using JK flipflop, if each flipflop propagation delay is 50nsec, the maximum clock frequency that can be used is equal to	1. 5MHz 2. 2.5MHz 3. 1.25MHz 4. 10MHz
The frequency of a continuous time signal $x(t)$ changes on transformation from $x(t)$ to $x(\alpha t)$, $\alpha > 0$ by a factor	1. $\alpha^{1/2}$ 2. $1/\alpha$ 3. α 4. α^2
How many flip-flops are required to make a MOD-29 binary counter?	1. 3 2. 6 3. 5 4. 4
The output frequency of a full-wave rectifier is _____ the input frequency.	1. one-half 2. equal to 3. twice 4. one-quarter
The output frequency for a frequency division circuit that contains 12 flip-flops with an input clock frequency of 20.48 MHz is	1. 5 kHz 2. 15 kHz 3. 30.24 kHz 4. 10.24 kHz
The normal operating region for a zener diode is the	1. forward-bias region 2. reverse-breakdown region 3. zero-crossing region 4. reverse-bias region

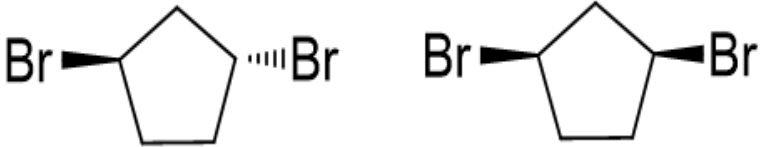
What type of diode is commonly used in electronic tuners in TVs?	1. Schottky 2. LED 3. Gunn 4. varactor
One of the main functions of the RF amplifier in a super heterodyne receiver is to	1. provide improved tracking 2. permit better adjacent-channel rejection 3. increase the tuning range of the receiver 4. improve the rejection of the image frequency
What is the minimum number of gates required to implement the Boolean function $(AB+C)$ if we have to use only 2-input NOR gates?	1. 5 2. 4 3. 2 4. 3
Identify the statement that is not true for ferromagnetic materials	1. They loss their nonlinearity property above the Curie Temperature 2. They have fixed value of μ . 3. They have large χ_m 4. Energy loss is proportional to the area of the hysteresis loop
If a transistor operates at the middle of the dc load line, a decrease in the current gain will move the Q point	1. down 2. nowhere 3. off the load line 4. up
The ends of a load line drawn on a family of curves determine	1. the amplification factor 2. saturation and cutoff 3. the power curve 4. the operating point
The Q point on a load line may be used to determine	1. V_B 2. V_{CC} 3. I_C 4. V_C
The figure shown below is a Mod-K counter, K = 	1. 3 2. 1 3. 2 4. 4
One of the following is not a source of Magnetostatics field:	1. A permanent magnet

	2. An accelerated charge 3. A dc current in a wire 4. The electric field linearly changing with time
Depth of penetration in free space is	1. 0 2. small 3. $1/\alpha$ 4. Infinity
The Ex-NOR is sometimes called the	1. Parity gate or the equality gate 2. inverted OR 3. equality gate 4. parity gate
Travel to length $\lambda g/2$ over the line corresponds to rotation over smith chart by	1. 90° 2. 180° 3. 270° 4. 360°
For a BJT, the common base current gain $\alpha = 0.98$ and the collector base junction reverse bias saturation current, $I_{co} = 0.6 \mu A$. This BJT is connected in the common emitter mode and operated in the active region with a base current (I_b) of $20 \mu A$. The collector current I_c for this mode of operation is	1. 0.98 mA 2. 0.99 mA 3. 1.01 mA 4. 1.0 mA
In a MOSFET operating in the saturation region, the channel length modulation effect causes	1. a decrease in the Transconductance 2. an increase in the gate-source capacitance 3. a decrease in the unity-gain cutoff frequency 4. a decrease in the output resistance
Indicate the false statement	1. Industrial noise is usually of the impulse type 2. Thermal noise is independent of the frequency at which it is measured 3. Impulse noised voltage is independent of the bandwidth 4. HF mixers are generally noisier than HF amplifiers
The bit sequence 10011100 is serially entered (right-most bit first) into an 8-bit parallel out shift register that is initially clear. What are the Q outputs after four clock pulses?	1. 11110000 2. 00001100 3. 11000000 4. 10011100
The Fourier Transform of a rectangular pulse is	1. Triangular pulse 2. Another rectangular pulse 3. Sinc function 4. Impulse
Displacement of various sinusoids with respect to their origin is	1. ac component 2. dc component 3. phase 4. vector

Higher value of Q is achievable in	1. big cluster size 2. medium cluster size 3. micro cluster size 4. small cluster size
A system with an input $x(t)$ and output $y(t)$ is described by the relation $y(t) = tx(t)$. This system is	1. Linear, time invariant 2. Linear, time variant 3. nonlinear , time invariant 4. non linear, time variant
Flat-top sampling of low pass signals	1. give rise to apperture effect 2. Implies oversampling 3. Leads to aliasing 4. Introduces delay distortion
The signal $a^n u[n]$ is a power signal if	1. $ a < 1$ 2. $ a = 1$ 3. $ a = 0$ 4. $ a > 1$
A network function contains only poles whose real-parts are zero or negative. The network is	1.always stable 2.stable, if the $j\omega$ -axis poles are simple 3.stable, if the $j\omega$ -axis poles are at most of multiplicity 2 4.always unstable
The minimum amount of hardware required to make a lowpass filter is	1.a resistance, a capacitance and an opamp. 2.a resistance, an inductance and an opamp. 3.a resistance, a capacitance and an inductance. 4.a resistance and a capacitance.
If all the poles of the system function $H(Z)$ have magnitude smaller than 1, then the system will be,	1. BIBO stable 2. stable 3. marginally stable 4. unstable
For the circuit given below Find out what is the type of feedback? Also find out the feedback factor (assume that $r=5\text{ k}$ and $R_2=10\text{ K}$ and $R_1=20\text{ K}$)	1.Series-Series, 3.34×10^{-3} 2.Series-Shunt, 2.54×10^{-3} 3. Shunt-Series, 2.45×10^{-3} 4. Shunt-Shunt, 4.67×10^{-3}

	
<p>A feedback arrangement is shown in figure below. If $X_o = 4.0\text{ V}$, $X_f = 0.9\text{ V}$, $X_s = 1.00\text{ V}$. Find X_i.</p> 	<ol style="list-style-type: none"> 1. 0.01 V 2. 0.1 V 3. 0.02 V 4. 0.001 V
<p>A feedback arrangement is shown in figure below. If $X_o = 4.0\text{ V}$, $X_f = 0.9\text{ V}$, $X_s = 1.00\text{ V}$. Find A</p> 	<ol style="list-style-type: none"> 1. 30 2. 40 3. 50 4. 60
<p>A network contains linear resistors and ideal voltage sources. If the value of all the resistors are doubled then the voltage across each resistor_____</p>	<ol style="list-style-type: none"> 1. not changed 2. increases four times 3. doubled 4. halved
<p>_____ is a subscriber module that stores all the subscriber related information.</p>	<ol style="list-style-type: none"> 1. BSS 2. MS 3. ME 4. SIM

_____ is the constant change of the range of the geographical area covered by a cellular telephone transmitter based on the amount of traffic currently using that transmitter.	1. Cell loading factor 2. Sectorization 3. FER 4. Cell breathing
The most suitable method for detecting a modulated signal $(2.5 + 5 \cos \omega_m t) \cos \omega_c t$ is:	1. Envelope detector 2. Synchronous detector 3. Ratio detector 4. Both Envelope and Synchronous detector
$\text{Rh}(\text{Ph}_3)_3\text{Cl}$ reacts very fast with a gaseous mixture of H_2 and C_2H_4 to give Z. The structure of Z is	1. $\text{H}_3\text{C}-\text{CH}_3$ 2.  3. $(\text{PPh}_3)_2 \text{RhCl} (\eta^2\text{-C}_2\text{H}_4)$ 4. 
What is the stereochemical relationship between the following molecules?	1. Enantiomers 2. Diastereomers 3. Both are meso 4. Same compound

	
<p>Which one of the following is mainly responsible for depletion of ozone layers?</p>	<ol style="list-style-type: none"> 1. Methane 2. Carbon dioxide 3. Water 4. Chlorofluorocarbon
<p>A micro controller at-least should consist of:</p>	<ol style="list-style-type: none"> 1. RAM, ROM, I/O devices, serial and parallel ports and timers 2. CPU, RAM, I/O devices, serial and parallel ports and timers 3. CPU, RAM, ROM, I/O devices, serial and parallel ports and timers 4. CPU, ROM, I/O devices and timers
<p>What is the order decided by a processor or the CPU of a controller to execute an instruction?</p>	<ol style="list-style-type: none"> 1. decode, fetch, execute 2. execute, fetch, decode 3. fetch, execute, decode 4. fetch, decode, execute
<p>Why micro controllers are not called general purpose devices?</p>	<ol style="list-style-type: none"> 1. because they are based on VLSI technology 2. because they are not meant to do a single work at a time 3. because they are cheap 4.

	because they consume low power
On power up, the 8051 uses which RAM locations for register R0- R7	<ol style="list-style-type: none"> 1. 00-2F 2. 00-07 3. 00-7F 4. 00-0F
When we add two numbers the destination address must always be.	<ol style="list-style-type: none"> 1. some immediate data 2. any register 3. accumulator 4. Memory
DAA command adds 6 to the nibble if:	<ol style="list-style-type: none"> 1. CY and AC are necessarily 1 2. either CY or AC is 1 3. no relation with CY or AC 4. CY is 1
In 8 bit signed number operations, OV flag is set to 1 if:	<ol style="list-style-type: none"> 1. a carry is generated from D7 bit 2. a carry is generated from D3 bit 3. a carry is generated from D7 or D3 bit 4. a carry is generated from D7 or D6 bit
In unsigned number addition, status of which bit is important?	<ol style="list-style-type: none"> 1. OV 2. CY 3.

	AC 4. PSW
What is the clock source for the timers?	1. some external crystal applied to the micro-controller for executing the timer 2. from the crystal applied to the micro-controller 3. through the software 4. through programming
Which of the following best describes how to construct a 1-line to 8-line de-multiplexer from a 3-line to 8-line decoder:	1. Connect the decoder input select lines CBA to D 2.connect the select lines of de-mux CBA as input D for decoder and input of de-mux as enable input for decoder 3. Connect the decoder input data lines to D _i 4. Connect the decoder output to D _i
The 8051 Micro controller has inbuilt	1. USART 2. UART 3.I2C 4. PWM
For serial communication, standard frequency of the crystal for 8051 would be	1.11.0592 MHz 2.11.0952 MHz 3.11.0295 MHz 4.11MHz
In serial communication with 8051 Micro controller _____ timer & _____ mode is used for baud rate generation	1.Timer 0 & Mode 1 2.Timer 1& Mode 0 3.Timer 0& Mode 2 4.Timer 1& Mode 2
A pole of the transfer function generates the form of the	1. forced response

	2. natural response 3. Both natural and forced response 4. Exponential Response
Rectangular Waveguide behaves as	1. Waveguide cant behave as filter 2. Low pass filter 3. All pass filter 4. High pass filter
In circular waveguide the dominat mode is	1. TE_{20} 2. TE_{10} 3. TE_{21} 4. TE_{11}
The capacitance, in force-current analogy, is analogous to	1. momentum 2. velocity 3. displacement 4. Mass
After RETI instruction is executed then the pointer will move to which location in the program?	1. next interrupt of the interrupt vector table 2. next instruction of the program after the IE instruction 3. next instruction after the RETI in the memory 4. First Instruction of the program
To initialize any port as an output port what value is to be given to it?	1. 0xFF 2. 0x11

	3. 0x22 4. A port is by default an output port
Technique gives quick transient and stability response	1. Root locus 2. Bode 3. Nyquist 4. nichols
How many memory chips of (128 x 8) are needed to provide a memory capacity of 4096 x 16?	1. 24 2. 32 3. 46 4. 64
A certain CE amplifier has a voltage gain of 100. If the emitter bypass capacitor is removed	1. The Q-point will shift 2. The circuit will become unstable 3. The voltage gain will decrease 4. The voltage gain will increase
An L-C impedance or admittance function:	1.has simple poles and zeros in the left half of the s-plane 2.has no zero or pole at the origin or infinity. 3.has all poles on the negative real axis of the s-plane. 4.is an odd rational function.
By cascading LPF and HPF active filter, the resulting circuit is	1.LPF 2.HPF 3. BPF 4. narrow BSF
Regenerative feedback:	1.Bandwidth decreases 2. Implies feedback with positive sign 3. Is used to increase the loop gain of the feedback system 4. Has the transfer function with a negative sign in the denominator
The constellation diagram of QPSK has	1. 8 2.1 3.2 4. 4
Switching technology used in 4G	1.circuit with packet switch 2. Digital with packet voice 3. Circuit Switched 4. Packet Switched

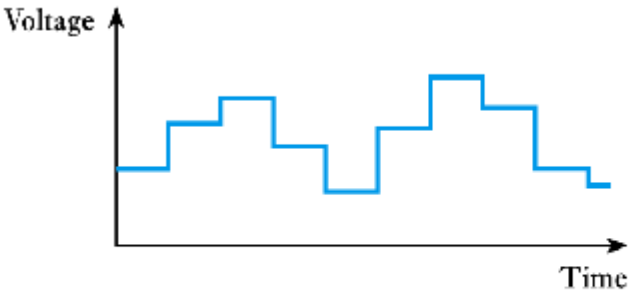
The reflection coefficient of a transmission line with a short-circuited load is	1.-1 2. $0.1\angle 0^\circ$ 3. ∞ 4. 0
The bandwidth of an amplifier is determined by	1.3dB cut-off frequencies 2. The input capacitances 3. The critical frequencies 4. The midrange gain
What effect does a clamper have on the peak-to-peak value of its input signal	1.No change 2. It decreases 3. It increases 4. zero
In a C-E configuration, an emitter resistor is used for	1. collector bias 2. stabilization 3. higher gain 4. ac signal bypass
In a transistor, collector current is controlled by	1.base voltage 2. base current 3. collector voltage 4. collector resistance
The closed loop gain of the wein bridge oscillator must be _____	1. $A_{cl} < 3$ 2. 0 3. $A_{cl} = 1$ 4. $A_{cl} = 3$
In BJT, the Q point on a dc load line in the saturation region represents the	1. minimum current gain 2. cutoff point 3. intermediate current gain 4. maximum current gain
A ring oscillator consisting of 5 inverters is running at a frequency of 1MHz. The propagation delay of each inverter isnsec	1. 200 2. 400 3. 50 4. 100
The input impedance of a $\lambda/2$ transformer is	1.input impedance 2. terminal admittance 3. characteristics impedance 4. terminal impedance
A direct sequence spread binary phase-shift keying system uses a feedback shift register of Length 19 for the generation of PN sequence. The system is required to have an average probability of symbol error due to externally generated interfering signals that does not exceed 10^{-5} . The Anti-jam margin is	1. 12.6 dB 2. 47.5 dB 3. 93.8 dB 4. 86.9 dB
A CDMA system is designed based on DS spread spectrum with a processing gain of 1000 and BPSK modulation scheme. If user has	1. 117 2. 147 3. 216 4. 89

equal power and the desired level of performance of an error probability of 10^{-6} , the number of user will be	
Design procedure of combinational circuit which gives output high if the input is greater than 5 involves minimum of gates	1. One AND and one OR gate 2. Two AND and one OR gate 3. One AND and two OR gate 4. One AND gate
How many minimum numbers of 3-line-to-8-line decoders are required for a 5-of-32 decoder?	1. 8 2. 2 3. 5 4. 1
How many basic binary subtraction operations are possible?	1. 1 2. 2 3. 3 4. 4
If an 8-bit ring counter has an initial state 10111110, what is the state after the fourth clock pulse	1. 11110000 2. 00000000 3. 00010111 4. 00001011 Ans.all options wrong correct answer is 11101011
Suppose only one multiplexer and one inverter are allowed to be used to implement any Boolean function of n variables. What is the minimum size of the multiplexer needed?	1. 2^n line to one line 2. 2^{n+1} line one line 3. 2^{n-1} line to one line 4. 2^{n-2} line to one line
If two system with impulse responses are $h_1(t)$ and $h_2(t)$ connected in parallel then the overall impulse response is	1. $h_1(t) * h_2(t)$ 2. $h_1(t) + h_2(t)$ 3. $h_1(t) - h_2(t)$ 4. $h_1(t)h_2(t)$
For an AC circuit, if $v(t) = 160 \sin(\omega t + 10^\circ)$ v and $i(t) = 5 \sin(\omega t - 20^\circ)$ A; then reactive power absorbed by the circuit is	1. 100 VARS. 2. 200 VARS. 3. 400 VARS. 4. 300 VARS.
_____ is defined as the frequency at which the magnitude of a circuit response function is reduced to $1/\sqrt{2}$ times its maximum value	1. Cut-off Frequency 2. Critical Frequency 3. Power frequency 4. Resonant Frequency

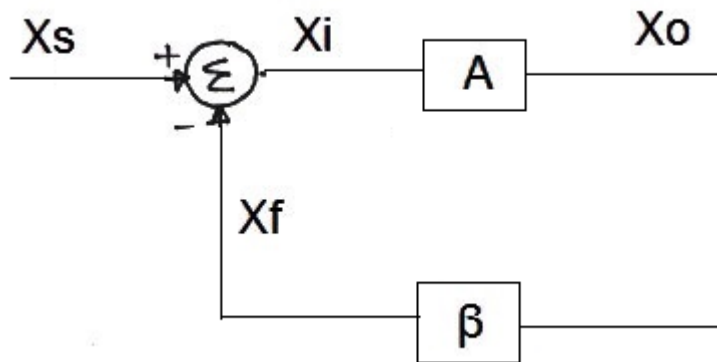
<p>A balanced 3 - Φ star connected load is fed from a 208 V, 3 - Φ supply. Each load has resistance of 35 Ω. The total power is</p>	<p>1. 1236 W.</p> <p>2. 618 W.</p> <p>3. 411.3 W.</p> <p>4. 309 W</p>
<p>A balanced delta connected load has an impedance of $9\angle 30^\circ \Omega$ per phase. What is the impedance per phase of its equivalent star?</p>	<p>1. $1\angle 90^\circ \Omega$.</p> <p>2. $3\angle 30^\circ \Omega$.</p> <p>3. $28\angle 30^\circ \Omega$.</p> <p>4. $27\angle 90^\circ \Omega$.</p>
<p>A circuit with resistor, inductor, and capacitor in series is resonant frequency of 50 Hz. If all the values are now doubled, the new resonant frequency is</p>	<p>1. $f_0 / 2$</p> <p>2. Still f_0.</p> <p>3. $f_0 / 4$.</p> <p>4. $2f_0$.</p>
<p>A reactance having an inductor of 0.15 H is connected in series with 10 Ω resistances. What will be the inductive reactance?</p>	<p>1. 47.1 Ω</p> <p>2. 1.5 Ω</p> <p>3. 10 Ω</p> <p>4. 48.15 Ω</p>
<p>An RLC circuit has a resonance frequency of 160 kHz and a Q-factor of 100. Its band width is</p>	<p>1. 32 MHz</p> <p>2. 16 MHz</p> <p>3. 1.6 kHz.</p> <p>4. 0.625 kHz.</p>

Input impedance of transmission line does not depends on	1. Characteristics impedance 2. Frequency 3. Length of the line 4. Source impedance
In a series RLC circuit the current can be found using:	1. $I = I_{rms} / \sqrt{2}$ 2. $I = V(\text{across source}) / Z$ 3. $I = V(\text{across resistance})/R$ 4. $I = I_{rms} * \sqrt{2}$
If the autocorrelation function of a random process $X(t)$ is given by $R_x(\tau) = \exp(-2 \tau)u(\tau)$. Power spectral density of $X(t)$ is	1. $1/(1 + 4\pi^2 f^2)$ 2. $1/(1 + \pi^2 f^2)$ 3. $1/(4 + \pi^2 f^2)$ 4. $4/(4 + 4\pi^2 f^2)$
A deterministic signal has	1. completely specified function of time 2. uncertainty 3. no uncertainty 4. Definite Certainty
A LTI system is said to be initially relaxed system only if ____	1. zero input produces non-zero output 2. zero input produces zero output 3. Zero input produces infinite output 4. zero input produces an output equal to unity
If periodic signal has odd symmetry, then the Fourier series contains	1. only sine terms 2. Only cosine terms 3. Both sine and cosine terms 4. Multiply of Cosine and Sine terms
The output offset voltage is determined by _____.	1. both the input offset voltage and the closed-loop gain 2. input offset current 3. the closed-loop gain

	4. the input offset voltage and input offset current
The extra time needed to bring the data into memory in case of a miss is called as	1. Miss penalty 2. jitter 3. Propagation Time 4. Delay
Compensating networks are used in op-amp to	1. worsen the stability 2. decrease the gain 3. increase the BW 4. improve the stability
In a _____ handoff, a mobile station can communicate with two base stations at the same time	1. Soft 2. hard – medium 3. Hard 4. Medium
_____ denotes the traffic intensity the entire trunked radio system.	1. Grade of Service 2. Load 3. Traffic intensity 4. quality of Service
Ideal physical antenna length is _____ than its electrical length.	1. greater 2. very smaller 3. smaller 4. equal
The frequency range of 1GHz to 30 GHz are referred as	1. Mini waves 2. Light waves 3. Sound waves 4. Microwaves
Spiral antenna is a	1. non-radiating 2. narrow band antenna 3. broadband antenna 4. dual band antenna
Which of the following is NOT a common light detector	1. PIN photodiode 2. Zener diode 3. Photodiode 4. Avalanche photodiode
The gain of op-amp decreases to high frequencies because of	1. capacitor within op-amp 2. feedback network with active device 3. capacitor in the feedback 4. resistance in the feedback
As reverse bias voltage is increased, for a diode, the base width at the junction	1. fluctuating 2. increases 3. decreases 4. remains same
Faraday's law is valid for both open and closed loops. The Lenz's law is valid for	1. both open and closed loop 2. Only open loop 3. only closed loop. 4. neither open loop nor closed loop

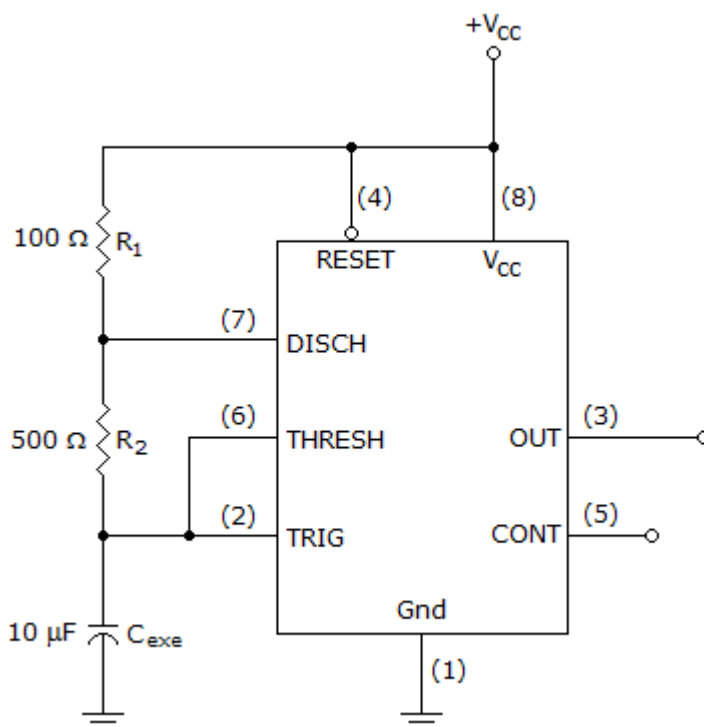
<p>An amplifier whose open loop response is characterized by a dc gain of 105 V/V and a 3 dB roll off at 20 KHz, is connected in a feedback loop for which the overall low frequency gain is 100V/V. what is the 3 dB roll-off with feedback?</p>	<ol style="list-style-type: none"> 10 MHz 30 MHz 20 MHz 40 MHz
<p>Why are the negative & positive phase shifts introduced for positive & negative frequencies respectively in amplitude and phase spectra?</p>	<ol style="list-style-type: none"> To maintain the amplitude spectrum To maintain the symmetry of the phase spectrum To change the symmetry of the phase spectrum To change and maintain the symmetry of the phase spectrum
<p>when a phasor is multiplied by $-j$, it is rotated through _____ in the counter clockwise direction</p>	<ol style="list-style-type: none"> 90 180 45 Both magnitude and direction change
<p>For addition or subtraction of phasors, we use _____ form</p>	<ol style="list-style-type: none"> Trigonometrical Rectangular Polar Trigonometrical and polar
<p>RC low pass filter is a</p>	<ol style="list-style-type: none"> Linear and time variant system Linear and time invariant system Time variant system Linear system
<p>What form of waveform is shown here?</p> 	<ol style="list-style-type: none"> a multi-valued digital signal a binary signal an analogue signal a digital signal
<p>The work done in moving a unit positive charge from one point to another in an electric field is known as</p>	<ol style="list-style-type: none"> Electric discharge Potential difference displacement charge transformation

Consider the figure given below. The given amplifier is showing nonlinear behavior with $A = 10^4$ V/V for $V_o \leq 0.2$ V, $A = 10^3$ V/V for 0.2 V $< V_o < 1$ V but it hard limits at $V_o = 1$ V. The β of feedback loop is 0.01. Find V_i when $V_o = 0.99$ V.



1. 0.9 mV
2. 0.099 mV
3. 0.99 mV
4. mV

Refer to this figure. Determine the frequency of oscillation,



1. 232 Hz
2. 262 Hz
3. 2.62 kHz
4. 131 Hz

The three terminal regulator has output following limitations:

1. short circuit protection
2. o/p voltage is fixed
3. no short circuit protection
4. o/p voltage is fixed and no short circuit protection

The input offset current equals the

1. difference between two bias currents
- 2.

	average of two bias currents 3. collector current divided by current gain 4. addition of two bias currents
FSK is used mostly in	1. Telephony 2. Radar communication 3. Radio transmission 4. Telegraphy
Total recombination lifetime in direct bandgap semiconductors.....than that of indirect bandgap semiconductors	1. more 2. less 3. Equal 4. Equal or more
System of embedding links in a text to link to other text	1. Java 2. HTML 3. Embedded linking 4. HTTP
DSLAM stands for	1. DSL available multiplexer 2. DSL asynchronous multiplexer 3. DSL access multiplexer 4. DSL asymmetric multiplexer
The uplink frequency of P-GSM system is	1. 890-915 MHz 2. 890-915 GHz 3. 1710-1785MHz 4. 1850-1910MHz
The technique adopted to increase the system capacity and reduce co-chl interference is	1. By installing the Omnidirectional antenna 2. Sectorisation 3. High power BTS 4. Low power BTS
The ripple factor of a full-wave rectifier circuit compared to that of a half wave rectifier circuit without filter is	1. equal to that of a half wave rectifier 2. higher than half that for a half-wave rectifier circuit 3. half of that for a half 'wave rectifier 4. less than half that for a half-wave rectifier circuit
What type of diode circuit is used to add or restore a dc level to an electrical signal?	1. clipper or limiter 2. clamper 3. IC voltage regulator

	4. Quantizer
A signal $m(t) = 10\cos(2\pi 100t)$ undergoes frequency modulation a carrier. The resulting FM signal is $x(t) = 20\cos(2\pi 106t + 15\sin(2\pi 100t))$. The approximate bandwidth of the FM used be	1. 3.2 kHz 2. 10 KHz 3. 1 kHz 4. 100kHz
3G wireless data network uses	1. no switching 2. Both Circuit and Packet Switched 3. Circuit Switched 4. Packet Switched
The capacity of the wire-line system can be increased	1. By increasing the number of wires 2. By random access 3. By TDMA 4. By increasing the number of wires or random access or TDMA
the unit of average power is _____	1. Watts 2. Volt ampere 3. Newton 4. Volt ampere Reactive
The signal $x(t) = 2 \cos(\pi t) + 3 \sin(2t)$	1. is periodic 2. is not periodic 3. may or may not be periodic 4. is periodic with certain conditions
The transfer function of phase lead compensator is given by $G(s) = (1 + TS)/(1 + \alpha TS)$, where, $T > 0$, $\alpha < 0$. What is the maximum phase shift provided by this compensator?	1. $\sin^{-1}((1 - \alpha)/(1 + \alpha))$ 2. $\cos^{-1}((1 - \alpha)/(1 + \alpha))$ 3. $\tan^{-1}((1 - \alpha)/(2\sqrt{\alpha}))$ 4. $\sin^{-1}((1 - \alpha)/(1 + \alpha))$ and $\tan^{-1}((1 - \alpha)/(2\sqrt{\alpha}))$
_____ is the expansion of GPRS.	1. General packet radio Switching 2. Genuine packet radio System 3. General packet radio service 4. Genuine packet radio switching
Duality Theorem / Property of Fourier Transform states that _____	1. Shape of signal in time domain & shape of spectrum can never be interchangeable 2. Shape of signal in frequency domain & shape of spectrum can never be interchangeable 3. Shape of signal in time domain & shape of spectrum can be interchangeable

	4. Shape of signal in frequency domain & shape of spectrum can be interchangeable
What is the resolution of a digital-to-analog converter (DAC)?	1. It is the comparison between the actual output of the converter and its expected output. 2. It is the difference between the input and output 3. It is its ability to resolve between forward and reverse steps when sequenced over its entire range. 4. It is the smallest analog output change that can occur as a result of an increment in the digital input.
A signal $x(t) = A \cos(\omega_0 t + \phi)$ is	1. An energy signal 2. A power signal 3. Energy as well as power signal 4. Neither energy nor power signal
The signal $x(t) = e^{(-2t)}u(t)$ is	1. power signal 2. energy signal 3. neither power nor energy 4. either power or energy
The time period of the signal $x(t) = \cos(2\pi t) + \sin(5\pi t)$ is	1. 2 sec 2. 5 sec 3. 10 sec 4. 2.5 sec
The signal $x[n] = \cos(2n)$ is	1. periodic with period π 2. periodic with period 2 3. periodic with period 4π

	4. Aperiodic
The odd and even component of signal $u(t)$ are	1. $\cos t, \sin t$ 2. $\sin t, -\cos t$ 3. $(u(t) - u(-t))/2, (u(t) + u(-t))/2$ 4. $\cos t, -j\sin t$
The power factor is given by _____	1. $1/\cos x$ 2. $\tan x$ 3. $\sin x$ 4. $\cos x$
A source of angular frequency 1 rad/sec has source impedance consisting of 1 ohm resistance in series with 1 H inductance. The load that will obtain the maximum power transfer is:	1. 1 ohm resistance 2. 1 ohm resistance in parallel with 1H inductance 3. 1 ohm resistance in parallel with 1F capacitor 4. 1 ohm resistance in series with 1F capacitor