

Telangana State Council Higher Education

Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

Subject Name :	Electronics and Communication Engineering
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Electronics and Communication Engineering

Group Number :	1
Group Id :	38382335
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
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Break time :	0
Group Marks :	120

Mathematics

Section Id :	383823101
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10

Section Marks :	10
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	383823101
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 3838235041 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\begin{bmatrix} \frac{1}{\sqrt{3}} & \frac{1+i}{\sqrt{3}} \\ \frac{1-i}{\sqrt{3}} & \frac{K}{\sqrt{3}} \end{bmatrix}$ is a unitary matrix, then the sum of all possible values of K is

Options :

1. ✘ 0

2. ✘ 1

3. ✔ -1

4. ✘ 2

Question Number : 2 Question Id : 3838235042 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The system of equations $\begin{bmatrix} -2 & 1 & 1 \\ 1 & -2 & 1 \\ 1 & 1 & -2 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} a \\ b \\ c \end{bmatrix}$ has

Options :

1. ✘ infinite number of solutions when $a+b+c \neq 0$

2. ✘ no solution when $a+b+c = 0$

3. ✘ unique solution for any values of a, b, c

4. ✔ unique solution for no value of a, b, c

Question Number : 3 Question Id : 3838235043 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$2 \int_0^1 \int_{\sqrt{y}}^1 e^{y/x} dx dy =$$

Options :

1. ✘ $\frac{1}{2}$

2. ✘ $-\frac{1}{2}$

3. ✔ 1

4. ✘ -1

Question Number : 4 Question Id : 3838235044 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Let \bar{F} be a vector point function defined inside and on the surface (S) of the sphere

$$x^2 + y^2 + z^2 = 1. \text{ Then } \oint_S \text{Curl} \bar{F} \cdot \bar{N} ds =$$

Options :

1. ✘ $\iint_E \bar{F} \cdot d\bar{R}$, where E is the region of the sphere

2. ✔ 0

3. ✘ $\frac{4}{3}\pi$

4. ✘ $\oint_S \bar{F} \cdot d\bar{R}$

Question Number : 5 Question Id : 3838235045 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following pair of functions are linearly dependent

Options :

- ✘ $e^x \sin 2x, e^x \cos 2x$
- ✔ $\sin x(4\sin^2 x - 3), \sin 3x$
- ✘ $\cos x, x \cos x$
- ✘ $e^{3x}, (x+1)e^{2x}$

Question Number : 6 Question Id : 3838235046 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The complete solution of $(mz - ny) \frac{\partial z}{\partial x} + (nx - lz) \frac{\partial z}{\partial y} = ly - mx$ is

Options :

- ✘ $xyz = f(lx + my + nz)$
- ✘ $lx + my + nz = f(x + yz)$
- ✔ $x^2 + y^2 + z^2 = f(lx + my + nz)$
- ✘ $(lx)^2 + (my)^2 + (nz)^2 = f(lmnxyz)$

Question Number : 7 Question Id : 3838235047 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The residue of $f(z) = \frac{z^2}{(z-1)^3(z-2)(z-3)}$ at the pole $z = 1$ is

Options :

- ✔ $\frac{23}{8}$
- ✘ $\frac{101}{16}$

3. ✘ $\frac{27}{16}$

4. ✘ -8

Question Number : 8 Question Id : 3838235048 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two numbers are drawn simultaneously from the set of integers from 1 to 12. If it is known that the sum of drawn two numbers is odd, then the probability that only one of the two numbers is a prime number, is

Options :

1. ✘ $\frac{5}{6}$

2. ✘ $\frac{1}{3}$

3. ✘ $\frac{36}{53}$

4. ✔ $\frac{11}{18}$

Question Number : 9 Question Id : 3838235049 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a communication network, 98% of messages are transmitted correctly with no error. If the random variable X denotes the number of messages transmitted with error, then the probability that at most two messages are transmitted with error out of the 1000 messages sent, is

Options :

1. ✘ $e^{\frac{2}{980}}$

2. ✘

$$\frac{221}{e^{100}}$$

3. ✓ $\frac{221}{e^{20}}$

4. ✗ $\frac{2}{e^{196}}$

Question Number : 10 Question Id : 3838235050 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

To solve the equation $x \log x = 1$, using Newton-Raphson method, the iterative formula and the first approximate x , when $x_0 = 1$ is

Options :

1. ✗ $x_{n+1} = \frac{x_{n-1}}{1 + \log x_n}; x_1 = 0$

2. ✗ $x_{n+1} = \frac{x_n + 2x_n \log x_n + 1}{1 + \log x_n}; x_1 = 2$

3. ✗ $x_{n+1} = \frac{x_n - 2x_n \log x_n + 1}{1 + \log x_n}; x_1 = 2$

4. ✓ $x_{n+1} = \frac{x_n + 1}{1 + \log x_n}; x_1 = 2$

Electronics and Communication Engineering

Section Id :	383823102
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	110
Number of Questions to be attempted :	110
Section Marks :	110

Maximum Instruction Time : 0
Sub-Section Number : 1
Sub-Section Id : 383823102
Question Shuffling Allowed : Yes

Question Number : 11 Question Id : 3838235051 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The function $\frac{dq}{dv}$ is called incremental then it is

Options :

1. ✘ Resistance
2. ✔ Capacitance
3. ✘ Inductance
4. ✘ Frequency

Question Number : 12 Question Id : 3838235052 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A coil of resistance 12Ω and inductance 18 H is suddenly connected to a dc supply of 30 V . Calculate time constant

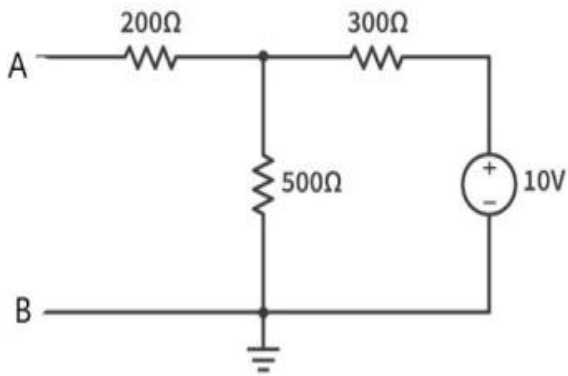
Options :

1. ✘ 6.7 sec
2. ✘ 4.5 sec
3. ✔ 1.5 sec
4. ✘ 0.11 sec

Question Number : 13 Question Id : 3838235053 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Find the value of required resistor across AB of the following circuit to transfer maximum power?



Options :

1. ✘ 500Ω
2. ✘ 800Ω
3. ✘ 442.8Ω
4. ✔ 262.5Ω

Question Number : 14 Question Id : 3838235054 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For a series RLC circuit which of the following statement is not correct?

Options :

1. ✘ $\omega L > \frac{1}{\omega C}$, ϕ is positive. In this case the voltage leads the current by an angle ϕ
2. ✔ $\omega L < \frac{1}{\omega C}$, ϕ is negative. In this case the current lags the voltage by an angle ϕ
3. ✘ $\omega L = \frac{1}{\omega C}$, $\phi = 0^\circ$. In this case the voltage and current are in phase
4. ✘ The impedance is purely resistive and minimum when $\phi = 0$, $Z = R$

Question Number : 15 Question Id : 3838235055 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Obtain the inverse Laplace transform of $F(s) = \frac{1}{s^2(s+2)}$

Options :

1. ✘ $\frac{1}{2}(2t + e^{-2t})$

2. ✘ $\frac{1}{4}(2t - 1)$

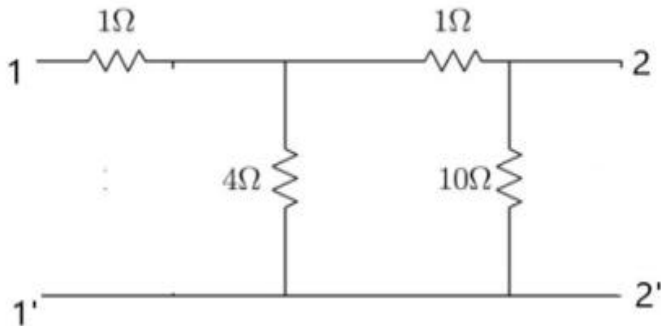
3. ✘ $\frac{1}{2}(e^{-2t} - 1)$

4. ✔ $\frac{1}{4}(2t + e^{-2t} - 1)$

Question Number : 16 Question Id : 3838235056 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The values of B and D of ABCD parameters of two port network respectively are



Options :

1. ✔ $9/4, 5/4$

2. ✘ $35/2, 5/2$

3. ✘ $11/4, 5/2$

4. ✘ $15/4, 35/2$

Question Number : 17 Question Id : 3838235057 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A transfer function is given by $H(s) = \frac{2(s+2)(s+4)}{(s+3)(s+5)(s+7)}$. Then the transfer function

becomes zero when

Options :

1. ✘ $s = 0$
2. ✔ $s = -2$
3. ✘ $s = -3$
4. ✘ $s = -5$

Question Number : 18 Question Id : 3838235058 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When two, two-port networks are connected in series, then

Options :

1. ✔ Z parameters are added
2. ✘ Y parameters are added
3. ✘ H parameters are added
4. ✘ ABCD parameters are multiplied

Question Number : 19 Question Id : 3838235059 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Driving point impedance of the function $F(s) = \frac{(s+k_1)(s+k_2)(s+k_3)}{(s+1)(s+2)(s+3)}$ is

Options :

1. ✘ 48
2. ✔ 24
3. ✘ 10

4. ✘ 4

Question Number : 20 Question Id : 3838235060 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If three equal resistances of 12Ω are connected in Delta, then each resistance of the equivalent Star is

Options :

1. ✔ 4Ω

2. ✘ 6Ω

3. ✘ 12Ω

4. ✘ 36Ω

Question Number : 21 Question Id : 3838235061 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following system is non-causal system?

Options :

1. ✘ $y(n) = x(n) - x(n-1)$

2. ✘ $y(n) = \frac{\delta y}{\delta x} \sum_{k=-\infty}^n x(k)$

3. ✘ $y(n) = ax(n)$

4. ✔ $y(n) = x(-n)$

Question Number : 22 Question Id : 3838235062 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The exponential Fourier series coefficient C_{-n} in terms of trigonometric Fourier coefficients is

Options :

1. ✓ $\frac{1}{2}(a_n + jb_n)$

2. ✗ $\frac{1}{2}(a_n - jb_n)$

3. ✗ $(a_0 + jb_n)$

4. ✗ $\frac{1}{2}(a_0 + a_n)$

Question Number : 23 Question Id : 3838235063 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The amplitude and phase spectrum of exponential Fourier Series about vertical axis respectively, is

Options :

1. ✗ Symmetrical, symmetrical
2. ✓ Symmetrical, antisymmetrical
3. ✗ Antisymmetrical, antisymmetrical
4. ✗ Antisymmetrical, symmetrical

Question Number : 24 Question Id : 3838235064 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following statement is not correct?

Options :

1. ✗ Laplace transform is a complex Fourier transform
2. ✗ Fourier transform of a function can be obtained from its Laplace transform by replacing s by $j\omega$
3. ✗ Fourier transform is the Laplace transform evaluated along the imaginary axis of the s -plane

4. ✓ Convolution integrals cannot be evaluated using Fourier transform

Question Number : 25 Question Id : 3838235065 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Fourier transform of the following signal is

$$x(t) = \begin{cases} 1 + \cos \pi t & |t| < 1 \\ 0 & |t| > 1 \end{cases}$$

Options :

1. ✓ $2 \sin c(\omega) + \sin c(\pi - \omega) - \sin c(\pi + \omega)$
2. ✗ $2 \sin(\omega) + \sin(\pi - \omega) - \sin(\pi + \omega)$
3. ✗ $\sin c(\pi - \omega) - \sin c(\pi + \omega)$
4. ✗ $\cos(\omega) + \cos(\pi - \omega)$

Question Number : 26 Question Id : 3838235066 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Consider a causal LTI system with impulse response $h(t) = e^{-4t}u(t)$. Find the output of the system for an input $x(t) = 3e^{-t}u(t)$.

Options :

1. ✗ $y(t) = e^{-2t}u(t) + e^{-4t}u(t)$
2. ✗ $y(t) = e^{-t}u(t) + e^{-2t}u(t)$
3. ✗ $y(t) = e^{-2t}u(t) - e^{-2t}u(t)$
4. ✓ $y(t) = e^{-t}u(t) - e^{-4t}u(t)$

Question Number : 27 Question Id : 3838235067 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The condition for orthogonality of two functions $x_1(t)$ and $x_2(t)$ in terms of correlation is

Options :

1. ✓ $R_{12} = 0$

2. ✗ $R_{12} = 1$

3. ✗ $R_{12} = \infty$

4. ✗ $R_{11} = 0$ and $R_{22} = 0$

Question Number : 28 Question Id : 3838235068 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is not correct with respect to Z-transforms?

Options :

Z-transform converts the difference equation of discrete time system into linear

1. ✗ algebraic equation

2. ✓ Frequency domain response is achieved and plotted

3. ✗ Convolution in time domain is converted into multiplication in z-domain

Z-transform exist for most of the signals for which discrete time Fourier transform does

4. ✗ not exist

Question Number : 29 Question Id : 3838235069 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the following with respect to region of convergence

x(n)		ROC	
A	infinite duration causal sequence	I	entire z-plane except at z=0
B	finite duration causal sequence	II	entire z-plane except at z=∞
C	infinite duration anticausal sequence	III	$ z > \alpha$, exterior of a circle of radius α
D	finite duration anticausal sequence	IV	$ z > \beta$, interior of a circle of radius β

Options :

1. ✘ A – II, B – I, C – III, D – IV
2. ✘ A – IV, B – III, C – I, D – II
3. ✔ A – III, B – I, C – IV, D – II
4. ✘ A – I, B – IV, C – II, D – III

Question Number : 30 Question Id : 3838235070 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Unilateral Z transform of $x(n)$ is equivalent to bilateral Z-transform of

Options :

1. ✘ $\delta(-n)$
2. ✘ $x(n) u(-n)$
3. ✔ $x(n) u(n)$
4. ✘ $x(-n) u(-n)$

Question Number : 31 Question Id : 3838235071 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For a system to be physically realizable, the degree of numerator polynomial M and the degree of denominator polynomial N should be

Options :

1. ✘ $M \geq N$
2. ✔ $M \leq N$
3. ✘ $M = N$
4. ✘ No constraint on M and N

Question Number : 32 Question Id : 3838235072 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The continuous time system structure which uses minimum number of integrators is

Options :

1. ✘ Direct form-I
2. ✔ Direct form-II
3. ✘ Cascade form
4. ✘ Parallel form

Question Number : 33 Question Id : 3838235073 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The frequency response of LTI system is given by the Fourier Transform of the _____ of the system.

Options :

1. ✘ Transfer function
2. ✔ Impulse response
3. ✘ Input
4. ✘ Output

Question Number : 34 Question Id : 3838235074 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The LTI system is said to be initially relaxed system when

Options :

1. ✔ Zero input produces zero output
2. ✘ Zero input produces non-zero output
3. ✘ Zero input produces an output equal to unity

4. ✘ Zero input produces an infinite output

Question Number : 35 Question Id : 3838235075 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Phase variation with respect to frequency is given by $\phi(\omega) = 2\omega^2 + \cos \omega$. Then, group delay of the system is

Options :

1. ✘ 0

2. ✘ 1

3. ✘ $\omega + \sin \omega$

4. ✔ $-4\omega - \sin \omega$

Question Number : 36 Question Id : 3838235076 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The electrical conductivity of pure semiconductor can be increased by

Options :

1. ✘ Increasing the mean life time of charge carriers

2. ✘ Increasing forbidden energy gap

3. ✔ Adding some impurities into it

4. ✘ Sharing conduction band

Question Number : 37 Question Id : 3838235077 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The electric current produced when the charge carrier concentration moves from region of higher concentration to the region of lower concentration is called

Options :

1. ✘ Drift current
2. ✔ Diffusion current
3. ✘ Reverse saturation current
4. ✘ Breakdown current

Question Number : 38 Question Id : 3838235078 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is not correct, when the collector base junction is reverse biased?

Options :

1. ✔ It decreases the depletion region across the collector base junction
2. ✘ Early effect occurs
3. ✘ Forms depletion region across the collector junction
4. ✘ Large current flow in collector

Question Number : 39 Question Id : 3838235079 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Choose the wrong one with respect to nMOSFET compared to pMOSFET

Options :

1. ✔ ON resistance is high
2. ✘ Size is small
3. ✘ Junction capacitance is small
4. ✘ Fast in operation

Question Number : 40 Question Id : 3838235080 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An 'n' channel JFET has $I_{DSS} = 8\text{mA}$, $V_p = -5\text{V}$. Determine the minimum value of

V_{DS} for $V_{GS} = -2\text{V}$ in the pinch off region.

Options :

1. ✘ -7 V
2. ✔ 3 V
3. ✘ 5 V
4. ✘ 7 V

Question Number : 41 Question Id : 3838235081 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The rise time of a BJT is 3.5 micro seconds. Find its transition frequency.

Options :

1. ✘ 1 kHz
2. ✘ 10 kHz
3. ✘ 35 kHz
4. ✔ 100 kHz

Question Number : 42 Question Id : 3838235082 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The disadvantage of the integrated circuit technology as compared with discrete components interconnected is

Options :

1. ✘ Low cost
2. ✘ Small size
3. ✘ Improved performance

4. ✓ Low reliability

Question Number : 43 Question Id : 3838235083 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The SiO₂ is grown by exposing the epitaxial layer to an oxygen atmosphere while being heated to about 1000°C, because Silicon dioxide has the fundamental property of

Options :

1. ✓ Preventing the diffusion of impurities
2. ✗ Electrical isolation between different circuit components
3. ✗ Prevent the depletion region of the reverse biased isolation to substrate junction
4. ✗ Sidewall capacitance reduction

Question Number : 44 Question Id : 3838235084 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

LEDs are based on the principle of

Options :

1. ✗ Forward bias
2. ✓ Eletro- luminescence
3. ✗ Photon sensitivity
4. ✗ Electron-hole recombination

Question Number : 45 Question Id : 3838235085 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a photodiode, light produces

Options :

1. ✓ Reverse current

2. ✘ Forward current
3. ✘ Electro – luminescence
4. ✘ Dark current

Question Number : 46 Question Id : 3838235086 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A shunt regulator is a type of

Options :

1. ✘ voltage regulator with the control element is in series with the load
2. ✘ current regulator with the control element is in series with the load
3. ✔ voltage regulator with the control element between the output and ground
4. ✘ current regulator with the control element between the output and ground

Question Number : 47 Question Id : 3838235087 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum dc output power in a Half wave rectifier occurs when the load resistance is _____ the diode forward resistance.

Options :

1. ✔ Same as
2. ✘ Double
3. ✘ Half
4. ✘ Quadruple

Question Number : 48 Question Id : 3838235088 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Half wave and Full wave rectifiers produce nearly identical _____ for equal values of transformer secondary voltage.

Options :

1. ✘ Ripple factor
2. ✘ PIV
3. ✘ Frequency
4. ✔ DC load voltage

Question Number : 49 Question Id : 3838235089 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The midband gain of an amplifier is 100 and the lower cutoff frequency is 1 KHz. Find the gain of the amplifier at a frequency of 20 Hz.

Options :

1. ✔ 2
2. ✘ 20
3. ✘ 50
4. ✘ 100

Question Number : 50 Question Id : 3838235090 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is not correct with respect to Darlington amplifier?

Options :

1. ✘ High input impedance
2. ✘ Two cascaded emitter followers
3. ✘ Overall voltage gain is less than unity
4. ✔ Overall leakage current is less

Question Number : 51 Question Id : 3838235091 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When the negative feedback is applied to an amplifier of gain 100, the overall gain falls to 50. If the same feedback factor is maintained, the value of the amplifier gain required for the overall gain of 75 is

Options :

1. ✘ 50
2. ✘ 75
3. ✘ 125
4. ✔ 300

Question Number : 52 Question Id : 3838235092 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the following

i	Voltage shunt	a	current sampling, voltage mixing
ii	Voltage series	b	current sampling, current mixing
iii	Current shunt	c	voltage sampling, current mixing
iv	Current series	d	voltage sampling, voltage mixing

Options :

1. ✘ i-b, ii-a, iii-c, iv-d
2. ✘ i-c, ii-b, iii-d, iv-a
3. ✔ i-a, ii-d, iii-b, iv-c
4. ✘ i-d, ii-c, iii-a, iv-b

Question Number : 53 Question Id : 3838235093 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Find the operating frequency of a transistor Hartley oscillator for $L_1 = 20\mu\text{H}$, $L_2 = 40\mu\text{H}$ and mutual inductance between coils is $2\mu\text{H}$ and $C = 1\mu\text{F}$.

Options :

1. ✓ $\frac{62.5}{\pi}$ kHz
2. ✗ $\frac{50.5}{\pi}$ kHz
3. ✗ 12.5π kHz
4. ✗ 50π kHz

Question Number : 54 Question Id : 3838235094 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Wein bridge oscillator is a

Options :

1. ✗ fixed frequency oscillator
2. ✗ variable frequency oscillator
3. ✗ low gain oscillator
4. ✓ uses both positive and negative feedback

Question Number : 55 Question Id : 3838235095 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A 'Class A' Common Emitter amplifier with $V_{cc} = 20\text{ V}$ draws a current $I = 5\text{A}$ and feed a load of 40Ω through a step-up transformer $N_2/N_1=3.16$. Find the efficiency of the amplifier when it is properly matched for maximum power supply.

Options :

1. ✗ 25 %

2. ✓ 50%

3. ✗ 78.5 %

4. ✗ 90 %

Question Number : 56 Question Id : 3838235096 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

To eliminate cross over distortion in Class B power amplifier, the circuit should have

Options :

1. ✗ Two complementary transistors to conduct in alternate half cycles

2. ✓ Two complementary transistors to conduct in full cycles

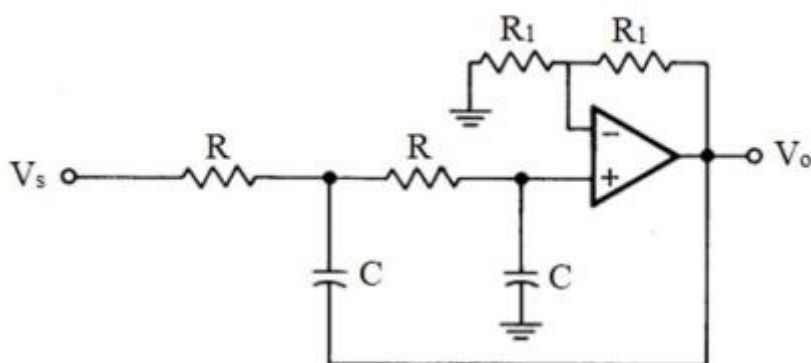
3. ✗ Two same transistors to conduct in two full cycles

4. ✗ Two same transistors conduct in alternate half cycles

Question Number : 57 Question Id : 3838235097 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the following circuit



Options :

1. ✗ First order Low pass filter

2. ✓ Second order Low pass filter

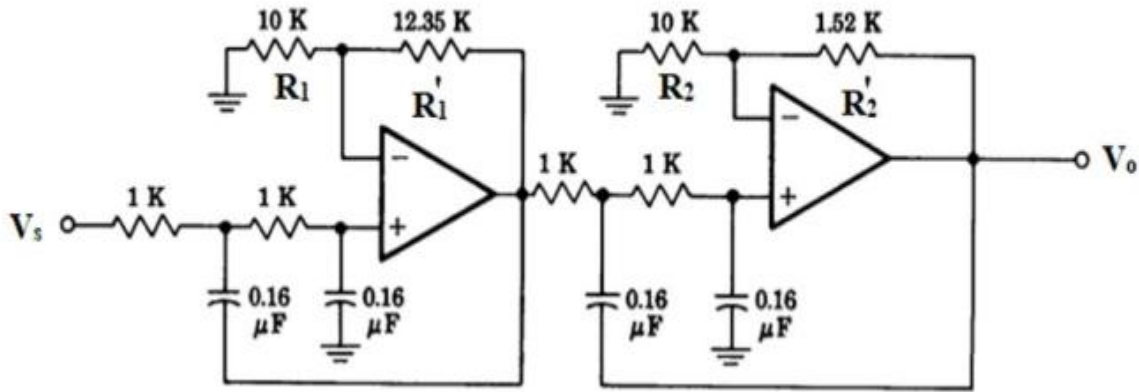
3. ✗ First order High pass filter

4. ✖ Second order High pass filter

Question Number : 58 Question Id : 3838235098 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The cut off frequency of the following fourth order filter is



Options :

1. ✔ 1 kHz
2. ✖ 4 kHz
3. ✖ 16 kHz
4. ✖ 16 MHz

Question Number : 59 Question Id : 3838235099 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the input to an OP-AMP comparator is a sine wave, then the output is a

Options :

1. ✖ Sine wave
2. ✖ Triangular wave
3. ✔ Square wave
4. ✖ Trapezoidal wave

Question Number : 60 Question Id : 3838235100 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Threshold voltage at the comparator of 555 timer is approximately

Options :

1. ✘ $1/3 V_{cc}$
2. ✔ $2/3 V_{cc}$
3. ✘ $1/4 V_{cc}$
4. ✘ V_{cc}

Question Number : 61 Question Id : 3838235101 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Convert a decimal number 3509.14453125 into a hexadecimal number

Options :

1. ✔ DB5.25
2. ✘ 437.1121
3. ✘ 10110.11011
4. ✘ AB6.456B

Question Number : 62 Question Id : 3838235102 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Simplify $AB + \overline{AC} + A\overline{B}C(AB + C)$

Options :

1. ✘ $\overline{A} + \overline{B} + AC$
2. ✘ $AB + A\overline{B}C$
3. ✘ $A\overline{B}C$
4. ✔ 1

Question Number : 63 Question Id : 3838235103 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Any Boolean function of $n+1$ variables can be implemented with _____ multiplexer

Options :

1. ✘ 2^n to 1
2. ✘ 2^{2n} to 1
3. ✔ 2^{n-1} to 1
4. ✘ 2^{n+1} to 1

Question Number : 64 Question Id : 3838235104 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An n -to- m line decoder is used to generate

Options :

1. ✘ 2^{n-1} min terms
2. ✔ 2^n min terms
3. ✘ 2^{n+1} min terms
4. ✘ 2^{n-1} max terms

Question Number : 65 Question Id : 3838235105 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Quantization error in ADC is due to

Options :

1. ✔ Poor resolution

2. ✘ Non-linearity of the input
3. ✘ A missing bit in the output
4. ✘ A change in the input voltage during the conversion time

Question Number : 66 Question Id : 3838235106 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The values of the segments 'abcdefg' of seven segment display for the BCD input of '0101'?

Options :

1. ✘ 1111111
2. ✘ 0000000
3. ✔ 1011011
4. ✘ 0110011

Question Number : 67 Question Id : 3838235107 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The 8-to-3 encoder is also called

Options :

1. ✔ Octal to binary encoder
2. ✘ Excess-3 encoder
3. ✘ Quadruple encoder
4. ✘ Mixed encoder

Question Number : 68 Question Id : 3838235108 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In priority encoder, if two or more inputs are equal to _____ will take highest priority

Options :

1. ✘ 0 at the same time
2. ✔ 1 at the same time
3. ✘ 0, 1,0,1
4. ✘ 1,1,0,1,1,0,0,.....

Question Number : 69 Question Id : 3838235109 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The characteristic equation of SR flip-flop is

Options :

1. ✘ $Q(t+1) = SQ(t) + R$
2. ✘ $Q(t+1) = S + RQ(t)$
3. ✘ $Q(t+1) = \overline{SQ(t)} + \overline{R} Q(t)$
4. ✔ $Q(t+1) = S + \overline{R} Q(t)$

Question Number : 70 Question Id : 3838235110 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The n stage Johnson counter will produce a modulus of

Options :

1. ✘ n
2. ✘ 2n
3. ✔ 2^n
4. ✘ 2^{n-1}

Question Number : 71 Question Id : 3838235111 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For n inputs, k product terms and m outputs, the internal logic of the PLA consists of

Options :

1. ✘ $n+1$ buffer gates, $k-1$ AND gates, $m+1$ OR gates and m XOR gates
2. ✘ $n-1$ inverter gates, $2k$ AND gates, $2m$ OR gates and m XOR gates
3. ✘ $n-1$ buffer-inverter gates, $2k$ AND gates, $2m$ OR gates and m XOR gates
4. ✔ n buffer-inverter gates, k AND gates, m OR gates and m XOR gates

Question Number : 72 Question Id : 3838235112 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The decoder used in 32×8 ROM is

Options :

1. ✘ 8×32 decoder
2. ✔ 5×32 decoder
3. ✘ 8×8 decoder
4. ✘ 5×8 decoder

Question Number : 73 Question Id : 3838235113 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

LEA CX,[BX][SI] instruction of 8086 microprocessor indicates

{where (BX) and (SI) represent the content of BX and SI respectively}

Options :

1. ✔ Load CX with the value equal to $(BX) + (SI)$
2. ✘ Load CX with the value equal to $(BX) - (SI)$
3. ✘ Less the content of CX by the (SI)
4. ✘ Less the content of CX by the (BX)

Question Number : 74 Question Id : 3838235114 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The interrupt vector for each interrupt type in 8086 microprocessor requires _____ memory locations

Options :

1. ✘ One
2. ✘ Two
3. ✘ Three
4. ✔ Four

Question Number : 75 Question Id : 3838235115 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The IC 8255 is a

Options :

1. ✘ Address Decoder
2. ✔ Programmable Peripheral Interface
3. ✘ Direct Memory Access controller
4. ✘ EPROM

Question Number : 76 Question Id : 3838235116 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The a_{ij} is the ---- of the branch directed from node x_i to x_j in signal flow graph.

Options :

1. ✘ Resistance
2. ✘ Impedance

3. ✖ Admittance

4. ✔ Transmittance

Question Number : 77 Question Id : 3838235117 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Impulse response for $t \geq 0$ of a second order control system when damping ratio = 1 is

Options :

1. ✖ $w_n \sin(w_n t)$

2. ✔ $w_n^2 t e^{-w_n t}$

3. ✖ $w_n^2 \sin(w_n t)$

4. ✖ $w_n e^{w_n t} \sin(w_n t)$

Question Number : 78 Question Id : 3838235118 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

From the following Routh array table, which tells us that there are

S^5	5	2	1
S^4	3	2	1
S^3	-4/3	-2/3	
S^2	1/2	1	
S^1	2		
S^0	1		

Options :

1. ✖ One root in the left half S-plane

2. ✖ Two roots in the left half S-plane

3. ✔ Two roots in the right half S-plane

4. ✖ One root in the left half S-plane and one root in the right half S-plane

Question Number : 79 Question Id : 3838235119 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Position, velocity and acceleration errors of type 2 control system respectively, are

Options :

1. ✘ $0, 0, \frac{1}{K_a}$

2. ✔ $0, \frac{1}{K_a}, \infty$

3. ✘ $\frac{1}{1+K_p}, \infty, \infty$

4. ✘ $\frac{1}{K_p}, \frac{1}{K_v}, \frac{1}{K_a}$

Question Number : 80 Question Id : 3838235120 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equation for resonant peak of second order system whose transfer function

$\frac{w_n^2}{s^2 + 2\zeta w_n s + w_n^2}$ is given by

Options :

1. ✘ $\frac{w_n}{2\zeta}$

2. ✔ $\frac{1}{2\zeta\sqrt{1-2\zeta^2}}$

3. ✘ $\frac{1}{2w_n\sqrt{1-2w_n^2}}$

4. ✘

$$\frac{w_n}{2\zeta\sqrt{(1-2w_n^2)}}$$

Question Number : 81 Question Id : 3838235121 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Generally, the bandwidth of a control system indicates ---- characteristic of the system.

Options :

1. ✘ Linearity
2. ✘ Causality
3. ✘ Gain
4. ✔ Noise-filtering

Question Number : 82 Question Id : 3838235122 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Addition of a pole at the origin to a transfer function rotates the polar plot at zero and infinite frequencies by a further angle of

Options :

1. ✘ 90°
2. ✔ -90°
3. ✘ 45°
4. ✘ -45°

Question Number : 83 Question Id : 3838235123 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The main advantage of Bode plot is to

Options :

1. ✘ Show complex conjugate zeros

2. ✖ Show complex conjugate poles
3. ✖ Calculate the constant gain
4. ✔ Convert multiplicative factors into additive factors

Question Number : 84 Question Id : 3838235124 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the contour of the open-loop transfer function $G(s)H(s)$ corresponding to the Nyquist contour in the s-plane encircle to the point _____, the closed loop system is stable

Options :

1. ✖ $(1+j0)$ in the counter clockwise direction as many times as the number of right half s-plane poles of $G(s)H(s)$
2. ✔ $(-1+j0)$ in the counter clockwise direction as many times as the number of right half s-plane poles of $G(s)H(s)$
3. ✖ $(1+j0)$ in the clockwise direction as many times as the number of left half s-plane poles of $G(s)H(s)$
4. ✖ $(-1+j0)$ in the clockwise direction as many times as the number of left half s-plane poles of $G(s)H(s)$

Question Number : 85 Question Id : 3838235125 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Consider an open-loop unstable system with the transfer function $G(s)H(S) = \frac{s+2}{(s+1)(s-1)}$

when the feedback path is closed, then the system is

Options :

1. ✖ unstable
2. ✖ stable

3. ✓ If two poles are added in left half s-plane then the system is stable

4. ✗ cannot be determined

Question Number : 86 Question Id : 3838235126 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The gain cross over frequency is the frequency at which the $|G(S)H(s)|$ is

Options :

1. ✗ 0

2. ✗ -1

3. ✓ 1

4. ✗ ∞

Question Number : 87 Question Id : 3838235127 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is not correct with respect to Phase Lead Compensator?

Options :

1. ✗ Bandwidth increases

2. ✓ High frequency gain decreases

3. ✗ Dynamic response becomes faster

4. ✗ Susceptible to high frequency noise

Question Number : 88 Question Id : 3838235128 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The state model is _____, the transfer function of the system is _____

Options :

1. ✓ Nonunique, unique

2. ✘ Nonunique, nonunique
3. ✘ Unique, nonunique
4. ✘ Unique, unique

Question Number : 89 Question Id : 3838235129 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The limit cycles describe the ---- of non-linear systems

Options :

1. ✘ Linearity
2. ✘ Stability
3. ✘ Causality
4. ✔ Oscillations

Question Number : 90 Question Id : 3838235130 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The characteristic equation of a control system is given by $s(s+1)(s^2 + 2s+1) + k(s+2) = 0$.

The angles of asymptotes of the root loci are

Options :

1. ✔ $60^\circ, 180^\circ, 300^\circ$
2. ✘ $30^\circ, 60^\circ, 90^\circ$
3. ✘ $0^\circ, 18^\circ, 45^\circ$
4. ✘ $10^\circ, 10^\circ, 30^\circ$

Question Number : 91 Question Id : 3838235131 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The probability density function is given by $f(x) = \begin{cases} C(x-1), & \text{for } 1 < x < 4 \\ 0 & , \text{ otherwise} \end{cases}$, find $P(2 < x < 3)$.

Options :

1. ✓ $\frac{1}{3}$

2. ✗ $\frac{2}{3}$

3. ✗ $\frac{2}{9}$

4. ✗ $\frac{3}{2}$

Question Number : 92 Question Id : 3838235132 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Thermal noise is independent of

Options :

1. ✗ Bandwidth

2. ✓ Centre frequency

3. ✗ Temperature

4. ✗ Boltzmann's constant

Question Number : 93 Question Id : 3838235133 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The positive RF peaks of an AM voltage rise to maximum value of 12V and drop to a minimum value of 4V. Assuming single tone modulation, the modulation index is

Options :

1. ✗ 3

2. ✘ 2

3. ✔ $\frac{1}{2}$

4. ✘ $\frac{1}{3}$

Question Number : 94 Question Id : 3838235134 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The plot of modulation index versus carrier amplitude yields a

Options :

1. ✘ Horizontal line

2. ✘ Circle

3. ✔ Hyperbola

4. ✘ Parabola

Question Number : 95 Question Id : 3838235135 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A DSB-SC signal can be demodulated using

Options :

1. ✘ Low pass filter

2. ✔ Synchronous detector

3. ✘ Phase discriminator

4. ✘ Envelop detector

Question Number : 96 Question Id : 3838235136 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The image channel rejection in superheterodyne receiver comes from

Options :

1. ✓ IF stage only
2. ✗ RF stage only
3. ✗ Detector only
4. ✗ RF and Detector stages

Question Number : 97 Question Id : 3838235137 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The figure of merit ratio of FM to PM for single tone modulating signal is

Options :

1. ✗ 1
2. ✓ 3
3. ✗ 4
4. ✗ ∞

Question Number : 98 Question Id : 3838235138 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A narrowband FM does not have the following feature

Options :

1. ✗ It has two sidebands
2. ✗ Both sidebands are equal in amplitude
3. ✗ It does not show amplitude variations
4. ✓ Both sidebands have same phase difference with respect to carrier

Question Number : 99 Question Id : 3838235139 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum permissible distance between two samples of a 2 kHz signal is

Options :

1. ✓ 250 μ sec
2. ✗ 500 μ sec
3. ✗ 250 m sec
4. ✗ 500 m sec

Question Number : 100 Question Id : 3838235140 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The main advantage of TDM over FDM is

Options :

1. ✗ It needs less power
2. ✓ It is simple circuitry
3. ✗ It needs less bandwidth
4. ✗ It gives better S/N ratio

Question Number : 101 Question Id : 3838235141 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Companding is used in PCM to

Options :

1. ✗ Reduce bandwidth
2. ✗ Reduce power
3. ✓ Get almost uniform S/N ratio

4. ✘ Increase S/N ratio

Question Number : 102 Question Id : 3838235142 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In delta modulation (DM) system, the granular noise occurs when the modulating signal

Options :

1. ✘ Increases rapidly
2. ✘ Decreases rapidly
3. ✔ Remains constant
4. ✘ Has high frequency components

Question Number : 103 Question Id : 3838235143 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The number of bits per sample in a PCM system with sinusoidal input is increased from n to $n+1$, The improvement in signal to quantization noise ratio will be

Options :

1. ✘ n dB
2. ✘ $2n$ dB
3. ✘ 3 dB
4. ✔ 6 dB

Question Number : 104 Question Id : 3838235144 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following modulation scheme gives the maximum probability of error?

Options :

1. ✔ ASK

2. ✖ FSK
3. ✖ PSK
4. ✖ QPSK

Question Number : 105 Question Id : 3838235145 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The input to a matched filter is given by $S(t) = 10\sin(2\pi \times 10^6 t)$, $0 < t < 1$ second

The peak amplitude of the filter output is

Options :

1. ✖ 5 mV
2. ✖ 10 mV
3. ✖ 5 V
4. ✔ 10 V

Question Number : 106 Question Id : 3838235146 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is incorrect?

Options :

1. ✖ $H(y/x) = H(x, y) - H(x)$
2. ✖ $H(x, y) = H(x/y) - H(y)$
3. ✔ $I(x, y) = H(x) - H(y/x)$
4. ✖ $I(x, y) = H(y) - H(y/x)$

Question Number : 107 Question Id : 3838235147 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

As the bandwidth approaches infinity, the channel capacity becomes

Options :

1. ✘ 0

2. ✔ $1.44 \frac{S}{\eta}$

3. ✘ $0.5 \frac{S}{\eta}$

4. ✘ ∞

Question Number : 108 Question Id : 3838235148 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which one of the following is true?

Options :

1. ✘ The efficiency of Huffman code is linearly proportional to average length of code

2. ✘ Huffman code is also known as maximum redundancy code

3. ✘ A code with Hamming distance 4 is capable of double error correction

4. ✔ When a code is irreducible, it is also separable

Question Number : 109 Question Id : 3838235149 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Flat-top sampling leads to

Options :

1. ✔ Aperture effect

2. ✘ Aliasing

3. ✘ Granular noise

4. ✖ Overload

Question Number : 110 Question Id : 3838235150 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

According to Parseval's theorem the energy spectral density curve is equal to the area under

Options :

1. ✖ Magnitude of the signal
2. ✔ Square of the magnitude of the signal
3. ✖ Square root of magnitude of the signal
4. ✖ Four times of the magnitude of the signal

Question Number : 111 Question Id : 3838235151 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A loop is rotating about the y-axis in a magnetic field $B = B_0 \sin \omega t a_x \text{ wb/m}^2$. The voltage induced in the loop is due to

Options :

1. ✖ Current density
2. ✖ Flux density
3. ✖ Electric field intensity
4. ✔ Combination of motional and transformer emf

Question Number : 112 Question Id : 3838235152 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Maxwell's equation $\oint E \cdot dl$ is equal to

Options :

1. ✖ 0

2. ✘ $-j\omega \int B.dl$

3. ✔ $-j\omega \int B.ds$

4. ✘ $j\omega \int B.dv$

Question Number : 113 Question Id : 3838235153 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following function does not satisfy the wave equation?

Options :

1. ✘ $100e^{j\omega(t-3z)}$

2. ✔ $\cos^2(y+5t)$

3. ✘ $\sin \omega(10z+5t)$

4. ✘ $\sin x \cos t$

Question Number : 114 Question Id : 3838235154 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which one of the following is not true of a lossless line?

Options :

1. ✔ $Z_{in} = -jZ_0$ for a shorted line with $l = \frac{\lambda}{8}$

2. ✘ $Z_{in} = j\infty$ for a shorted line with $l = \frac{\lambda}{4}$

3. ✘ $Z_{in} = Z_0$ for a matched line

4. ✘ At a half-wavelength from load $Z_{in} = Z_L$ and repeats for every half wavelength there after

Question Number : 115 Question Id : 3838235155 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If in a rectangular waveguide for which $a = 2b$, the cutoff frequency for TE_{02} mode is 12 GHz, the cutoff frequency for TM_{11} is

Options :

1. ✓ $3\sqrt{5}$ GHz
2. ✗ $6\sqrt{5}$ GHz
3. ✗ $3\sqrt{12}$ GHz
4. ✗ $6\sqrt{12}$ GHz

Question Number : 116 Question Id : 3838235156 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If a small single-turn loop antenna has a radiation resistance of 0.04Ω , how many turns are needed to produce a radiation resistance of 1Ω ?

Options :

1. ✓ 5
2. ✗ 10
3. ✗ 25
4. ✗ 50

Question Number : 117 Question Id : 3838235157 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The array factor of an N element linear uniform array is

($\Psi = \beta d \cos \theta + \alpha$, $\beta = \frac{2\pi}{\lambda}$, d = spacing between elements and

α = inter element phase shift)

Options :

1. ✘ $\frac{\cos(n\Psi / 2)}{\sin(\Psi / 2)}$

2. ✔ $\frac{\sin(n\Psi / 2)}{\sin(\Psi / 2)}$

3. ✘ $\frac{\sin(n\Psi)}{\cos(\Psi)}$

4. ✘ $\frac{\sin(\Psi / n)}{\sin(\Psi)}$

Question Number : 118 Question Id : 3838235158 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In lossless medium for which $\eta = 60\pi$, $\mu_r = 1$ and

$H = -0.1 \cos(\omega t - z)a_x + 0.5 \sin(\omega t - z)a_y$ A/m, calculate ω .

Options :

1. ✘ 1.0×10^6 rad/s

2. ✘ 1.0×10^8 rad/s

3. ✘ 1.5×10^6 rad/s

4. ✔ 1.5×10^8 rad/s

Question Number : 119 Question Id : 3838235159 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A wave travelling in conducting medium, if its amplitude decreases by a factor of _____, it is called penetration depth of the medium.

Options :

1. ✘ 25 %

2. ✓ 37 %

3. ✗ 50 %

4. ✗ 75 %

Question Number : 120 Question Id : 3838235160 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which factor determines the range resolution of a radar?

Options :

1. ✗ Size of the antenna

2. ✗ Power radiated from the antenna

3. ✗ Aperture of the antenna

4. ✓ Bandwidth of the transmitted pulse