

Topic:- DU_J18_MTECH_ME

1) The Poynting vector $\vec{S}$ of an electromagnetic wave is given by

[Question ID = 51857]

1. $\vec{E} \times \vec{H}$ [Option ID = 87422]
2. $\vec{E} \times \vec{B}$ [Option ID = 87420]
3. $\frac{\vec{E}}{\vec{H}}$ [Option ID = 87421]
4. $\frac{\vec{E}}{\vec{B}}$ [Option ID = 87423]

Correct Answer :-

- $\vec{E} \times \vec{H}$ [Option ID = 87422]

2) A potential field exists in a region where $\varepsilon = f(x)$. If $\rho_v = 0$, $\vec{\nabla}^2 V$ is

[Question ID = 51856]

1. $-f(x) \frac{dF}{dx} \frac{\partial V}{\partial x}$ [Option ID = 87419]
2. $-\frac{1}{f(x)} \frac{dF}{dx} \frac{\partial V}{\partial x}$ [Option ID = 87417]
3. $\frac{1}{f(x)} \frac{dF}{dx} \frac{\partial V}{\partial x}$ [Option ID = 87418]
4. $f(x) \frac{dF}{dx} \frac{\partial V}{\partial x}$ [Option ID = 87416]

Correct Answer :-

- $-\frac{1}{f(x)} \frac{dF}{dx} \frac{\partial V}{\partial x}$ [Option ID = 87417]

3) Find the correct match between group-I and group-II

Group-I

- P. varactor diode
Q. PIN diode
R. Zener diode
S. Schottky diode

Group-II

1. voltage reference
2. high frequency switches
3. tuned circuits
4. current controlled attenuator

[Question ID = 51832]

1. P Q R S 4 2 1 3 [Option ID = 87323]
2. P Q R S 2 3 4 1 [Option ID = 87320]
3. P Q R S 3 4 1 2 [Option ID = 87321]
4. P Q R S 3 4 2 1 [Option ID = 87322]

Correct Answer :-

- P Q R S 3 4 1 2 [Option ID = 87321]

- 4) A triangle in the xy -plane is bounded by the straight lines $2x = 3y$, $y = 0$ and $x = 3$. The volume above the triangle and under the plane $x + y + z = 6$ is

[Question ID = 51782]

1. 20 [Option ID = 87123]
2. 10 [Option ID = 87122]
3. 10.5 [Option ID = 87120]
4. 15 [Option ID = 87121]

Correct Answer :-

- 10 [Option ID = 87122]

- 5) The measured reflection coefficient of an isolator at input port is 0.1, the percentage ratio of power reflected to power incident is

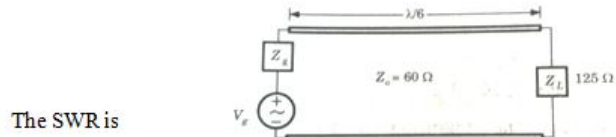
[Question ID = 51869]

1. 1 % [Option ID = 87470]
2. 0.1 % [Option ID = 87471]
3. 0 % [Option ID = 87469]
4. 10 % [Option ID = 87468]

Correct Answer :-

- 1 % [Option ID = 87470]

- 6) Consider the lossless transmission shown in figure



[Question ID = 51863]

1. 2.08 [Option ID = 87444]
2. 1.63 [Option ID = 87445]
3. 2.44 [Option ID = 87446]
4. 1.93 [Option ID = 87447]

Correct Answer :-

- 2.08 [Option ID = 87444]

- 7) The longest wavelength that can be absorbed by silicon, which has the bandgap of 1.12 eV is 1.1 μm . If the largest wavelength that can be absorbed by another material is 0.87 μm , then the band gap of this material is

[Question ID = 51830]

1. 1.416 eV [Option ID = 87314]
2. 0.70 eV [Option ID = 87312]
3. 0.49 eV [Option ID = 87315]
4. 2.00 eV [Option ID = 87313]

Correct Answer :-

- 1.416 eV [Option ID = 87314]

8)

What is $\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta}$ equal to

[Question ID = 51794]

1. θ [Option ID = 87171]
2. 1 [Option ID = 87170]
3. $\sin \theta$ [Option ID = 87169]
4. 0 [Option ID = 87168]

Correct Answer :-

- 1 [Option ID = 87170]

9) CMOS technology is used in

[Question ID = 51810]

1. Microprocessor [Option ID = 87233]
2. Both microprocessor and digital logic [Option ID = 87234]
3. Digital logic [Option ID = 87232]
4. Inverter [Option ID = 87235]

Correct Answer :-

- Both microprocessor and digital logic [Option ID = 87234]

10) The input impedance of a lossless transmission line is 100Ω when terminated in a short-circuit, and 64Ω when terminated in an open circuit the characteristic impedance of the line is

[Question ID = 51862]

1. 164Ω [Option ID = 87441]
2. 36Ω [Option ID = 87443]
3. 64Ω [Option ID = 87442]
4. 80Ω [Option ID = 87440]

Correct Answer :-

- 80Ω [Option ID = 87440]

11) A certain matched antenna radiates one watt (P_r) when driven with voltage $V_a = 10$ volts. The radiation resistance (R_r) of antenna is

[Question ID = 51871]

1. 36.5Ω [Option ID = 87479]
2. 50Ω [Option ID = 87478]
3. 377Ω [Option ID = 87477]
4. 5Ω [Option ID = 87476]

Correct Answer :-

- 50Ω [Option ID = 87478]

12) In a silicon sample the electron concentration drops linearly from 10^{18} cm^{-3} to 10^{16} cm^{-3} over a length of $2.0 \mu\text{m}$. The current density due to the electron diffusion current is ($D_n = 35 \text{ cm}^2/\text{s}$)

[Question ID = 51821]

1. $2.8 \times 10^9 \text{ A/cm}^2$ [Option ID = 87278]

- 9.3×10⁹ A/cm²
2. [Option ID = 87279]
3. 2.8×10⁴ A/cm² [Option ID = 87277]
4. 9.3×10⁴ A/cm² [Option ID = 87276]

Correct Answer :-

- 2.8×10⁴ A/cm² [Option ID = 87277]

13) What would be the nature of 'Z_L' if 'Z_s' reactance is inductive according to 'Max power Transfer theorem'?

[Question ID = 51804]

1. Capacitive [Option ID = 87208]
2. Resistive [Option ID = 87210]
3. All of the above [Option ID = 87211]
4. Inductive [Option ID = 87209]

Correct Answer :-

- Capacitive [Option ID = 87208]

14) In binary PCM system for rectangular pulses, if the quantization levels are increased from 2 to 8, the relative bandwidth requirement will

[Question ID = 51836]

1. remain same [Option ID = 87337]
2. be tripled [Option ID = 87336]
3. be doubled [Option ID = 87338]
4. become four times [Option ID = 87339]

Correct Answer :-

- be tripled [Option ID = 87336]

15) A 50 ohm line is terminated by a purely reactive load of reactance given by Z_L = j 100. The VSWR on the line is

[Question ID = 51858]

1. 4 [Option ID = 87424]
2. ∞ [Option ID = 87427]
3. -4 [Option ID = 87425]
4. 0 [Option ID = 87426]

Correct Answer :-

- ∞ [Option ID = 87427]

16) The Boolean expression (X + Y)(X + $\bar{Y}$)($\bar{X}$ + Y) is equivalent to

[Question ID = 51811]

1. $X\bar{Y}$ [Option ID = 87237]
2. $\bar{X}Y$ [Option ID = 87239]
3. $\bar{X}Y$ [Option ID = 87238]
4. XY [Option ID = 87236]

Correct Answer :-

- XY [Option ID = 87236]

- 17) A source $V_s(t) = V \cos 100\pi t$ has an internal impedance of $(4+j3)\Omega$. If a purely resistive load connected to this source has to extract the maximum power out of the source, find its Value.

[Question ID = 51803]

1. 5Ω [Option ID = 87206]
2. 15Ω [Option ID = 87205]
3. 20Ω [Option ID = 87207]
4. 10Ω [Option ID = 87204]

Correct Answer :-

- 5Ω [Option ID = 87206]

- 18) A particular material has 2.7×10^{29} atoms/m³ and each atom has a dipole moment of $2.6 \times 10^{-30} \hat{u}_y$ A. m². The magnetic field intensity $\hat{H}$ in material ($\mu_r = 4.2$) is

[Question ID = 51852]

1. $0.17 \hat{u}_y$ A/m [Option ID = 87402]
2. $2.04 \hat{u}_y$ A/m [Option ID = 87403]
3. $0.22 \hat{u}_y$ A/m [Option ID = 87400]
4. $2.94 \hat{u}_y$ A/m [Option ID = 87401]

Correct Answer :-

- $0.22 \hat{u}_y$ A/m [Option ID = 87400]

- 19) A charged particle is moving in the presence of an electric field $\vec{E}$ and magnetic field $\vec{B}$. The directions of the fields are such that the particle moves in a straight line and its velocity $\vec{v}$ increases. Which of the following is true?

[Question ID = 51850]

1. $\vec{E}$, $\vec{B}$ and $\vec{v}$ are all parallel to each other [Option ID = 87393]
2. $\vec{B} \cdot \vec{v} = 0$ and $\vec{E}$ is arbitrary [Option ID = 87395]
3. $\vec{E} \cdot \vec{B} = 0$ and $\vec{v}$ is arbitrary [Option ID = 87392]
4. $\vec{E} \cdot \vec{v} = 0$ and $\vec{B}$ is arbitrary [Option ID = 87394]

Correct Answer :-

- $\vec{E}$, $\vec{B}$ and $\vec{v}$ are all parallel to each other [Option ID = 87393]

- 20) A PAM source generates four symbols 3V, 1V, -1V, and -3V with probability of $p(3)=0.2$, $p(1)=0.3$, $p(-1)=0.3$, $p(-3)=0.2$ respectively. The variance for this source will be

[Question ID = 51838]

1. 4.2 V [Option ID = 87347]
2. 3.6 V [Option ID = 87346]
3. 3.2 V [Option ID = 87345]
4. 4.6 V [Option ID = 87344]

Correct Answer :-

- 4.2 V [Option ID = 87347]

- 21) A receiver tunes signals from 550 kHz to 1600 kHz with an IF of 455 kHz. The frequency tuning range ratio for the oscillator section of the receiver is nearly

[Question ID = 51847]

1. 1.65 [Option ID = 87383]
2. 1.60 [Option ID = 87381]
3. 2.90 [Option ID = 87380]
4. 2.05 [Option ID = 87382]

Correct Answer :-

- 2.05 [Option ID = 87382]

22) If $F(s)$ is the Laplace transform of a function $f(t)$, then the Laplace transform of $\int_0^t f(t)dt$ is given by

[Question ID = 51775]

1. $\frac{F(s)}{s-1}$ [Option ID = 87094]
2. $\frac{F(s)}{s}$ [Option ID = 87092]
3. $sF(s)$ [Option ID = 87093]
4. $s^2 F(s)$ [Option ID = 87095]

Correct Answer :-

- $\frac{F(s)}{s}$ [Option ID = 87092]

23) An rms voltage of 1 volt is applied at the sending end of a telephone cable of length 1000 meters. The attenuation in the cable is 1 dB/m. The rms voltage at receiving end of the cable is,

[Question ID = 51833]

1. 10^{50} V [Option ID = 87324]
2. 10^5 V [Option ID = 87325]
3. 10^{-5} V [Option ID = 87326]
4. 10^{-50} V [Option ID = 87327]

Correct Answer :-

- 10^{-50} V [Option ID = 87327]

24) A lossless transmission line operating at 4.5 GHz has $L = 2.6 \mu\text{H/m}$ and $Z_0 = 80 \Omega$. The phase constant and the phase velocity v is

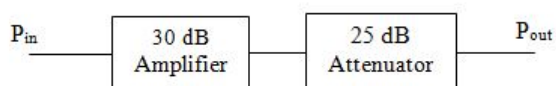
[Question ID = 51864]

1. 148 rad/m, 30.8×10^5 m/s [Option ID = 87450]
2. 919 rad/m, 274×10^5 m/s [Option ID = 87448]
3. 148 rad/m, 274×10^5 m/s [Option ID = 87449]
4. 919 rad/m, 30.8×10^6 m/s [Option ID = 87451]

Correct Answer :-

- 919 rad/m, 30.8×10^6 m/s [Option ID = 87451]

25) The power output for an input power of 1 mW in the following system is



[Question ID = 51868]

1. 10 dBm [Option ID = 87466]
2. 0 dB [Option ID = 87467]
3. 5 dBm [Option ID = 87465]
4. 10 dB [Option ID = 87464]

Correct Answer :-

- 5 dBm [Option ID = 87465]

26) If magnetic monopoles existed, then which of the following Maxwell's equations will be modified?

[Question ID = 51848]

1. $\vec{\nabla} \cdot \vec{D} = 0$ [Option ID = 87384]
 $\vec{\nabla} \times \vec{H} = \vec{J} + \frac{\partial \vec{D}}{\partial t}$
2. [Option ID = 87387]
3. $\vec{\nabla} \cdot \vec{B} = 0$ [Option ID = 87385]
 $\vec{\nabla} \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$
4. [Option ID = 87386]

Correct Answer :-

- $\vec{\nabla} \cdot \vec{B} = 0$ [Option ID = 87385]

27) An electron travelling with velocity of 10^7 cm/s. If the velocity increased by a value of 1 cm/s then the increase in kinetic energy (K.E) is

[Question ID = 51824]

1. 0 eV [Option ID = 87291]
2. 10.4×10^{-9} eV [Option ID = 87289]
3. 1 eV [Option ID = 87290]
4. 5.7×10^{-9} eV [Option ID = 87288]

Correct Answer :-

- 5.7×10^{-9} eV [Option ID = 87288]

28) The current, $i(t)$, through a 10Ω resistor in series is equal to $4 \sin(100t + 45^\circ) + 4 \sin(300t + 60^\circ)$ amperes. The RMS value of the current and the power dissipated in the circuit are:

[Question ID = 51797]

1. 4 A, 160 W [Option ID = 87183]
2. $\sqrt{35}$ A, 410 W [Option ID = 87182]
3. $\sqrt{41}$ A, 410 W [Option ID = 87181]
4. 5 A, 210 W [Option ID = 87180]

Correct Answer :-

- 4 A, 160 W [Option ID = 87183]

29)

In C language, what is the output of the following code

```
int main()
{
    int i=5 , j=4;
    j = ++i+i++;
    i*=j;
    printf("%d %d", i,j);
}
```

[Question ID = 51813]

- 60 31 [Option ID = 87244]
- 90 30 [Option ID = 87245]
- 91 13 [Option ID = 87247]
- 180 20 [Option ID = 87246]

Correct Answer :-

- 91 13 [Option ID = 87247]

30)

If $\vec{F} = x\hat{i} + 2y\hat{j} + 3z\hat{k}$ the value of $\vec{\nabla} \times (\vec{\nabla} \times \vec{F})$ is

[Question ID = 51772]

- $\hat{i}$ [Option ID = 87081]
- $3\hat{k}$ [Option ID = 87083]
- $2\hat{j}$ [Option ID = 87082]
- zero [Option ID = 87080]

Correct Answer :-

- zero [Option ID = 87080]

31) Consider an abrupt pn junction. Let V_{bi} be the built in potential of this junction and V_R be the applied reverse bias. If the junction capacitance, C_j is 1 pF for $V_{bi} + V_R = 1$ V, then for $V_{bi} + V_R = 4$ V, C_j will be

[Question ID = 51823]

- 0.5 pF [Option ID = 87286]
- 2 pF [Option ID = 87287]
- 0.25 pF [Option ID = 87285]
- 4 pF [Option ID = 87284]

Correct Answer :-

- 0.5 pF [Option ID = 87286]

32) If a particular JFET has shorted gate saturation current (I_{DSS}) is 10 mA at 25 °C then the temperature at which saturation current shall be 4.5 mA is _____

[Question ID = 51829]

- ~125 °C [Option ID = 87308]
- ~234 °C [Option ID = 87311]
- ~450 °C [Option ID = 87309]
- ~100 °C [Option ID = 87310]

Correct Answer :-

- ~234 °C [Option ID = 87311]

33) A lot has 10% defective items. Ten items are chosen randomly from this lot. The probability that exactly 2 of the chosen items are defective is

[Question ID = 51792]

1. 0.0036 [Option ID = 87160]
2. 0.3874 [Option ID = 87163]
3. 0.2234 [Option ID = 87162]
4. 0.1937 [Option ID = 87161]

Correct Answer :-

- 0.1937 [Option ID = 87161]

34) In the following circuit the output Z is



[Question ID = 51812]

1. $\bar{A}B$ [Option ID = 87241]
2. ABC [Option ID = 87243]
3. $\overline{ABC}$ [Option ID = 87242]
4. $A\bar{B}$ [Option ID = 87240]

Correct Answer :-

- ABC [Option ID = 87243]

35) The main advantages of the crystal oscillator is that its output is

[Question ID = 51827]

1. d.c [Option ID = 87303]
2. 50 MHz to 60 MHz [Option ID = 87300]
3. variable frequency [Option ID = 87301]
4. a constant frequency [Option ID = 87302]

Correct Answer :-

- a constant frequency [Option ID = 87302]

36) The phenomenon known as 'Early effect' in BJT refers to a reduction of effect base-width caused by

[Question ID = 51831]

1. the reverse biasing of the base-collector junction [Option ID = 87318]
2. electron-hole recombination in the base [Option ID = 87316]
3. the early removal of the stored base charge during saturation to cutoff switching. [Option ID = 87319]
4. the forward biasing of emitter-base junction [Option ID = 87317]

Correct Answer :-

- the reverse biasing of the base-collector junction [Option ID = 87318]

37) A box contains 2 washers, 3 nuts and 4 bolts. Items are drawn from the box at random one at a time without replacement. The probability of drawing 2 washers first followed by 3 nuts and subsequently the 4 bolts is

[Question ID = 51785]

1. $\frac{2}{315}$ [Option ID = 87133]
2. $\frac{1}{1260}$ [Option ID = 87135]
3. $\frac{1}{2520}$ [Option ID = 87134]
4. $\frac{1}{630}$ [Option ID = 87132]

Correct Answer :-

- $\frac{1}{1260}$ [Option ID = 87135]

38) A discrete memoryless source produces symbols m_1, m_2, m_3, m_4 with probabilities $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$ and $\frac{1}{8}$ respectively. The entropy of the source is

[Question ID = 51837]

1. 1.81 [Option ID = 87340]
2. 0.25 [Option ID = 87342]
3. 1.75 [Option ID = 87341]
4. $\frac{2}{2}$ [Option ID = 87343]

Correct Answer :-

- 1.75 [Option ID = 87341]

39) If the Newton Raphson Method is used to find the positive solution of the equation $f(x) = x^3 - A$, where A is any real number, the iteration equation is

[Question ID = 51814]

1. $x_n = x_{n-1}^3 - A + \frac{2x_{n-1} + \frac{A}{x_{n-1}^2}}{3}$ [Option ID = 87251]
2. $x_n = 2x_{n-1} + \frac{A}{x_{n-1}^2}$ [Option ID = 87249]
3. $x_{n+1} = \frac{2x_n + \frac{A}{x_n^2}}{3}$ [Option ID = 87248]
4. $x_n = \frac{2x_{n-1} + \frac{A}{x_{n-1}^2}}{3}$ [Option ID = 87250]

Correct Answer :-

- $x_n = \frac{2x_{n-1} + \frac{A}{x_{n-1}^2}}{3}$ [Option ID = 87250]

40) Two transmission lines of length 30 m, loss 0.1 dB/m and length 80 m, loss 0.05 dB/m are joined. The joint is not done well and imparts a 3 dB loss. What percentage of the input power reaches the output of the combination?

[Question ID = 51860]

1. 5% [Option ID = 87433]
2. 10% [Option ID = 87434]
3. 2.5% [Option ID = 87432]
4. 4.3% [Option ID = 87435]

Correct Answer :-

- 10% [Option ID = 87434]

41) The minimum bandwidth of the link needed for a guard band of 10 kHz frequency to prevent interference between six channels, each with 100 kHz frequency, is

[Question ID = 51842]

1. 575 kHz [Option ID = 87360]
2. 650 kHz [Option ID = 87361]
3. 725 kHz [Option ID = 87363]
4. 425 kHz [Option ID = 87362]

Correct Answer :-

- 650 kHz [Option ID = 87361]

42) A message signal Band limited to 4K is transmitted through 256 level PCM system. Find Transmission bandwidth of the system

[Question ID = 51845]

1. 16 K [Option ID = 87372]
2. 64 K [Option ID = 87374]
3. 128 K [Option ID = 87375]
4. 32 K [Option ID = 87373]

Correct Answer :-

- 32 K [Option ID = 87373]

43) The modulus of the complex number $\left(\frac{3+4i}{1+2i}\right)$ is

[Question ID = 51786]

1. $1/\sqrt{5}$ [Option ID = 87137]
2. $\sqrt{5}$ [Option ID = 87138]
3. 5 [Option ID = 87136]
4. $1/5$ [Option ID = 87139]

Correct Answer :-

- $\sqrt{5}$ [Option ID = 87138]

44) If the two ports are connected in cascade configuration, then which arithmetic operation Should be performed between the individual transmission parameters in order to determine Overall transmission parameters?

[Question ID = 51807]

1. Multiplication [Option ID = 87220]
2. Addition [Option ID = 87221]
3. Subtraction [Option ID = 87222]
4. Division [Option ID = 87223]

Correct Answer :-

- Multiplication [Option ID = 87220]

45) A 70 MHz carrier is QPSK modulated by a 1.544 Mbps T1 data stream. The transmitter employs a raised-cosine filter with $\alpha = 0.2$. Which is the transmitted bandwidth of the signal?

[Question ID = 51839]

1. 1852.8 KHz [Option ID = 87348]
2. 3705.6 KHz [Option ID = 87350]
3. 926.4 KHz [Option ID = 87351]
4. 308.8 KHz [Option ID = 87349]

Correct Answer :-

- 926.4 KHz [Option ID = 87351]

46) Evaluate $\int_0^1 \int_0^{\sqrt{1+x^2}} \frac{dx \cdot dy}{1+x^2+y^2}$

[Question ID = 51776]

1. $\frac{\pi}{2} [\log(1 + \sqrt{2})]$ [Option ID = 87097]
2. $\frac{\pi}{4} [\log(1 - \sqrt{2})]$ [Option ID = 87099]
3. $\frac{\pi}{2} [\log(1 - \sqrt{2})]$ [Option ID = 87098]
4. $\frac{\pi}{4} [\log(1 + \sqrt{2})]$ [Option ID = 87096]

Correct Answer :-

- $\frac{\pi}{4} [\log(1 + \sqrt{2})]$ [Option ID = 87096]

47) A solid state Microwave Device used as transmitters for millimeter-wave communication is

[Question ID = 51825]

1. TRAPATT [Option ID = 87295]
2. BARITT [Option ID = 87294]
3. GUNN [Option ID = 87292]
4. IMPATT [Option ID = 87293]

Correct Answer :-

- IMPATT [Option ID = 87293]

48) The solution of the differential equation $\frac{d^3 y}{dx^3} - 8y = 0$ is

[Question ID = 51773]

1. $y = C_1 e^{2x} + e^{-x} [C_2 \cos(\sqrt{3} x) + C_2 \sin(\sqrt{3} x)]$ [Option ID = 87086]
2. $y = C_1 e^x + C_2 e^{-x}$ [Option ID = 87087]
3. $y = C_1 e^x + e^{-x} [C_2 \cos(\sqrt{3} x) + C_2 \sin(\sqrt{3} x)]$ [Option ID = 87084]
4. $y = C_1 e^{2x} + e^x [C_2 \cos(\sqrt{3} x) + C_2 \sin(\sqrt{3} x)]$ [Option ID = 87085]

Correct Answer :-

- $y = C_1 e^{2x} + e^{-x} [C_2 \cos(\sqrt{3} x) + C_2 \sin(\sqrt{3} x)]$ [Option ID = 87086]

49) The reactance offered by a capacitor to ac of frequency 50Hz is 10Ω. If the frequency is increased to double, reactance becomes

[Question ID = 51806]

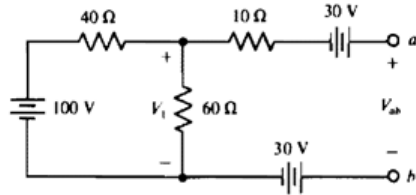
1. 5Ω [Option ID = 87217]

2. 20Ω [Option ID = 87219]
3. 2.5Ω [Option ID = 87216]
4. 10Ω [Option ID = 87218]

Correct Answer :-

- 5Ω [Option ID = 87217]

- 50) Find the voltage V_{ab} across the open circuit in the circuit shown below:



[Question ID = 51798]

1. 60 V [Option ID = 87187]
2. 100 V [Option ID = 87186]
3. 70 V [Option ID = 87184]
4. 50 V [Option ID = 87185]

Correct Answer :-

- 60 V [Option ID = 87187]

- 51) Consider 2×2 square matrix A where X is unknown.

$$A = \begin{bmatrix} \sigma & X \\ \omega & \sigma \end{bmatrix}$$

If the eigen values of the matrix A are $(\sigma + j\omega)$ and $(\sigma - j\omega)$, the X is equal to

[Question ID = 51778]

1. $-\omega$ [Option ID = 87107]
2. $+j\omega$ [Option ID = 87106]
3. $-j\omega$ [Option ID = 87104]
4. $+\omega$ [Option ID = 87105]

Correct Answer :-

- $-\omega$ [Option ID = 87107]

- 52) Which of the following represents an elliptically polarized electromagnetic wave propagating in the z -direction

[Question ID = 51851]

1. $\vec{E} = E_0(\hat{i} + 2\hat{j})e^{j(\omega t - kz + \phi)}$ [Option ID = 87397]
2. $\vec{E} = E_0(\hat{i} + 2\hat{j})e^{j(\omega t + kz + \phi)}$ [Option ID = 87398]
3. $\vec{E} = E_0(\hat{i} + 2j\hat{j})e^{j(\omega t - kz + \phi)}$ [Option ID = 87396]
4. $\vec{E} = E_0(\hat{i} + \hat{j})e^{j(\omega t - kz + \phi)}$ [Option ID = 87399]

Correct Answer :-

- $\vec{E} = E_0(\hat{i} + 2j\hat{j})e^{j(\omega t - kz + \phi)}$ [Option ID = 87396]

53)

The gradient of the field $f = \rho^2 z \cos 2\phi$ at point $(1, 45^\circ, 2)$ is

[Question ID = 51853]

1. $-4\hat{u}_\phi$ [Option ID = 87407]
2. $4\sqrt{2}\hat{u}_\phi$ [Option ID = 87405]
3. $4\hat{u}_\phi$ [Option ID = 87404]
4. $-4\sqrt{2}\hat{u}_\phi$ [Option ID = 87406]

Correct Answer :-

- $-4\hat{u}_\phi$ [Option ID = 87407]

54) The Lagrange polynomial that passes through the three data points (x_0, y_0) , (x_1, y_1) and (x_2, y_2) given as $(15, 24)$, $(18, 37)$ and $(22, 25)$ is given by
$$P_2(x) = 24L_0(x) + 37L_1(x) + 25L_2(x)$$

The value of $L_1(x)$ at $x=16$ is

[Question ID = 51816]

1. 0.5000 [Option ID = 87257]
2. -0.0714 [Option ID = 87256]
3. 4.3333 [Option ID = 87259]
4. 0.57143 [Option ID = 87258]

Correct Answer :-

- 0.5000 [Option ID = 87257]

55) A 6 cm x 4 cm rectangular waveguide is filled with a dielectric of dielectric constant 4.0. The range of frequencies over which the waveguide will have single mode operation will be

[Question ID = 51854]

1. 625 MHz ~~<f~~ 938 MHz [Option ID = 87409]
2. 1.0 GHz ~~<f~~ 2.275 GHz [Option ID = 87410]
3. 1.25 GHz ~~<f~~ 1.875 GHz [Option ID = 87408]
4. 1.0 GHz ~~<f~~ 2.5 GHz [Option ID = 87411]

Correct Answer :-

- 1.25 GHz ~~<f~~ 1.875 GHz [Option ID = 87408]

56) For a lossy distortionless transmission line the propagation constant, β , is given by

[Question ID = 51859]

1. $\omega\sqrt{LC}$ [Option ID = 87428]
2. $\omega\sqrt{\frac{G}{R}}$ [Option ID = 87431]
3. $\omega\sqrt{RG}$ [Option ID = 87429]
4. $\omega\sqrt{\frac{R}{G}}$ [Option ID = 87430]

Correct Answer :-

- $\omega\sqrt{LC}$ [Option ID = 87428]

57) The current i in a series R-L circuit with $R=10\Omega$ and $L=20\text{ mH}$ is given by $i=2\sin 500t$ A. If v is the voltage across the R-L combination, then i

[Question ID = 51799]

1. Is in phase with v [Option ID = 87189]
2. Lags v by 45° [Option ID = 87188]
3. Leads by 45° [Option ID = 87190]
4. Lags v by 90° [Option ID = 87191]

Correct Answer :-

- Lags v by 45° [Option ID = 87188]

58)

For a partial differential equation $\frac{\partial^2 u}{\partial x^2} = \frac{\partial^2 u}{\partial t^2}$, the finite difference form is obtained as (where $\alpha = \frac{\Delta t}{\Delta x}$)

[Question ID = 51817]

1. $u_{i,j+1} = u_{i,j-1} + \alpha^2(u_{i-1,j} + u_{i+1,j}) + 2(1 - \alpha^2)u_{i,j}$ [Option ID = 87260]
2. $u_{i,j+1} = -u_{i,j-1} - \alpha^2(u_{i-1,j} + u_{i+1,j}) + 2(1 - \alpha^2)u_{i,j}$ [Option ID = 87263]
3. $u_{i,j+1} = -u_{i,j-1} + \alpha^2(u_{i-1,j} + u_{i+1,j}) + 2(1 - \alpha^2)u_{i,j}$ [Option ID = 87261]
4. $u_{i,j+1} = -u_{i,j-1} + \alpha^2(u_{i-1,j} + u_{i+1,j}) + 2(1 + \alpha^2)u_{i,j}$ [Option ID = 87262]

Correct Answer :-

- $u_{i,j+1} = -u_{i,j-1} + \alpha^2(u_{i-1,j} + u_{i+1,j}) + 2(1 - \alpha^2)u_{i,j}$ [Option ID = 87261]

59) If $\phi(x) = \int_0^{x^4} \sqrt[3]{t} dt$, then $\frac{d\phi}{dx}$

[Question ID = 51784]

1. $\frac{9}{4}x^2$ [Option ID = 87128]
2. $\frac{4}{9}x^2$ [Option ID = 87129]
3. $4x^{\frac{13}{3}}$ [Option ID = 87131]
4. $\sqrt{x}$ [Option ID = 87130]

Correct Answer :-

- $4x^{\frac{13}{3}}$ [Option ID = 87131]

60) If a single-tone amplitude modulated signal at a modulation depth of 100% transmits a total power of 15 W, the power in the carrier component is

[Question ID = 51840]

1. 15 W [Option ID = 87355]
2. 10 W [Option ID = 87352]
3. 5 W [Option ID = 87353]

4. 12 W [Option ID = 87354]

Correct Answer :-

• 10 W [Option ID = 87352]

61) A single die is thrown twice. What is the probability that the sum is neither 8 nor 9?

[Question ID = 51793]

1. $\frac{1}{4}$ [Option ID = 87165]

2. $\frac{3}{4}$ [Option ID = 87167]

3. $\frac{5}{36}$ [Option ID = 87164]

4. $\frac{1}{9}$ [Option ID = 87166]

Correct Answer :-

• $\frac{3}{4}$ [Option ID = 87167]

62) A triode valve as an amplifier gives a voltage gain of 30. If the anode resistance is $20 \text{ k}\Omega$ for the valve and load resistance is $60 \text{ k}\Omega$ then the value of amplification factor for the valve is

[Question ID = 51826]

1. 39.99 [Option ID = 87297]

2. 80.01 [Option ID = 87298]

3. 1 [Option ID = 87299]

4. 20.05 [Option ID = 87296]

Correct Answer :-

• 39.99 [Option ID = 87297]

63) The relationship between wave number k and angular frequency ω for a certain type of wave is given by $\omega^2 = \alpha k + \beta k^3$. The wave number k for which group velocity equals phase velocity is

[Question ID = 51855]

1. $\frac{1}{3} \sqrt{\frac{\alpha}{\beta}}$ [Option ID = 87415]

2. $3 \sqrt{\frac{\alpha}{\beta}}$ [Option ID = 87414]

3. $\frac{1}{2} \sqrt{\frac{\alpha}{\beta}}$ [Option ID = 87413]

4. $\sqrt{\frac{\alpha}{\beta}}$ [Option ID = 87412]

Correct Answer :-

• $\sqrt{\frac{\alpha}{\beta}}$ [Option ID = 87412]

64) The value of $\int_{0.2}^{3.2} x e^x dx$ by using the three segment trapezoidal rule is most nearly

[Question ID = 51818]

1. 78.92 [Option ID = 87265]

2. 89.36 [Option ID = 87267]

3. 55.48 [Option ID = 87264]

4. 63.21 [Option ID = 87266]

Correct Answer :-

- 63.21 [Option ID = 87266]

65) The standard deviation of a uniformly distributed random variable between 0 and 2 is

[Question ID = 51819]

1. $\frac{7}{\sqrt{12}}$ [Option ID = 87271]
2. $\frac{2}{\sqrt{12}}$ [Option ID = 87270]
3. $\frac{1}{\sqrt{3}}$ [Option ID = 87269]
4. $\frac{4}{\sqrt{12}}$ [Option ID = 87268]

Correct Answer :-

- $\frac{2}{\sqrt{12}}$ [Option ID = 87270]

66) An ideal n-channel MOSFET has parameters $\mu_n = 525 \text{ cm}^2/\text{V}\cdot\text{s}$, $V_{tn} = 0.75 \text{ V}$, $t_{ox} = 40 \text{ nm}$. If the device is biased in saturation with $V_{gs} = 5 \text{ V}$, the required rated current is $I_{D,rat} = 6 \text{ mA}$. The required W/L ratio is

[Question ID = 51822]

1. 14.7 [Option ID = 87282]
2. 12.3 [Option ID = 87280]
3. 7.2 [Option ID = 87283]
4. 9.6 [Option ID = 87281]

Correct Answer :-

- 14.7 [Option ID = 87282]

67) The optical power incident on a photo diode is $3.60 \mu\text{W}$. If the responsivity of photo diode is 0.7 A/W then the photo current generated (in μA) is _____

[Question ID = 51828]

1. $1.58 \mu\text{A}$ [Option ID = 87304]
2. $5.62 \mu\text{A}$ [Option ID = 87306]
3. $2.52 \mu\text{A}$ [Option ID = 87305]
4. $7.86 \mu\text{A}$ [Option ID = 87307]

Correct Answer :-

- $2.52 \mu\text{A}$ [Option ID = 87305]

68) In an air-filled waveguide, a TE mode operating at 6 GHz has

$$E_y = 15 \sin\left(\frac{2\pi x}{a}\right) \sin\left(\frac{\pi z}{b}\right) \sin(\omega t - 12z). \text{ The cut-off frequency is approximately}$$

[Question ID = 51865]

1. 15 GHz [Option ID = 87454]
2. 5.97 GHz [Option ID = 87453]
3. 4.5 GHz [Option ID = 87455]
4. 8.25 GHz [Option ID = 87452]

Correct Answer :-

- 5.97 GHz [Option ID = 87453]

- 69) An unmodulated carrier frequency is given by 1 MHz after frequency modulation, maximum frequency is given by 1.4 MHz Find Δf and $f_{\min}$?

[Question ID = 51846]

1. 0.6 MHz and 0.4 MHz respectively [Option ID = 87377]
2. 0.25 MHz and 0.5 MHz respectively [Option ID = 87378]
3. 0.4 MHz and 0.6 MHz respectively [Option ID = 87379]
4. 0.4 MHz and 0.4 MHz respectively [Option ID = 87376]

Correct Answer :-

- 0.4 MHz and 0.6 MHz respectively [Option ID = 87379]

- 70) The Gauss divergence theorem relates certain

[Question ID = 51795]

1. Surface integrals to line integrals [Option ID = 87172]
2. Line integrals to volume integral [Option ID = 87175]
3. Vector quantities to other vector quantities [Option ID = 87173]
4. Surface integrals to volume integrals [Option ID = 87174]

Correct Answer :-

- Surface integrals to volume integrals [Option ID = 87174]

- 71) For which value of β will the matrix given become a singular?

$$\begin{bmatrix} 8 & \beta & 0 \\ 4 & 0 & 2 \\ 12 & 6 & 0 \end{bmatrix}$$

[Question ID = 51788]

1. -4 [Option ID = 87147]
2. -2 [Option ID = 87145]
3. 1 [Option ID = 87144]
4. 4 [Option ID = 87146]

Correct Answer :-

- 4 [Option ID = 87146]

- 72) $\int_0^1 \int_0^1 (x^2 y + xy^3) dx dy$ equals to

[Question ID = 51787]

1. $\frac{4}{33}$ [Option ID = 87140]
2. 0 [Option ID = 87143]
3. $\frac{7}{24}$ [Option ID = 87141]
4. $\frac{2}{31}$ [Option ID = 87142]

Correct Answer :-

- $\frac{7}{24}$ [Option ID = 87141]

73)

A silicon sample doped n-type with 10^{18} cm^{-3} has a resistance of 10Ω . The sample has an area of 10^{-6} cm^2 and a length of $10 \mu\text{m}$. The doping efficiency of the sample is approximately ($\mu_n = 800 \text{ cm}^2/\text{V-s}$)

[Question ID = 51820]

1. 43 % [Option ID = 87272]
2. 78 % [Option ID = 87274]
3. 96 % [Option ID = 87275]
4. 54 % [Option ID = 87273]

Correct Answer :-

- 78 % [Option ID = 87274]

74)

If $F(\omega)$ is the Fourier transform of a function $f(t)$, then the Fourier transform of $\int_{-\infty}^t f(t) dt$ is given by

[Question ID = 51774]

1. $\omega F(\omega)$ [Option ID = 87089]
2. $\frac{F(\omega)}{j\omega}$ [Option ID = 87088]
3. $j\omega F(\omega)$ [Option ID = 87091]
4. $j \frac{F(\omega)}{\omega}$ [Option ID = 87090]

Correct Answer :-

- $\frac{F(\omega)}{j\omega}$ [Option ID = 87088]

75)

Solution of the differential equation $3y \frac{dy}{dx} + 2x = 0$ represents a family of

[Question ID = 51791]

1. ellipses [Option ID = 87157]
2. parabolas [Option ID = 87158]
3. hyperbolas [Option ID = 87159]
4. Circles [Option ID = 87156]

Correct Answer :-

- ellipses [Option ID = 87157]

76)

The locus represented by $|z - 3| + |z + 3| = 10$ is

[Question ID = 51780]

1. parabola [Option ID = 87114]
2. ellipse [Option ID = 87113]
3. hyperbola [Option ID = 87115]
4. Circle [Option ID = 87112]

Correct Answer :-

- ellipse [Option ID = 87113]

77) In an impedance Smith chart, a clockwise movement along a constant resistance circle gives rise to

[Question ID = 51866]

1. no change in the impedance value [Option ID = 87457]
2. no change in the reactance value [Option ID = 87458]
3. a decrease in the value of reactance [Option ID = 87456]
4. an increase in the value of reactance [Option ID = 87459]

Correct Answer :-

- an increase in the value of reactance [Option ID = 87459]

78) A certain coaxial line of copper conductors with inner and outer conductor diameters of 1mm and 3mm respectively, filled with a dielectric of $\epsilon_r = 2.8$ has an inductance per unit length given by $\frac{\mu_0}{2\pi} \ln 3$. The corresponding capacitance per unit length is given by

[Question ID = 51861]

1. $\frac{2\pi\epsilon_r}{\ln 3}$ [Option ID = 87438]
2. $\frac{2\pi\epsilon_0}{\ln 3}$ [Option ID = 87436]
3. $\frac{5.6\pi\epsilon_0}{\ln 3}$ [Option ID = 87437]
4. $\frac{2\pi\epsilon_r}{\mu_0} \ln 3$ [Option ID = 87439]

Correct Answer :-

- $\frac{5.6\pi\epsilon_0}{\ln 3}$ [Option ID = 87437]

79) The values of the integral along a closed contour c in anti-clockwise direction for

$$\frac{1}{2\pi j} \oint_c \frac{e^z}{z-2} dz$$

- a. The point $z_0 = 2$ inside the contour c, and
 - b. The point $z_0 = 2$ outside the contour c,
- Respectively, are

[Question ID = 51777]

1. (i) 2.72, (ii) 0 [Option ID = 87100]
2. (i) 0, (ii) 7.39 [Option ID = 87103]
3. (i) 0, (ii) 2.72 [Option ID = 87101]
4. (i) 7.39, (ii) 0 [Option ID = 87102]

Correct Answer :-

- (i) 7.39, (ii) 0 [Option ID = 87102]

80) Magnetic bubble is a

[Question ID = 51808]

1. high capacity magnetic storage material [Option ID = 87227]
2. magnetic drive [Option ID = 87225]
3. bubble appearing on the magnetic liquid surface [Option ID = 87224]
4. magnetic storage element [Option ID = 87226]

Correct Answer :-

- magnetic storage element [Option ID = 87226]

81) The SSB modulator is known as

[Question ID = 51844]

1. none [Option ID = 87371]
2. Amplitude modulator [Option ID = 87369]
3. Product modulator [Option ID = 87370]
4. Balanced modulator [Option ID = 87368]

Correct Answer :-

- Product modulator [Option ID = 87370]

82) The information in an analog voltage waveform is to be transmitted over a PCM system with a $\pm 0.1\%$ accuracy. This analog waveform has an absolute bandwidth of 100 Hz and an amplitude range of -10 V to +10 V. The minimum number of bits per sample needed for the waveform is

[Question ID = 51834]

1. 16 bits/samples [Option ID = 87328]
2. 6 bits/samples [Option ID = 87329]
3. 12 bits/samples [Option ID = 87330]
4. 9 bits/samples [Option ID = 87331]

Correct Answer :-

- 9 bits/samples [Option ID = 87331]

83) The Y-parameter matrix of a network is given by $Y = \begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix}$. The Z_{11} parameter of the same network is

[Question ID = 51800]

1. $2\ \Omega$ [Option ID = 87195]
2. $1/\sqrt{2}\ \Omega$ [Option ID = 87192]
3. $1/2\ \Omega$ [Option ID = 87193]
4. $1\ \Omega$ [Option ID = 87194]

Correct Answer :-

- $1/2\ \Omega$ [Option ID = 87193]

84) VSWR meter displays the power in the following manner

[Question ID = 51867]

1. in terms of voltage [Option ID = 87462]
2. relative [Option ID = 87461]
3. in terms of current [Option ID = 87463]
4. absolute [Option ID = 87460]

Correct Answer :-

- relative [Option ID = 87461]

85) Compact disk (CD) players use 16 bit PCM, including one parity bit with 8 times oversampling of the analog signal. If the analog signal bandwidth is 20 kHz. The peak SNR in dB for this signal is,

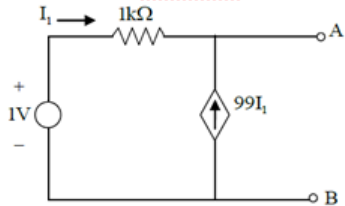
[Question ID = 51835]

1. 101.1 dB [Option ID = 87335]
2. 95.08 dB [Option ID = 87334]
3. 10.1 dB [Option ID = 87333]
4. 9.50 dB [Option ID = 87332]

Correct Answer :-

- 95.08 dB [Option ID = 87334]

86) For the network shown, Thevenin's equivalent voltage source and resistance are, respectively:



[Question ID = 51801]

1. 1mV and 1 kΩ [Option ID = 87197]
2. 1mV and 10 kΩ [Option ID = 87199]
3. 1V and 1 kΩ [Option ID = 87196]
4. 1V and 10Ω [Option ID = 87198]

Correct Answer :-

- 1V and 10Ω [Option ID = 87198]

87) A signal $\underline{x}(t) = 6\cos 10\pi t$ is sampled at the rate of 14 Hz. To recover the original signal, the cut-off frequency f_c of the ideal low-pass filter should be

[Question ID = 51841]

1. 9Hz [Option ID = 87357]
2. 10Hz [Option ID = 87358]
3. 14Hz [Option ID = 87359]
4. $5\text{Hz} < f_c < 9\text{Hz}$ [Option ID = 87356]

Correct Answer :-

- $5\text{Hz} < f_c < 9\text{Hz}$ [Option ID = 87356]

88) Which of the following is the correct expression for integration of $f(x)$ by composite Simpson rule over an interval $[a, b]$ subdivided into $2M$ subintervals of equal width $h = \frac{(b-a)}{2M}$?

[Question ID = 51815]

1. $\frac{h}{2} \left\{ [f(a) + f(b)] + 2 \sum_{k=1}^{M-1} f(x_{2k}) + 4 \sum_{k=1}^M f(x_{2k-1}) \right\}$ [Option ID = 87255]
2. $\frac{h}{2} \left\{ [f(a) + f(b)] + \sum_{k=1}^{M-1} f(x_{2k}) + 2 \sum_{k=1}^M f(x_{2k-1}) \right\}$ [Option ID = 87254]
3. $\frac{h}{3} \left\{ 2[f(a) + f(b)] + \sum_{k=1}^{M-1} f(x_{2k}) + 2 \sum_{k=1}^M f(x_{2k-1}) \right\}$ [Option ID = 87252]
4. $\frac{h}{3} \left\{ [f(a) + f(b)] + 2 \sum_{k=1}^{M-1} f(x_{2k}) + 4 \sum_{k=1}^M f(x_{2k-1}) \right\}$ [Option ID = 87253]

Correct Answer :-

• $\frac{h}{3} \left\{ [f(a) + f(b)] + 2 \sum_{k=1}^{M-1} f(x_{2k}) + 4 \sum_{k=1}^M f(x_{2k-1}) \right\}$ [Option ID = 87253]

89) A 75Ω load is connected to a generator of 50Ω internal impedance through a quarter wavelength coaxial line. The characteristic impedance of this coaxial line is

[Question ID = 51870]

1. 62.5Ω [Option ID = 87475]
2. 102.48Ω [Option ID = 87472]
3. 75Ω [Option ID = 87474]
4. 61.24Ω [Option ID = 87473]

Correct Answer :-

• 61.24Ω [Option ID = 87473]

90) The final value of $L^{-1} \frac{2s+1}{s^4+8s^3+16s^2+s}$ is

[Question ID = 51781]

1. 0 [Option ID = 87118]
2. 2 [Option ID = 87117]
3. 1 [Option ID = 87116]
4. ∞ [Option ID = 87119]

Correct Answer :-

• 1 [Option ID = 87116]

91) The complete solution of the differential equation $\frac{d^2y}{dx^2} - 7\frac{dy}{dx} + 6y = e^{2x}$ is:

[Question ID = 51779]

1. $c_1 e^x + c_2 e^{6x} - \frac{1}{4} e^{2x}$ [Option ID = 87111]
2. $c_1 e^x + c_2 e^{3x} - e^{2x}$ [Option ID = 87110]
3. $c_1 e^x + c_2 e^{3x} - \frac{1}{4} e^{2x}$ [Option ID = 87108]
4. $c_1 e^x + c_2 e^{6x} - e^{2x}$ [Option ID = 87109]

Correct Answer :-

• $c_1 e^x + c_2 e^{3x} - e^{2x}$ [Option ID = 87110]

92) $\lim_{x \rightarrow 0} \frac{\log_e(1+4x)}{e^{3x}-1}$ is equal to

[Question ID = 51789]

1. 1 [Option ID = 87148]
2. none of these [Option ID = 87151]
3. 0 [Option ID = 87149]
4. $\frac{4}{3}$ [Option ID = 87150]

Correct Answer :-

- $\frac{4}{3}$ [Option ID = 87150]

93) 10 message signal, each band limited to 10K are multiplexed using FDM. Guard Band is 0.5K. Find multiplexed signal B.W for DSB modulation

[Question ID = 51843]

1. 104.5 K [Option ID = 87365]
2. 100 K [Option ID = 87366]
3. 204.5 K [Option ID = 87367]
4. 20K [Option ID = 87364]

Correct Answer :-

- 204.5 K [Option ID = 87367]

94) A Y-network has resistances of 10Ω each in two of its arms, while the third arm has a resistance of 5Ω . In the equivalent Δ -network, the highest value (in Ω) among the three resistances is

[Question ID = 51796]

1. 35 Ω [Option ID = 87179]
2. 40 Ω [Option ID = 87177]
3. 20 Ω [Option ID = 87176]
4. 30 Ω [Option ID = 87178]

Correct Answer :-

- 40 Ω [Option ID = 87177]

95) In a charge free region ($\sigma = 0$, $\epsilon = \epsilon_0\epsilon_r$, $\mu = \mu_0$), magnetic field intensity is $\vec{H} = 10 \cos(10^{11}t - 4y)\hat{a}_z$ A/m. The displacement current density is

[Question ID = 51849]

1. $40 \sin(10^{11}t - 4y)\hat{a}_x$ [Option ID = 87390]
2. $40 \sin(10^{11}t - 4y)\hat{a}_y$ [Option ID = 87388]
3. $-40 \sin(10^{11}t - 4y)\hat{a}_x$ [Option ID = 87391]
4. $-40 \sin(10^{11}t - 4y)\hat{a}_y$ [Option ID = 87389]

Correct Answer :-

- $40 \sin(10^{11}t - 4y)\hat{a}_y$ [Option ID = 87388]

96) A series RLC circuit has a resonance frequency of 2 KHz and a quality factor $Q=200$. If each of R, L and C is doubled from its original value, the new Q of the circuit is

[Question ID = 51802]

1. 25 [Option ID = 87203]
2. 100 [Option ID = 87200]
3. 200 [Option ID = 87201]
4. 50 [Option ID = 87202]

Correct Answer :-

- 100 [Option ID = 87200]

97) The Laplace transform of e^{i5t} is _____ where $i = \sqrt{-1}$

[Question ID = 51790]

1. $\frac{s+5i}{s^2+25}$ [Option ID = 87155]
2. $\frac{1+5i}{s^2-25}$ [Option ID = 87152]
3. $\frac{s^2+25}{5i}$ [Option ID = 87153]
4. $\frac{s}{s^2-25}$ [Option ID = 87154]

Correct Answer :-

- $\frac{s+5i}{s^2+25}$ [Option ID = 87155]

98) The value of a, b, c such that $\vec{F} = (3x - 4y + az)\hat{i} + (cx + 5y - 2z)\hat{j} + (x - by + 7z)\hat{k}$ is irrotational are

[Question ID = 51783]

1. -4, 1, 2 [Option ID = 87127]
2. 2, 1, -4 [Option ID = 87124]
3. 1, 2, -4 [Option ID = 87125]
4. 1, 8, 4 [Option ID = 87126]

Correct Answer :-

- 1, 2, -4 [Option ID = 87125]

99) What should be done, if the dependent current and voltage sources are present in a circuit while applying 'Superposition theorem'?

[Question ID = 51805]

1. None of the above [Option ID = 87215]
2. Keep in their original form without replacing by either open or short circuits [Option ID = 87212]
3. Replace them by short circuit [Option ID = 87214]
4. Replace them by open circuit [Option ID = 87213]

Correct Answer :-

- Keep in their original form without replacing by either open or short circuits [Option ID = 87212]

100) Among the given storages, which one has the highest storage capacity

[Question ID = 51809]

1. hard disk [Option ID = 87228]
2. flexible floppy disk [Option ID = 87231]
3. multiple disk storage [Option ID = 87229]
4. CDROM [Option ID = 87230]

Correct Answer :-

- multiple disk storage [Option ID = 87229]