## Topic:- ELEC PHD S2

1) The complex number $\frac{(1+i)(2+i)(4+i)}{(1-i)}$ can be expressed in $a+i b$ form as follows
[Question ID = 5438]
1. $5+7 i$
[Option ID = 21746]
2. $-6+4 i$
[Option ID = 21747]
3. $-6+7 i$
[Option ID = 21748]
4. $-4+7 i$
[Option ID = 21749]
Correct Answer :-

- $-6+7 i$
[Option ID = 21748]

2) If $f(x)=(2 x+1) /(2 x-1)$ and $g(x)=(x+5) /(2 x-3)$ then $g(f(x))$ is
[Question ID = 5439]
1. $\frac{5 x+3}{x+4}$
[Option ID = 21750]
2. $\frac{3 x+7}{4-x}$
3. $\begin{aligned} & \text { [Option } \\ & \frac{2 x-5}{2 x-3}\end{aligned}$
[Option ID = 21752]
4. $\frac{12 x-4}{-2 x+5}$
[Option ID = 21753]
Correct Answer :-

- $\frac{12 x-4}{-2 x+5}$
[Option ID = 21753]

3) $\lim _{x \rightarrow \pi} \frac{1+\cos x}{\tan ^{2} x}=$
[Question ID = 5440]
1. 1
[Option ID = 21754]
2. -1
[Option ID = 21755]
3. $1 / 2$
[Option ID $=21756$ ]
4. $-1 / 2$
[Option ID = 21757]

- $1 / 2$

[Question ID = 5441]

1. $y(x)=A e^{2 x}-B e^{-x}$
[Option ID $=21758$ ]
2. $y(x)=A e^{-2 x}+B e^{x}$
[Option ID $=21759$ ]
3. $y(x)=A e^{2 x}+B e^{x}$
[Option ID $=21760$ ]
4. $y(x)=A e^{-2 x}+B e^{-x}$
[Option ID = 21761]
Correct Answer :-

- $y(x)=A e^{-2 x}+B e^{x}$
[Option ID = 21759]

5) Given $x=\frac{c t}{(1-3 t)}, y=\frac{c t^{2}}{(1-4 t)}$, where $\boldsymbol{t}$ is a parameter and $\mathbf{c}$ is a constant, then $d y / d x$ in terms of $\boldsymbol{t}$ only is
[Question ID = 5442]
1. $\frac{2 t(1-2 t)(1-3 t)^{2}}{(1-4 t)^{2}}$
2. $\frac{[\text { Option ID }=21762]}{2(1-2 t)(1-4 t)^{2}} \begin{aligned} & (1-3 t)^{2}\end{aligned}$
[Option ID $=21763]$
$\frac{2 t(1-2 t)(1+3 t)^{2}}{(1+7 t)^{2}}$
[Option ID = 21764]
3. $\frac{(1-2 t)(1-3 t)^{2}}{(1-7 t)^{2}}$
[Option ID = 21765]
Correct Answer :-

- $\frac{2 t(1-2 t)(1-3 t)^{2}}{(1-4 t)^{2}}$
[Option ID $=21762$ ]

6) 

The eigen values of the matrix $\left|\begin{array}{lll}1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1\end{array}\right|$ are
[Question ID = 5443]

1. $2,-3,6$
[Option ID = 21766]
2. $-2,-3,-6$
[Option ID = 21767]
3. $-2,3,6$
[Option ID $=21768$ ]
4. 2,-3,-6
[Option ID = 21769]

## [Question ID = 5444]

1. 1
[Option ID = 21770]
2. 0
[Option ID = 21771]
3. 4
[Option ID = 21772]
4. 2
[Option ID = 21773]
Correct Answer :-

- 4
[Option ID = 21772]

8) 

If A is orthogonal matrix and $A=\left|\begin{array}{ccc}0 & 2 b & c \\ a & b & -c \\ a & -b & c\end{array}\right|$, the values of a and b are
[Question ID = 5445]

1. $a= \pm \frac{1}{\sqrt{2}} b= \pm \frac{1}{\sqrt{6}}$
[Option ID = 21774]
2. $a= \pm \frac{1}{\sqrt{3}} b= \pm \frac{1}{\sqrt{2}}$
[Option ID $=21775$ ]
3. $a= \pm 0 b=\frac{1}{\sqrt{2}}$
[Option ID = 21776]
4. $a= \pm \frac{1}{\sqrt{3}} b= \pm 0$
[Option ID = 21777]
Correct Answer :-

- $a= \pm \frac{1}{\sqrt{2}} b= \pm \frac{1}{\sqrt{6}}$
[Option ID = 21774]

9) The particular solution for $Y^{\prime \prime \prime}-Y^{\prime}=e^{x}+e^{-x}$ is
[Question ID = 5446]
1. $\frac{x\left(e^{x}+e^{-x}\right)}{2}$
2. $\frac{\begin{array}{c}\text { [Option ID } \\ \left(e^{x}+e^{-x}\right) \\ 2\end{array}}{2}$
3. $\frac{[\text { Option ID }=21}{-x\left(e^{x}+e^{-x}\right)}$| 2 |
| :---: |

[Option ID $=21780$ ]
4.
$\frac{-\left(e^{x}+e^{-x}\right)}{2}$
[Option ID = 21781]

## Correct Answer :-

$\frac{x\left(e^{x}+e^{-x}\right)}{2}$

1. parabolic
[Option ID = 21782]
2. hyperbolic
[Option ID = 21783]
3. none of these
[Option ID = 21784]
4. elliptic
[Option ID = 21785]
Correct Answer :-

- elliptic
[Option ID = 21785]

11) Consider an ordinary differential equation $\frac{d x}{d t}=4 t+4$. if $x=x_{0}$ at $t=0$, the increment in $x$ calculated using Runge-Kutta fourth order multi-step method with a step size of $\Delta t=0.2$ is
[Question ID = 5448]
1. 0.66 [Option ID $=21786$ ]
2. $0.44[$ Option ID $=21787]$
3. $0.88[$ Option ID $=21788]$
4. $0.22[$ Option $\mathrm{ID}=21789]$

Correct Answer :-

- 0.88 [Option ID $=21788$ ]

12) The velocity $v$ (in kilometre/minute) of a motorbike which starts from rest, is given at fixed intervals of time $t$ (in minutes) as follows:

| $\mathbf{t}$ | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| v | 10 | 18 | 25 | 29 | 32 | 20 | 11 | 5 | 2 | 0 |

The approximate distance (in kilometres) rounded to two places of decimals covered in 20 minutes using Simpson's $1 / 3$ rd rule is
[Question ID = 5449]

1. 200
[Option ID = 21790]
2. 309
[Option ID $=21791]$
3. 119
[Option ID = 21792]
4. 234
[Option ID = 21793]
Correct Answer :-

- 309
[Option ID = 21791]

13) Consider $p(s)=s^{3}+a_{2} s^{2}+a_{1} s+a_{0}$ with all real coefficients. It is known that its derivative $p^{\prime}(\mathrm{s})$ has no real roots. The number of real roots of $p(s)$ is
[Question ID = 5450]
1. 0
[Option ID = 21794]
2. 1
[Option ID = 21795]
3. 2
[Option ID = 21796]
4. 3
14) Gauss Seidel method is used to solve the following equations (as per the given order):
$x_{1}+2 x_{2}+3 x_{3}=5 ;$
$2 x_{1}+3 x_{2}+x_{3}=1 ;$
$3 x_{1}+2 x_{2}+x_{3}=3 ;$
Assuming initial guess as $x_{1}=x_{2}=x_{3}=0$, the value of $x_{3}$ after the first iteration is
[Question ID = 5451]
1. 1.55
[Option ID = 21798]
2. 2.55
[Option ID = 21799]
3. 1.00
[Option ID = 21800]
4. 3.67
[Option ID = 21801]
Correct Answer :-

- 1.55
[Option ID = 21798]

15) The function $f(x)=e^{x}-1$ is to be solved using Newton-Raphson method, an initial guess of $x_{0}$ is taken as 1.0 , then the absolute error observed at $2^{\text {nd }}$ iteration is
[Question ID = 5452]
1. 0.50 [Option $I D=21802$ ]
2. 1.25 [Option ID $=21803$ ]
3. 0.25 [Option ID $=21804$ ]
4. 0.33 [Option ID $=21805$ ]

Correct Answer :-

- 0.25 [Option ID $=21804$ ]

16) IF $F(s)$ is the Fourier transform of $f(x)$ then the Fourier transform of $e^{5 x} f(x)$ is
[Question ID = 5453]
1. $F\left(\frac{s}{5}\right)$
[Option ID = 21806]
2. $F(5 s)$
[Option ID = 21807]
3. $\mathrm{F}(\mathrm{s}+5)$
[Option ID = 21808]
4. $\mathrm{F}(\mathrm{s}-5)$
[Option ID = 21809]
Correct Answer :-

- $\mathrm{F}(\mathrm{s}+5)$
[Option ID = 21808]

17) The Fourier cosine transform of $7 e^{-x}+e^{-5 x}$ is
[Question ID = 5454]
1. $\sqrt{\frac{2}{\pi}}\left(\frac{7}{\left(s^{2}+1\right)\left(s^{2}+25\right)}\right)$

[^0][Option ID = 21812]
4. $\sqrt{\frac{2}{\pi}}\left(\frac{7}{s^{2}}+\frac{1}{s^{2}}\right)$
[Option ID = 21813]
Correct Answer :-

- $\sqrt{\frac{2}{\pi}}\left(\frac{7}{s^{2}+1}+\frac{5}{s^{2}+25}\right)$
[Option ID = 21811]

18) Using Laplace transform evaluate the given integral $\int_{0}^{\infty} t e^{-2 t} \sin 3 t d t$
[Question ID = 5455]
1. $\frac{12}{169}$
[Option ID = 21814]
2. 1
[Option ID = 21815]
3. $\frac{9}{225}$
[Option ID = 21816]
4. 0
[Option ID = 21817]
Correct Answer :-

- $\frac{12}{169}$
[Option ID = 21814]

19) If Laplace transform of the function $\mathrm{f}(\mathrm{t})$ is given by $\int_{0}^{\infty} \mathrm{f}(\mathrm{t}) e^{-s t} d t$ then Laplace transform of the function shown in the figure is

[Question ID = 5456]
1. $\left(\frac{5-e^{-s}}{s}\right)$
[Option ID = 21818]
2. $5\left(\frac{1-e^{-s}}{s}\right)$
[Option ID = 21819]
3. $\left(\frac{5+e^{-s}}{s}\right)$
[Option ID = 21820]
4. $\left(\frac{5+e^{s}}{s}\right)$
[Option ID = 21821]

## Correct Answer :-



1. $\frac{1}{\sqrt{2 t}} e^{-\frac{5}{2}}$
[Option ID = 21822]
2. $\frac{1}{\sqrt{2}} e^{-\frac{5}{2}}$
[Option ID = 21823]
3. $\frac{1}{\sqrt{\pi}}$
[Option ID = 21824]
4. $\frac{1}{\sqrt{2 t \pi}} e^{-\frac{5}{2}}$
[Option ID = 21825]
Correct Answer :-

- $\frac{1}{\sqrt{2 t \pi}} e^{-\frac{5}{2}}$
[Option ID = 21825]

21) Which MATLAB command will return the corner elements of a 5-by-5 matrix A?
[Question ID = 5458]
1. $A([1,1]$, [end, end]) [Option ID $=21826$ ]
2. $A(\{[1,1]$, [1, end], [end, 1], [end, end]\}) [Option ID $=21827]$
3. $A(1$ :end, 1 :end) [Option ID $=21828$ ]
4. $\mathrm{A}([1$, end], [1, end]) [Option ID $=21829]$

## Correct Answer :-

- $\mathrm{A}([1$, end], [1, end]) [Option ID = 21829]

22) Two vectors created in MATLAB as
>> X = [7 77 7];
>> $\mathrm{Y}=6: 9$;
The output of the command $\mathrm{X}==\mathrm{Y}$ is
[Question ID = 5459]
1. 0100
[Option ID = 21830]
2. 6789
[Option ID = 21831]
3. 7777
[Option ID = 21832]
4. 0101
[Option ID $=21833$ ]

## Correct Answer :-

- 0100
[Option ID = 21830]

23) Consider the following MATLAB vectors:
$\mathrm{x}=\left[\begin{array}{ll}1 & 2\end{array}\right] ;$
$y=\left[\begin{array}{ll}3 & 4\end{array}\right] ;$
z = [ x' [ y ; y ] ]';
What is the value of $z$ after this program executes?
[Question ID = 5460]

3. $\left[\begin{array}{lll}1 & 3 & 3 \\ 2 & 4 & 4\end{array}\right]$
[Option ID = 21836]
4. $\left[\begin{array}{ll}3 & 3 \\ 4 & 4\end{array}\right]$
[Option ID = 21837]
Correct Answer :-
$\left[\begin{array}{ll}1 & 2 \\ 3 & 3 \\ 4 & 4\end{array}\right]$
[Option ID = 21837]
24) In C language, what is the output of the following code?
int main()
\{
int $\mathrm{j}=4 ;$
printf("\%d\%d",j,j++);
\}
[Question ID = 5461]
1. 44
[Option ID = 21838]
2. 45
[Option ID = 21839]
3. 54
[Option ID $=21840]$
4. 55
[Option ID = 21841]
Correct Answer :-

- 54
[Option ID = 21840]

25) In C language, what is the output of the following code? int main()
\{
int $\mathrm{a}=52$;
printf("\%o \%x",a,a);
\}
[Question ID = 5462]
1. $0520 \times 52$
[Option ID = 21842]
2. 6434
[Option ID = 21843]
3. 6243
[Option ID = 21844]
4. error
[Option ID = 21845]

## Correct Answer :-

- 6434
[Option ID = 21843]


# - R"FTrrstRamkedweónins <br> [Option ID = 21846] <br> 2. 10.5 ns <br> [Option ID = 21847] <br> 3. 7.4 ns <br> [Option ID = 21848] <br> 4. 3.1 ns <br> [Option ID = 21849] 

Correct Answer :-

- 15.8 ns
[Option ID = 21846]

27) If the number density of a free electron gas changes from $10^{27}$ to $10^{25}$ electrons $/ \mathrm{m}^{3}$ then the value of plasma frequency (in Hz ) changes from $9.85 \times 10^{14}$ to $\qquad$
[Question ID = 5464]
1. $9.85 \times 10^{10}$ [Option ID $=21850$ ]
2. $9.85 \times 10^{9}[$ Option ID $=21851$ ]
3. $9.85 \times 10^{13}$ [Option ID $=21852$ ]
4. $9.85 \times 10^{7}[$ Option ID $=21853]$

Correct Answer :-

- $9.85 \times 10^{13}$ [Option ID $=21852$ ]

28) Match List I with List II typical spectroscopic regions type of transitions

| List I | List II |
| :--- | :--- |
| A. Infrared region | I. Electron transition involving valance <br> electrons |
| B. Ultraviolet visible <br> region | II. Nuclear transitions |
| C. X-ray region | III. Vibrational transitions of molecules |
| D. Y-ray region | IV. Transitions involving inner shell electrons |

Choose the correct answer from the options given below:
[Question ID = 5465]

1. A - III, B - I, C - IV, D - II
[Option ID $=21854$ ]
2. A-IV, B - II, C - I, D - III
[Option ID = 21855]
3. A-I, B - II, C - III, D - IV
[Option ID = 21856]
4. A - III, B - IV, C - I, D - II
[Option ID = 21857]
Correct Answer :-

- A - III, B - I, C - IV, D - II
[Option ID $=21854$ ]

29) The value of $\theta$ at which the first order peak in $X$-ray ( $\lambda=1.53 \AA$ ) diffraction corresponding to (111) plane of a single cubic structure with the lattice constant $\mathrm{a}=2.65 \AA$ is proximately
[Question ID = 5466]
1. $15^{\circ}$
[Option ID = 21858]
2. $45^{\circ}$
3. $30^{\circ}$
[Option ID = 21860]
30) If an IMPATT diode amplifier has negative resistance $R_{d}=-15 \Omega$ and load resistance $R_{L}=25 \Omega$ the power gain is
[Question ID = 5467]
1. 25 [Option ID $=21862$ ]
2. 0 [Option ID $=21863$ ]
3. $\infty$
[Option ID = 21864]
4. 16 [Option ID $=21865$ ]

Correct Answer :-

- 16 [Option ID = 21865]

31) How many AND gates are required for 1 to 16 de-multiplexer?
[Question ID = 5468]
1. 8 [Option ID $=21866$ ]
2. 16 [Option ID $=21867$ ]
3. 14 [Option $I D=21868]$
4. 20 [Option ID = 21869]

## Correct Answer :-

- 16 [Option ID = 21867]

32) A 12 bit ADC is used to convert analog voltage of 0 to 10 V into digital. The resolution is
[Question ID = 5469]
1. 24.4 mV
[Option ID = 21870]
2. 2.44 mV
[Option ID $=21871$ ]
3. 1.2 V
[Option ID = 21872]
4. none of these
[Option ID = 21873]
Correct Answer :-

- 2.44 mV
[Option ID = 21871]

33) The value of x for the given system: $(\sqrt{22})_{x}=6$ is
[Question ID = 5470]
1. 17
[Option ID = 21874]
2. 15
[Option ID = 21875]
3. 16
[Option ID = 21876]
4. none of these
[Option ID = 21877]
Correct Answer :-

- 17
[Option ID = 21874]

34) The input impedance of the following circuit

3. $10 \mathrm{k} \Omega$ [Option ID $=21880$ ]
4. Infinity [Option ID $=21881$ ]

Correct Answer :-

- $10 \mathrm{k} \Omega$ [Option ID = 21880]

35) What is the bandwidth of single stage amplifier if its rise time is 0.35 microseconds?
[Question ID = 5472]
1. 2 MHz [Option ID $=21882$ ]
2. 5 KHz [Option ID $=21883$ ]
3. 1 MHz [Option ID $=21884$ ]
4. $2 \mathrm{KHz}[$ Option ID $=21885]$

Correct Answer :-

- 1 MHz [Option ID = 21884]

36) If the electric field strength $E$ of an electromagnetic wave in free space is given by $E=2 \cos w(t-z / n o)$ ay $V / m$. The magnetic flux density $B$ is calculated as
[Question ID = 5473]
1. $-\frac{2}{v_{0}} \cos \omega\left(t-\frac{z}{v_{0}}\right) \boldsymbol{a}_{\boldsymbol{x}} A / m$
[Option ID = 21886]
2. $-\frac{2}{v_{0}} \cos \omega\left(t-\frac{z}{v_{0}}\right) \boldsymbol{a}_{\boldsymbol{y}} A / m$
[Option ID $=21887$ ]
3. $-\frac{2}{v_{0}} \sin \omega\left(t-\frac{z}{v_{0}}\right) \boldsymbol{a}_{\boldsymbol{x}} A / m$
[Option ID = 21888]
4. $-\frac{2}{v_{0}} \sin \omega\left(t-\frac{z}{v_{0}}\right) \boldsymbol{a}_{\boldsymbol{y}} A / m$
[Option ID $=21889$ ]
Correct Answer :-

- $-\frac{2}{v_{0}} \cos \omega\left(t-\frac{z}{v_{0}}\right) \boldsymbol{a}_{\boldsymbol{x}} A / m$
[Option ID = 21886]

37) The electric field acting on an electron (charge $-1.6 \times 10^{-19} \mathrm{C}$ ) which is $1 \mu \mathrm{~m}$ away from a perfectly conducting plane
[Question ID = 5474]
1. $181 \mathrm{~V} / \mathrm{m}$
[Option ID $=21890$ ]
2. $360 \mathrm{~V} / \mathrm{m}$
[Option ID = 21891]
3. $543 \mathrm{~V} / \mathrm{m}$
[Option ID = 21892]
4. $271 \mathrm{~V} / \mathrm{m}$
[Option ID = 21893]

## Correct Answer :-

- $360 \mathrm{~V} / \mathrm{m}$
[Option ID = 21891]

38) An electron starts with zero velocity from a cathode which is at a potential of -5 kV and then moves into a region where the potential is zero. The velocity of this electron is
[Question ID = 5475]
1. $32.65 \times 10^{6} \mathrm{~m} / \mathrm{s}$ [Option $\mathrm{ID}=21894$ ]
2. $31.55 \times 10^{7} \mathrm{~m} / \mathrm{s}$ [Option ID $=21895$ ]
3. $41.95 \times 10^{6} \mathrm{~m} / \mathrm{s}$ [Option ID $=21896$ ]
4. $52.65 \times 10^{7} \mathrm{~m} / \mathrm{s}$ [Option $\mathrm{ID}=21897$ ]
 filled coaxial cable. The VSWR and phase velociNYWWhEirstRanker cagm respective WWYW.FirstRanker.com [Question ID = 5476]
5. 2.0 and $0.70 \times 10^{8} \mathrm{~m} / \mathrm{s}$ [Option ID $=21898$ ]
6. 1.3 and $3.65 \times 10^{8} \mathrm{~m} / \mathrm{s}$ [Option $\mathrm{ID}=21899$ ]
7. 1.5 and $1.90 \times 10^{8} \mathrm{~m} / \mathrm{s}$ [Option $\mathrm{ID}=21900$ ]
8. 2.5 and $2.50 \times 10^{7} \mathrm{~m} / \mathrm{s}$ [Option $\mathrm{ID}=21901$ ]

## Correct Answer :-

- 1.5 and $1.90 \times 10^{8} \mathrm{~m} / \mathrm{s}$ [Option $\mathrm{ID}=21900$ ]

40) A transmission line is terminated by a resistance load which is less than the characteristic impedance and VSWR on the line is 1.5 . The ratio of reflected wave to the incident wave in decibels is
[Question ID = 5477]
1. 0 dB [Option ID = 21902]
2. $1.5 \mathrm{Db}[$ Option $\mathrm{ID}=21903$ ]
3. -13.98 dB [Option ID $=21904]$
4. -1.5 dB [Option ID $=21905$ ]

Correct Answer :-

- -13.98 dB [Option ID $=21904$ ]

41) The power internally generated within a double-hetero junction LED if it has internal quantum efficiency of $54.5 \%$ and drive current of 50 mA with a peak emission wavelength of $0.72 \mu \mathrm{~m}$ is
[Question ID = 5478]
1. 0.09 W [Option $\mathrm{ID}=21906$ ]
2. 0.047 W [Option ID = 21907]
3. 0.01 W [Option ID $=21908$ ]
4. 0.6 W [Option ID = 21909]

## Correct Answer :-

- 0.047 W [Option ID = 21907]

42) For a phototransistor having gain of 116.5 , wavelength of $1.28 \mu \mathrm{~m}$, optical power $123 \mu \mathrm{~W}$. The collector current is [Question ID = 5479]
1. 7.46 mA [Option $\mathrm{ID}=21910$ ]
2. 1.23 mA [Option $\mathrm{ID}=21911]$
3. 5.24 mA [Option $\mathrm{ID}=21912$ ]
4. 14.76 mA [Option $\mathrm{ID}=21913$ ]

## Correct Answer :-

- 14.76 mA [Option ID = 21913]

43) In 8086 microprocessor the overflow flag is set when
[Question ID = 5480]
1. the sum is more than 16 bits [Option ID $=21914$ ]
2. carry and sign flags are set. [Option ID = 21915]
3. Subtraction [Option ID $=21916$ ]
4. signed numbers go out of their range after an arithmetic operation [Option ID = 21917]

## Correct Answer :-

- signed numbers go out of their range after an arithmetic operation [Option ID = 21917]

44) What is the bit size of the 8051 microcontroller?
[Question ID = 5481]
1. 4 bit [Option ID $=21918$ ]
2. 16 bit [Option ID $=21919$ ]
3. 128 bit [Option ID $=21920$ ]
4. 8 bit $[$ Option $\mathrm{ID}=21921]$

Correct Answer :-

- 8 bit [Option ID = 21921]

45) A $50 \Omega$ lossless transmission line has a pure reactance of $j 100 \Omega$ as its load. The VSWR in the line is
[Question ID = 5482]
1. $\infty$ (infinity)

[^1][Option ID = 21925]

## Correct Answer :-

- $\infty$ (infinity)
[Option ID = 21922]

46) The bit stream 01001 is differentially encoded using 'Delay and EX-OR' scheme for DPSK transmission. Assuming the reference bit as ' 1 ' and assigning phases of ' 0 ' and $\pi$ for 1 's and 0 's respectively in the encoded sequence, the transmitted phase sequence becomes
[Question ID = 5483]
1. $0 \pi \pi \pi 0$
[Option ID = 21926]
2. $\pi 0 \pi \pi 0$
[Option ID = 21927]
3. $0 \pi \pi 00$
[Option ID = 21928]
4. $\pi \pi \pi 0 \pi$
[Option ID = 21929]
Correct Answer :-

- 0ாாா0
[Option ID = 21926]

47) An $A M$ modulator has output $x_{c}(t)=A \cos (400 \pi t)+B \cos (380 \pi t)+B \cos (420 \pi t)$. The carrier power is 100 W and the efficiency is $40 \%$. The value of $A$ and $B$ are
[Question ID = 5484]
1. $14.14,8.16$
[Option ID = 21930]
2. 50,10
[Option ID = 21931]
3. $22.36,13.46$
[Option ID = 21932]
4. None of these
[Option ID = 21933]

Correct Answer :-

- 14.14, 8.16
[Option ID = 21930]

48) To prevent overloading of the last IF amplifier in a receiver, one should use
[Question ID = 5485]
1. Squelch [Option ID = 21934]
2. Variable sensitivity [Option ID $=21935$ ]
3. Variable selectivity [Option ID $=21936$ ]
4. Double conversion [Option ID $=21937$ ]

## Correct Answer :-

- Variable sensitivity [Option ID = 21935]

49) A base band PCM system with a matched filter at receiver is implemented with $\pm 5 \mathrm{~V}$ bipolar pulse with pulse duration of $72 \mu \mathrm{sec}$. If the noise power spectral density is $1.0 \times 10^{-4} \mathrm{~V}^{2} / \mathrm{Hz}$, the probability of error for this system is given by [Question ID = 5486]
1. $1.15 \times 10^{-5}$ [Option $\mathrm{ID}=21938$ ]
2. $1.85 \times 10^{-5}$ [Option $\left.\mathrm{ID}=21939\right]$
3. $2.8 \times 10^{-5}$ [Option $\mathrm{ID}=21940$ ]
4. $2.36 \times 10^{-5}$ [Option ID $=21941$ ]
5. $18 \mathrm{kbps}[O p t i o n ~ I D=21944]$
6. $24 \mathrm{kbps}[$ Option $\mathrm{ID}=21945$ ]

Correct Answer :-

- 26.4 kbps [Option ID $=21943$ ]


[^0]:    [Option ID = 21810]
    2. $\sqrt{\frac{2}{\pi}}\left(\frac{7}{s^{2}+1}+\frac{5}{s^{2}+25}\right)$

[^1]:    [Option ID = 21922]
    2. $\frac{1}{2}$ (half)

