

# Question Paper Preview

**Question Paper Name:** Electrical and Electronics Engineering 30th April 2019 Shift1  
**Subject Name:** Electrical and Electronics Engineering  
**Share Answer Key With Delivery Engine:** Yes  
**Actual Answer Key:** Yes

Mathematics

**Number of Questions:** 50  
**Display Number Panel:** Yes  
**Group All Questions:** No

**Question Number : 1 Question Id : 67809438857 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

The adjoint of  $A = \begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$  is

**Options :**

1.  $\begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$

2.  $\begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$

3.  $\begin{pmatrix} 3 & 0 & 6 \\ 6 & 3 & 0 \\ 9 & 6 & 3 \end{pmatrix}$

4.  $\begin{pmatrix} 3 & 2 & 1 \\ 4 & 1 & -1 \\ 0 & 3 & 4 \end{pmatrix}$

**Question Number : 2 Question Id : 67809438858 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

If  $A$  is a square matrix of order 3 then  $(\text{adj } A) \cdot A =$

Options :

1.  $A \cdot (\text{adj } A)$
2.  $A \times (\text{adj } A)$
3.  $A - (\text{adj } A)$
4.  $A + (\text{adj } A)$

Question Number : 3 Question Id : 67809438859 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The inverse of  $A = \begin{pmatrix} 2 & 3 \\ 2 & 5 \end{pmatrix}$  is

Options :

1.  $\begin{pmatrix} 5/4 & -3/4 \\ 1/2 & 1/2 \end{pmatrix}$
2.  $\begin{pmatrix} 5/4 & 3/4 \\ -1/2 & 1/2 \end{pmatrix}$
3.  $\begin{pmatrix} 5/4 & -5/4 \\ -1/2 & 1/2 \end{pmatrix}$
4.  $\begin{pmatrix} 5/4 & -3/4 \\ -1/2 & 1/2 \end{pmatrix}$

Question Number : 4 Question Id : 67809438860 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $A = \begin{pmatrix} 3 & 2 & x \\ 4 & 1 & -1 \\ 0 & 3 & 4 \end{pmatrix}$  is a singular matrix then the value of  $x$  is

Options :

1.  $11/12$
2.  $-11/12$

3.  $\frac{13}{12}$

4.  $\frac{5}{4}$

Question Number : 5 Question Id : 67809438861 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $A = \begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$  then  $A^2 - 5A + 7I$  is

Options :

1.  $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

2.  $\begin{pmatrix} 0 & 3 \\ 2 & 0 \end{pmatrix}$

3.  $\begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}$

4.  $\begin{pmatrix} 2 & 3 \\ 2 & 5 \end{pmatrix}$

Question Number : 6 Question Id : 67809438862 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve  $\frac{3x+7}{(x-1)(x-2)}$  into partial fractions

Options :

1.  $\frac{12}{(x-2)} - \frac{10}{(x-1)}$

2.  $\frac{13}{(x-2)} - \frac{10}{(x-1)}$

3.  $\frac{13}{(x-5)} - \frac{10}{(x-1)}$

4.  $\frac{13}{(x-2)} - \frac{10}{(x-7)}$

Question Number : 7 Question Id : 67809438863 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve  $\frac{5x^2+1}{x^2-1}$  into partial fractions

Options :

1.  $\frac{12}{(x-2)} - \frac{10}{(x-1)}$

2.  $\frac{13}{(x-2)} - \frac{10}{(x-1)}$

3.  $\frac{13}{(x-5)} - \frac{10}{(x-1)}$

4.  $\frac{2}{(x-1)} + \frac{3x+1}{x^2+x+1}$

Question Number : 8 Question Id : 67809438864 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $\tan^2\theta + \sec\theta = 5$  then the value of  $\cos\theta$  is

Options :

1.  $-1/3$  or  $1/2$

2.  $-11/12$  or  $1/2$

3.  $13/12$  or  $-1/3$

4.  $5/4$  or  $1/2$

Question Number : 9 Question Id : 67809438865 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $16\sin^3\theta + 8\cos^3\theta$  is

Options :

1. 3

2. 1

3. -3

4. 0

Question Number : 10 Question Id : 67809438866 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $\sin\alpha = \frac{15}{17}$ ,  $\cos\beta = \frac{12}{13}$  then the value of  $\sin(\alpha + \beta)$  is

Options :

1.  $\frac{110}{105}$

2.  $-\frac{121}{152}$

3.  $\frac{220}{221}$

4.  $\frac{5}{4}$

Question Number : 11 Question Id : 67809438867 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ$  is

Options :

1.  $\frac{11}{12}$

2.  $\frac{1}{16}$

3.  $\frac{13}{12}$

4.  $\frac{5}{4}$

Question Number : 12 Question Id : 67809438868 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\frac{\cos 17^\circ + \sin 17^\circ}{\cos 17^\circ - \sin 17^\circ}$  is

Options :

1.  $\cos 20^\circ$

2.  $\tan 65^\circ$

3.  $\tan 60^\circ$

4.  $\tan 62^\circ$

Question Number : 13 Question Id : 67809438869 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\sin \frac{\pi}{5} \sin \frac{2\pi}{5} \sin \frac{3\pi}{5} \sin \frac{4\pi}{5} =$

Options :

1.  $\frac{4}{15}$

2.  $\frac{5}{16}$

3.  $\frac{-5}{16}$

4.  $\frac{7}{15}$

Question Number : 14 Question Id : 67809438870 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $\tan^{-1}x + \tan^{-1}y + \tan^{-1}z = \frac{\pi}{2}$  then the value of  $xy + yz + zx$  is

Options :

1. -1

2. 3

3. 5

4. 1

Question Number : 15 Question Id : 67809438871 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of  $4\cos^2x - 3 = 0$  is

Options :

1.  $2n\pi \pm \frac{\pi}{6}$

2.  $2n\pi \pm \frac{7\pi}{6}$

3.  $3n\pi \pm \frac{5\pi}{6}$

4.  $2n\pi \pm \frac{11\pi}{6}$

Question Number : 16 Question Id : 67809438872 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The modulus of a complex number  $\sqrt{3} + i$  is

Options :

1. -2

2. 3

3. 2

4. 5

Question Number : 17 Question Id : 67809438873 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $(a - b)^2 \cos^2\left(\frac{C}{2}\right) + (a + b)^2 \sin^2\left(\frac{C}{2}\right)$  is

Options :

1.  $C^3$

2.  $C$

3.  $C^5$

4.  $C^2$

Question Number : 18 Question Id : 67809438874 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $x + \frac{1}{x} = 2 \cos \theta$  then the value of  $x^n + \frac{1}{x^n}$  is

Options :

1.  $2 \cos n\theta$

2.  $-2 \cos n\theta$

3.  $3 \cos \theta$

4.  $2 \sin n\theta$

Question Number : 19 Question Id : 67809438875 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $2\tan^{-1}\left(\frac{1}{3}\right) + \tan^{-1}\left(\frac{1}{7}\right)$  is

Options :

1.  $\frac{\pi}{4}$

2.  $\frac{\pi}{4}$

3.  $\frac{\pi}{6}$

4.  $\frac{\pi}{3}$

Question Number : 20 Question Id : 67809438876 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the major axis of the ellipse:  $4x^2 + 3y^2 = 48$  is

Options :

1. 10

2. 11

3. 12

4. 13

Question Number : 21 Question Id : 67809438877 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Centre of the ellipse:  $9x^2 + 25y^2 - 18x + 100y - 116 = 0$  is

Options :



1.  $(2, -1)$

2.  $(-1, -2)$

3.  $(1, -2)$

4.  $(1, 2)$

Question Number : 22 Question Id : 67809438878 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of the parabola with vertex  $(2, -1)$  and focus  $(2, -3)$  is

Options :

1.  $x^2 - 4x + 8y + 12 = 0$

2.  $x^2 - 4x - 8y - 12 = 0$

3.  $x^2 + 4x - 8y - 12 = 0$

4.  $x^2 + 5x - 8y - 11 = 0$

Question Number : 23 Question Id : 67809438879 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the latus rectum of the hyperbola:  $\frac{x^2}{9} - \frac{y^2}{16} = 1$  is

Options :

1. 9 units

2. 5 units

3. 6 units

4. 13 units

Question Number : 24 Question Id : 67809438880 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the length of latus rectum is  $\frac{9}{2}$  and the distance between its foci is 10 then the equation of hyperbola is

Options :

1.  $\frac{x^2}{16} + \frac{y^2}{9} = 1$

2.  $\frac{x^2}{18} - \frac{y^2}{9} = 1$

3.  $\frac{x^2}{16} - \frac{y^2}{6} = 1$

4.  $\frac{x^2}{16} - \frac{y^2}{9} = 1$

Question Number : 25 Question Id : 67809438881 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of the parabola with focus at  $(-3,2)$  and vertex  $(-2,2)$  is

Options :

1.  $x^2 - 4x + 8y + 12 = 0$

2.  $x^2 + 5x - 8y - 11 = 0$

3.  $y^2 + 4x - 4y + 12 = 0$

4.  $x^2 - 4x - 8y - 12 = 0$

Question Number : 26 Question Id : 67809438882 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $y = \frac{a+bx}{b-ax}$  then the derivative of  $y$  with respect to  $x$  is

Options :

1.  $\frac{a^2+b^2}{(b-ax)^2}$

2.  $\frac{a^2+b^2}{(b+ax)^2}$

3.  $\frac{a^2-b^2}{(b-ax)^2}$

4.  $\frac{a+b}{(b-ax)^2}$

If  $y = \frac{2+3 \sinh x}{3+2 \sinh x}$  then the derivative of  $y$  with respect to  $x$  is

Options :

1.  $\frac{5 \cosh x}{(3+2 \sinh x)^2}$

2.  $\frac{5 \sinh x}{(3+2 \sinh x)^2}$

3.  $\frac{5 \sin x}{(3-2 \cosh x)^2}$

4.  $\frac{\sinh^2 x}{(2-3 \sinh x)^2}$

The range of  $x$  for which the function  $x^3 - 3x^2 - 45x + 2$  is increasing with  $x$  is

Options :

1.  $(3, -5)$

2.  $(-3, -5)$

3.  $(3, 5)$

4.  $(-3, 5)$

If  $u$  is a homogeneous function of  $x$  and  $y$  with degree  $n$  then  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} =$

Options :

1.  $-nu$

2.  $n^2u$

3.  $nu$

4.  $nu^2 + u$

Question Number : 30 Question Id : 67809438886 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The angle between the curves  $y = x^2 + 3x - 7$  and  $y^2 = 2x + 5$  at (2,3) is

Options :

1.  $\tan \theta = 2$

2.  $\sec \theta = 2$

3.  $\cos \theta = 1$

4.  $\sin \theta = 3$

Question Number : 31 Question Id : 67809438887 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum value of the function  $2x^3 - 12x^2 + 18x + 5$  is

Options :

1. 13

2. 12

3. 10

4. 15

Question Number : 32 Question Id : 67809438888 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The three sides of a trapezium are equal each being 6" long then the area of the trapezium when it is maximum is

Options :

1. 27 square units

2. 33 square units

3.  $27\sqrt{3}$  square units

4.  $29\sqrt{3}$  square units

Question Number : 33 Question Id : 67809438889 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The interval in which the function  $f(x) = x^2 \log x$  is an increasing function is

Options :

1.  $(1, e^{-1/2})$

2.  $(2, e^{-1/2})$

3.  $(0, e^{1/2})$

4.  $(0, e^{-1/2})$

Question Number : 34 Question Id : 67809438890 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The stationary points and the corresponding values of the function  $f(x) = x^3 - 9x^2 + 15x - 1$  is

Options :

1. 6,-26

2. 3,-26

3. 6,26

4. -6,-26

Question Number : 35 Question Id : 67809438891 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If  $u = \log\left(\frac{x^2+y^2}{x+y}\right)$  then  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} =$

Options :

1. 2

2. 4

3. 5

4. 1

Question Number : 36 Question Id : 67809438892 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\int \log x \, dx$  is

Options :

1.  $x \log x + x + c$
2.  $x^2 \log x - x + c$
3.  $x \log x - x + c$
4.  $x \log x - \frac{x^2}{2} + c$

Question Number : 37 Question Id : 67809438893 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\lim_{n \rightarrow \infty} \left[ \frac{1}{n+1} + \frac{1}{n+2} + \dots + \frac{1}{n+n} \right]$  is

Options :

1.  $\log 2$
2.  $\log 3$
3.  $-\log 2$
4.  $\log n$

Question Number : 38 Question Id : 67809438894 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\int \frac{\cos \sqrt{x}}{\sqrt{x}} \, dx$  is

Options :

1.  $2 \sin \sqrt{x} + c$
2.  $3 \sin \sqrt{x} + c$
3.  $2 \sin x + c$

4.  $\sin \sqrt{x} + c$

Question Number : 39 Question Id : 67809438895 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area enclosed between the curve  $y^2 = 4ax$  and the line  $x = 2y$  is

Options :

1.  $\frac{64}{5}$  sq. units

2.  $\frac{64}{3}$  sq. units

3.  $\frac{65}{4}$  sq. units

4.  $\frac{63}{4}$  sq. units

Question Number : 40 Question Id : 67809438896 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\int_1^{\pi} \sin^2 x \, dx$  is

Options :

1.  $\frac{\pi}{2}$

2.  $-\frac{\pi}{4}$

3.  $\frac{\pi}{6}$

4.  $\frac{\pi}{4}$

Question Number : 41 Question Id : 67809438897 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\int_1^4 \left( \sqrt{x} + \frac{1}{\sqrt{x}} \right) dx$  is

Options :

1.  $\frac{20}{3}$

2.  $-\frac{20}{3}$

3.  $\frac{10}{3}$

4.  $\frac{15}{3}$

Question Number : 42 Question Id : 67809438898 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\int_0^{\pi/4} \sqrt{1 + \sin 2x} dx =$

Options :

1. -1

2. -3

3. 3

4. 1

Question Number : 43 Question Id : 67809438899 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of  $\int_0^{\pi/2} \frac{\sin x}{1 + \cos^2 x} dx =$

Options :

1.  $\pi/4$

2.  $-\pi/4$

3.  $\pi/3$

4.  $\pi/2$

Question Number : 44 Question Id : 67809438900 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The particular integral of  $(D^2 + 5D + 6)y = e^x$  is



Options :

1.  $\frac{-e^{-x}}{12}$

2.  $\frac{e^{2x}}{12}$

3.  $\frac{e^x}{12}$

4.  $\frac{e^x}{6}$

Question Number : 45 Question Id : 67809438901 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Form the differential equation by eliminating the arbitrary constant  $a$  from  $ay^2 = x^3$

Options :

1.  $\frac{dy}{dx} = \frac{3y}{2x}$

2.  $\frac{dy}{dx} = \frac{2x}{3y}$

3.  $\frac{dy}{dx} = \frac{x}{y}$

4.  $\frac{dy}{dx} = \frac{2y}{x}$

Question Number : 46 Question Id : 67809438902 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of  $\frac{dy}{dx} + y = e^{-x}$  is

Options :

1.  $(x + c)e^{-x}$

2.  $(x - c)e^x$

3.  $(x + c)e^x$

4.  $(x + c)e^{-2x}$

Question Number : 47 Question Id : 67809438903 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The complementary function of  $(D^2 + 3D + 2)y = 8\sin 5x$  is

Options :

1.  $c_1 e^{-x} + c_2 e^{-2x}$

2.  $c_1 e^x + c_2 e^{2x}$

3.  $c_1 e^{-x} + c_2 e^{2x}$

4.  $c_1 e^{2x} + c_2 e^{3x}$

Question Number : 48 Question Id : 67809438904 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of exact differential equation  $2xy dx + x^2 dy = 0$  is

Options :

1.  $x^2 y^2 = c$

2.  $x^2 y = c$

3.  $x^3 y = c$

4.  $x^2 y^3 = c$

Question Number : 49 Question Id : 67809438905 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Form the differential equation representing the family of curves  $x^2 = 4ay$ , where  $a$  is any arbitrary constant

Options :

1.  $x \frac{dy}{dx} - 2y = 0$

2.  $x \frac{dy}{dx} + 2y = 0$

3.  $x \frac{dy}{dx} - 6y = 0$

4.  $x \frac{dy}{dx} - y = 0$

Question Number : 50 Question Id : 67809438906 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of  $\frac{dy}{dx} + y \cot x = \cos x$  is

Options :

1.  $y \sin x = \frac{-\cos 2x}{4} + c$

2.  $y \sin x = \frac{\cos 2x}{4} + c$

3.  $y \sin x = \frac{-\cos 5x}{4} + c$

4.  $y \cos x = \frac{-\cos 2x}{4} + c$

Physics

Number of Questions:

25

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 51 Question Id : 67809438907 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the equation  $\frac{\alpha}{t^2} = Fv + \frac{\beta}{x^2}$  the dimensional formula for  $[\alpha]$ ,  $[\beta]$  is (here  $t =$  time,  $F =$  force,  $v =$  velocity,  $x =$  distance)

Options :

1.  $MLT^{-1}, MLT^{-3}$

2.  $ML^2T, ML^4T^2$

3.  $ML^2T^{-1}, ML^4T^{-3}$

4.  $ML^3T^{-1}, MLT^{-3}$

Question Number : 52 Question Id : 67809438908 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following quantities has not been expressed in proper units?

Options :

1. Young's modulus= $N/m^2$

2. Surface tension= $N/m$

3. Pressure =  $N/m^2$

4. Energy= $kg\ m/s$

Question Number : 53 Question Id : 67809438909 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three vectors A, B and C satisfy the relation  $A \cdot B = 0$  and  $A \cdot C = 0$ . The vector A is parallel to

Options :

1. B

2. C

3. B.C

4.  $B \times C$

Question Number : 54 Question Id : 67809438910 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If three vectors A, B and C are 12, 5 and 13 in magnitude such that  $C = A + B$ , then the angle between A and B is

Options :

1.  $60^\circ$

2.  $90^\circ$

3.  $120^\circ$

4.  $30^\circ$

Question Number : 55 Question Id : 67809438911 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A stone dropped from a certain height, can reach the ground in 5s. It is stopped after 3 seconds of its fall and then allowed to fall again. The time taken by the stone to reach the ground for the remaining distance is

Options :

1. 2 s
2. 6 s
3. 4 s
4. 1 s

Question Number : 56 Question Id : 67809438912 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The range of projectile fired at an angle of  $15^\circ$  is 50m. If it is fired with the same speed at an angle of  $45^\circ$ , its range will be

Options :

1. 25 m
2. 37 m
3. 50 m
4. 100 m

Question Number : 57 Question Id : 67809438913 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A freely falling body acquires a velocity ' $v$ ' m/s in falling through a distance of 80m. How much further distance should it fall, so as to acquire a velocity of ' $2v$ ' m/s?(Take  $g=10$  m/s<sup>2</sup>)

Options :

1. 240 m
2. 200 m
3. 400 m
4. 280 m

Question Number : 58 Question Id : 67809438914 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A block is projected along a rough horizontal road with a speed of 10 m/s. If the coefficient of kinetic friction is 0.10, how far will it travel before coming to rest ?

Options :

1. 50 m
2. 60 m
3. 40 m
4. 10 m

Question Number : 59 Question Id : 67809438915 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What force is required to push a 200 N body up a  $30^\circ$  smooth incline with an acceleration of  $2 \text{ m/s}^2$ ? The force is to be applied along the plane is (Take  $g=10 \text{ m/s}^2$ )

Options :

1. 40 N
2. 60 N
3. 80 N
4. 140 N

Question Number : 60 Question Id : 67809438916 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A block of mass 2 kg rests on a rough inclined plane making an angle of  $30^\circ$  with the horizontal. The coefficient of static friction between the block and the plane is 0.7. The frictional force on the block is

Options :

1. 9.8N
2.  $0.78 \times 9.8 \text{ N}$
3.  $9.8 \times \sqrt{3} \text{ N}$
4.  $0.7 \times 9.8\sqrt{3} \text{ N}$

Question Number : 61 Question Id : 67809438917 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A man moves on a straight horizontal road with a block of mass 2 kg in his hand. If he covers a distance of 40 m with an acceleration of  $0.5 \text{ m/s}^2$ , the work done by the man on the block during the motion is ( Take  $g=10 \text{ m/s}^2$ )

Options :

1. 40 J

2. 1 J

3. 80 J

4. 20 J

Question Number : 62 Question Id : 67809438918 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a factory it is desired to lift 2000 kg of metal through a distance of 12 m in 1 minute. The minimum horse power of the engine to be used is

Options :

1. 3.5

2. 5.3

3. 4.3

4. 5.8

Question Number : 63 Question Id : 67809438919 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Energy harnessed from flowing water is called ----- energy

Options :

1. Hydel

2. Solar

3. Tidal

4. Geothermal

Question Number : 64 Question Id : 67809438920 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a particle executing simple harmonic motion passes through the mean position, it has

Options :

1. minimum K.E and maximum P.E.
2. maximum K.E and maximum P.E.
3. maximum K.E and minimum P.E.
4. minimum K.E. and minimum P.E.

Question Number : 65 Question Id : 67809438921 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A particle of mass 200 g executes a simple harmonic motion. The restoring force is provided by a spring of spring constant 80 N/m. The time period is

Options :

1. 0.2 s
2. 0.41 s
3. 0.31 s
4. 0.5 s

Question Number : 66 Question Id : 67809438922 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature at which the speed of sound will be double of its value at  $0^{\circ}\text{C}$  is

Options :

1.  $819^{\circ}\text{C}$
2.  $850^{\circ}\text{C}$
3.  $919^{\circ}\text{C}$
4.  $900^{\circ}\text{C}$

Question Number : 67 Question Id : 67809438923 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical



If the source of sound moves towards an observer, then

Options :

1. The frequency of the source is increased
2. The velocity of sound in the medium is increased
3. The wavelength of sound in the medium towards the observer is decreased
4. The amplitude of vibration of the particles is increased.

Question Number : 68 Question Id : 67809438924 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cinema hall has a volume of  $7500 \text{ m}^3$ . The total absorption in the hall if the reverberation time of 1.5 s is to be maintained is

Options :

1. 800 OWU
2. 925 OWU
3. 950 OWU
4. 825 OWU

Question Number : 69 Question Id : 67809438925 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One mole of oxygen is heated at constant pressure starting at  $0^\circ\text{C}$ . The heat energy that must be supplied to the gas to double its volume is

Options :

1.  $2.5 \times 273 \times R$
2.  $3.5 \times 273 \times R$
3.  $2.5 \times 546 \times R$
4.  $3.5 \times 546 \times R$

Question Number : 70 Question Id : 67809438926 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A vessel contains a gas at a temperature of  $27^{\circ}\text{C}$  and a pressure of 20 atm. If one half of the gas is released and the temperature of the remaining gas is raised by  $50^{\circ}\text{C}$ , the new pressure will be

Options :

1. 12.24 atm
2. 11.67 atm
3. 13.79 atm
4. 11 atm

Question Number : 71 Question Id : 67809438927 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature of 5 gm of air is raised from  $0^{\circ}\text{C}$  to  $1^{\circ}\text{C}$ . The increase in the internal energy of air is ( $C_v = 0.172 \text{ cal/gm/}^{\circ}\text{C}$  and  $J = 4.18 \times 10^7 \text{ erg/cal}$ )

Options :

1.  $3.595 \times 10^7 \text{ erg}$
2.  $3 \times 10^7 \text{ erg}$
3.  $4.5 \times 10^7 \text{ erg}$
4.  $2.595 \times 10^7 \text{ erg}$

Question Number : 72 Question Id : 67809438928 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In all reversible processes entropy of the system

Options :

1. decreases
2. increases
3. remains constant
4. remains zero

Question Number : 73 Question Id : 67809438929 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If one mole of a monoatomic gas ( $\gamma=5/3$ ) is mixed with one mole of a diatomic gas ( $\gamma=7/5$ ), the value of ' $\gamma$ ' for the mixture is

Options :

1. 1.40
2. 1.50
3. 1.53
4. 3.07

Question Number : 74 Question Id : 67809438930 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Electrons are emitted with zero velocity from a certain metal surface when it is exposed to radiations of wavelength  $7000 \text{ \AA}$ . The work function of the metal is

Options :

1. 1 eV
2. 1.52 eV
3. 2.52 eV
4. 1.77 eV

Question Number : 75 Question Id : 67809438931 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A superconducting material exhibits

Options :

1. zero conductivity and complete diamagnetism
2. zero resistivity and complete paramagnetism
3. infinite conductivity and complete paramagnetism
4. zero resistivity and complete diamagnetism

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 76 Question Id : 67809438932 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The splitting of spectral lines in a strong magnetic field is called

Options :

1. Stark effect
2. Pauli Exclusion Principle
3. Zeeman effect
4. Aufbau Principle

Question Number : 77 Question Id : 67809438933 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bohr's model can explain

Options :

1. The spectrum of hydrogen atom only
2. The spectrum of hydrogen molecule
3. The solar spectrum
4. Spectrum of an atom or ion containing one electron only

Question Number : 78 Question Id : 67809438934 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum number of electrons that a d-orbital can accommodate is

Options :

1. 2
2. 6
3. 10
4. 14

Question Number : 79 Question Id : 67809438935 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Magnesium Atomic number is 12, which of the following is the electronic configuration

Options :

1.  $1S^2 2S^1 2P^6 3S^2$
2.  $1S^2 2S^2 2P^5 3S^2$
3.  $1S^2 2S^2 2P^6 3S^2$
4.  $1S^2 2S^2 2P^6 3S^1 3d^1$

Question Number : 80 Question Id : 67809438936 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$N_2$  molecule contains

Options :

1. Covalent bond
2. Ionic bond
3. Hydrogen bond
4. Metallic bond

Question Number : 81 Question Id : 67809438937 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One mole of any of the particles contains

Options :

1.  $6.023 \times 10^{-23}$
2.  $6.022 \times 10^{23}$
3.  $60.23 \times 10^{23}$
4.  $6.023 \times 10^{25}$

Question Number : 82 Question Id : 67809438938 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normality of the solution obtained by dissolving 4 gm of NaOH in 1 Litre is

Options :

1. 1N
2. 0.1N
3. 0.5N
4. 0.02N

Question Number : 83 Question Id : 67809438939 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Molecular weight of  $\text{H}_2\text{SO}_4$  is

Options :

1. 92
2. 96
3. 98
4. 99

Question Number : 84 Question Id : 67809438940 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Lewis acid is a substance which

Options :

1. Accept protons
2. Accept a lone pair of electrons
3. Donate protons
4. Donate a lone pair of electrons

Question Number : 85 Question Id : 67809438941 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\text{P}^{\text{H}}$  of a solution is 9.5, the solution is

Options :

1. Basic
2. Acidic

3. Neutral

4. Amphoteric

Question Number : 86 Question Id : 67809438942 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Laws of electrolysis were given by

Options :

1. Ostwald

2. Faraday

3. Arrhenius

4. Volta

Question Number : 87 Question Id : 67809438943 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Common electrolyte used in the salt bridge is

Options :

1. NaOH

2. NaCO<sub>3</sub>

3. KCl

4. KOH

Question Number : 88 Question Id : 67809438944 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Standard Reduction Potential of an element is equal to

Options :

1. 1 X Its reduction potential

2. -1 X Its standard oxidation potential

3. -1 X Its reduction potential

4. 1 X Its standard oxidation potential

The standard emf for the cell reaction,  $\text{Zn} + \text{Cu}^{+2} \rightarrow \text{Cu} + \text{Zn}^{2+}$  is 1.10 V at 25°C. The emf of the cell reaction when 0.1 M  $\text{Cu}^{+2}$  and 0.1 M  $\text{Zn}^{+2}$  solutions are used at 25°C is

Options :

1. 1.10V
2. 0.11V
3. -1.10V
4. -0.11V

Which chemical is responsible for permanent hardness of water?

Options :

1. KCl
2.  $\text{MgCl}_2$
3. NaCl
4. AgCl

Permutit is chemically

Options :

1. Sodium Silicate
2. Aluminium Silicate
3. Hydrated Sodium alumino silicate
4. Calcium silicate



Question Number : 92 Question Id : 67809438948 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The cation exchange resin possesses

Options :

1. Acidic group
2. Basic group
3. Amphoteric group
4. Benzo group

Question Number : 93 Question Id : 67809438949 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Chemically the rust is

Options :

1.  $\text{Fe}_2\text{O}_3$
2.  $\text{Fe}_2\text{O}_3 \cdot \text{FeO}$
3.  $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$
4.  $\text{Fe}_2\text{O}_3 \cdot \text{NH}_3$

Question Number : 94 Question Id : 67809438950 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Galvanizing is the process of coating iron with

Options :

1. Mg
2. Cu
3. Au
4. Zn

Question Number : 95 Question Id : 67809438951 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a thermoplastic ?

Options :

1. Bakelite
2. Polystyrene
3. Polythene
4. Nylon

Question Number : 96 Question Id : 67809438952 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Isoprene is a monomer of

Options :

1. Starch
2. Cellulose
3. Natural rubber
4. Lignin

Question Number : 97 Question Id : 67809438953 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Buna-S is a copolymer of

Options :

1. Butadiene and Styrene
2. Butadiene and Acrylonitrile
3. Butadiene and Isoprene
4. Formaldehyde and Styrene

Question Number : 98 Question Id : 67809438954 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Main constituent of natural gas is

Options :

1. Ethane
2. Methane
3. Butane
4. Carbon Monoxide

Question Number : 99 Question Id : 67809438955 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ozone layer is present at

Options :

1. Staratosphere
2. Inosphere
3. Thermosphere
4. Atmosphere

Question Number : 100 Question Id : 67809438956 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The amount of DO required to aerobically decompose biodegradable organic matter of a given volume of water is

Options :

1. Biochemical Oxygen Demand
2. Biological Oxygen Demand
3. Chemical Oxygen demand
4. Biomagnification

Electrical and Electronics Engineering

Number of Questions:	100
Display Number Panel:	Yes
Group All Questions:	No

Superposition theorem is not applicable for \_\_\_\_\_

Options :

1. voltage calculations
2. bilateral elements
3. power calculations
4. passive elements

Which one of the following materials cannot be used for permanent magnets?

Options :

1. Alnico
2. barium ferrite
3. Carbon-Steel
4. Iron-Cobalt alloy

For a given dielectric, with increase in temperature the ionic polarizability\_\_\_\_\_

Options :

1. increases
2. decreases
3. remains same
4. fluctuates

Two bulbs of 100 W/250 V and 150 W/250 V are connected in series across a supply of 250 V. The power consumed by the circuit is \_\_\_\_\_

Options :

1. 30 W
2. 60 W
3. 100 W
4. 250 W

Question Number : 105 Question Id : 67809438961 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three  $30\Omega$  resistors are connected in parallel across an ideal 40 V source. What would be the equivalent resistance seen by the load connected across the circuit?

Options :

1.  $0\Omega$
2.  $10\Omega$
3.  $20\Omega$
4.  $30\Omega$

Question Number : 106 Question Id : 67809438962 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum power will be transferred from a voltage source to a load when\_\_

Options :

1. the source impedance is half that of the load impedance
2. the source impedance is equal to that of the load impedance
3. the source impedance is twice that of the load impedance
4. both source and load impedances must be zero

Question Number : 107 Question Id : 67809438963 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a conducting material?

Options :

1. Copper

2. Tungstun
3. Germanium
4. Platinum

Question Number : 108 Question Id : 67809438964 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The armature of a DC machine is laminated to reduce \_\_\_\_\_

Options :

1. The hysteresis loss
2. Eddy current loss
3. the mass
4. the inductance

Question Number : 109 Question Id : 67809438965 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A lap wound DC machine has 400 conductors and 8 poles. The voltage induced per conductor is 2V. The machine generates a voltage of \_\_\_\_\_

Options :

1. 100V
2. 200V
3. 400V
4. 800V

Question Number : 110 Question Id : 67809438966 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 250V DC generator is run at rated speed with no excitation. The open circuit voltage will be

Options :

1. Zero
2. About 2 to 3V

3. 100 V

4. 250V

Question Number : 111 Question Id : 67809438967 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The simplest way of shifting load from one shunt generator to the other operating in parallel is by \_\_\_\_\_

Options :

1. Adjustment of speeds
2. Adjustment of armature resistances
3. Adjustment of field rheostats
4. Using equalizer connections

Question Number : 112 Question Id : 67809438968 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

With the increase in speed of a DC motor \_\_\_\_\_

Options :

1. Both back emf as well as line current increase
2. Both back emf as well as line current fall
3. Back emf increases but line current falls
4. Back emf falls and line current increases

Question Number : 113 Question Id : 67809438969 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The direction of rotation of a DC motor can be determined by \_\_\_\_\_

Options :

1. Fleming's right hand rule
2. Fleming's left hand rule
3. Lenz's law

4. Ampere law

Question Number : 114 Question Id : 67809438970 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the applied voltage to a DC machine is 230 V, then the back emf for maximum power developed is \_\_\_\_\_

Options :

1. 115V
2. 200V
3. 230V
4. 460V

Question Number : 115 Question Id : 67809438971 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a DC series motor, the torque developed is \_\_\_\_\_

Options :

1. Inversely proportional to armature current
2. Directly proportional to armature current
3. Proportional to the square of armature current
4. Proportional to the square root of the armature current

Question Number : 116 Question Id : 67809438972 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If one of the control springs of a Permanent Magnet Moving Coil ammeter is broken then, when connected it will read \_\_\_\_\_

Options :

1. zero
2. half of the correct value
3. twice the correct value
4. an infinite value



The principle of operation of an LVDT is based on variation of \_\_\_\_\_

Options :

1. Self-inductance
2. Mutual inductance
3. Reluctance
4. Permeance

The major cause of creeping in an energy meter is \_\_\_\_\_

Options :

1. over compensation for friction
2. mechanical vibrations
3. excessive voltage across the potential coil
4. stray magnetic fields

A current transformer has a phase error of  $+3^\circ$ . The phase angle between the primary and secondary currents is \_\_\_\_\_

Options :

1.  $3^\circ$
2.  $177^\circ$
3.  $180^\circ$
4.  $183^\circ$

Unit of reactive power is \_\_\_\_\_

Options :

1. VA
2. Watt
3. VAR
4. Ohm

Question Number : 121 Question Id : 67809438977 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A series RLC circuit will have unity power factor if operated at a frequency of

Options :

1.  $1/LC$
2.  $1/\omega\sqrt{LC}$
3.  $1/\omega^2LC$
4.  $1/2\pi\sqrt{LC}$

Question Number : 122 Question Id : 67809438978 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The form factor of sinusoidal alternating current is \_\_\_\_\_

Options :

1. 1
2. 0
3. 1.11
4. 1.15

Question Number : 123 Question Id : 67809438979 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the reading of two wattmeters are equal and positive in two watt meter method, the load pf in a balanced 3-phase, 3-wire circuit will be \_\_\_\_\_

Options :

1. Zero

2. 0.5

3. 0.866

4. 1

Question Number : 124 Question Id : 67809438980 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An RLC series circuit has  $f_1$  and  $f_2$  as the half power frequencies and  $f_0$  as the resonant frequency. The Q-factor of the circuit is \_\_\_\_\_

Options :

1.  $(f_1+f_2)/2f_0$

2.  $f_1-f_0/f_2-f_0$

3.  $f_0/f_1-f_2$

4.  $f_1-f_2/f_0$

Question Number : 125 Question Id : 67809438981 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a transformer, zero voltage regulation at full load is \_\_\_\_\_

Options :

1. Not possible

2. Possible at leading power factor load

3. Possible at lagging power factor load

4. Possible at unity power factor load

Question Number : 126 Question Id : 67809438982 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The transformer efficiency at relatively light loads is quite low. This is due to \_\_\_

Options :

1. Small copper losses

2. Small secondary output

3. High fixed loss in comparison to the output

4. Poor power factor

Question Number : 127 Question Id : 67809438983 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In order to reduce the hysteresis loss \_\_\_\_\_

Options :

1. Core may be laminated

2. Silicon steel may be used as the core material

3. Core may be constructed with any permanent magnet material such as Alnico

4. Core may be impregnated with varnish

Question Number : 128 Question Id : 67809438984 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Transformers are rated in kVA instead of kW because \_\_\_\_\_

Options :

1. Load power factor is often not known

2. kVA is fixed where kW depends on load pf

3. Total transformer loss depends on volt-amperes

4. It has become customary

Question Number : 129 Question Id : 67809438985 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following connection of transformer will give the highest secondary voltage?

Options :

1. Delta primary, delta secondary

2. Delta primary, star secondary

3. Star primary, star secondary

4. Star primary, delta secondary

Question Number : 130 Question Id : 67809438986 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For successful parallel operation of two single phase transformers, the most essential condition is that their \_\_\_\_\_

Options :

1. percentage impedances are equal
2. polarities are properly connected
3. turn-ratios are exactly equal
4. kVA ratings are equal

Question Number : 131 Question Id : 67809438987 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an auto transformer, power is transferred through \_\_\_\_\_

Options :

1. Conduction process only
2. Induction process only
3. Both conduction and Induction processes
4. Mutual coupling

Question Number : 132 Question Id : 67809438988 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Distributed winding is preferred over concentrated winding as it \_\_\_\_\_

Options :

1. reduces noise
2. reduces the machine size
3. reduces the amount of copper required
4. improves the generated emf waveform and adds rigidity and mechanical strength to the winding

Question Number : 133 Question Id : 67809438989 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The short circuit characteristic of an alternator is \_\_\_\_\_

Options :

1. Always linear
2. Always non-linear
3. Always triangular
4. Always circular

Question Number : 134 Question Id : 67809438990 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum possible speed at which an alternator can be driven to generate 50 Hz and 4000V is \_\_\_\_\_

Options :

1. 400 rpm
2. 3600 rpm
3. 3000 rpm
4. 1500 rpm

Question Number : 135 Question Id : 67809438991 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An ideal synchronous motor has no starting torque because the \_\_\_\_

Options :

1. rotor is made up of salient poles
2. relative velocity between the stator and the rotor mmfs is zero
3. relative velocity between the stator and rotor mmfs is not zero
4. rotor winding is highly reactive

Question Number : 136 Question Id : 67809438992 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a synchronous machine, damper windings are used to \_\_\_\_\_

Options :

1. help in starting as a motor
2. run it as an induction motor
3. help in starting as a motor and to reduce hunting
4. increase efficiency

Question Number : 137 Question Id : 67809438993 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Armature reaction in a synchronous motor at rated voltage and zero power factor (lead) is \_\_\_\_\_

Options :

1. magnetising
2. cross-magnetising
3. both magnetising and cross-magnetising
4. demagnetising

Question Number : 138 Question Id : 67809438994 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The principle of operation of a 3-phase induction motor is almost similar to that of

Options :

1. synchronous motor
2. repulsion start induction motor
3. transformer with a shorted secondary
4. capacitor start induction motor

Question Number : 139 Question Id : 67809438995 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A three phase 6-pole, 50 Hz, induction motor is running at 5% slip. What is the speed of the motor?

Options :

1. 850 rpm
2. 900 rpm
3. 950 rpm
4. 1000 rpm

Question Number : 140 Question Id : 67809438996 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an induction motor under running condition, the rotor reactance per phase is \_\_\_\_\_ its standstill phase reactance.

Options :

1. s times
2. equal to
3. 1/s times
4. (1-s) times

Question Number : 141 Question Id : 67809438997 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a three phase induction motor, the starting torque will be maximum when \_\_\_\_\_

Options :

1.  $R_2 = 1/X_2$
2.  $R_2 = X_2$
3.  $R_2 = X_2^2$
4.  $R_2 = \sqrt{X_2}$

Question Number : 142 Question Id : 67809438998 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The type of single phase induction motor having the highest power factor at full load is \_\_\_\_\_

Options :

1. shaded pole type



2. split-phase type
3. capacitor start type
4. capacitor run type

Question Number : 143 Question Id : 67809438999 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A universal motor is one which has \_\_\_\_\_

Options :

1. constant speed
2. constant output
3. capability of operating both on ac and dc with comparable performance
4. maximum efficiency

Question Number : 144 Question Id : 67809439000 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following power plants is free from environmental problems?

Options :

1. Diesel engine
2. Nuclear
3. Hydroelectric
4. Steam

Question Number : 145 Question Id : 67809439001 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Diversity factor is the ratio of \_\_\_\_\_

Options :

1. sum of maximum demands of consumers/system maximum demand
2. maximum demand of consumers/average demand
3. demand of all consumers/average demand

4. Average demand/system maximum demand

Question Number : 146 Question Id : 67809439002 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Flat rate tariff can be charged on the basis of \_\_\_\_\_

Options :

1. connected load
2. units consumed
3. maximum demand
4. minimum demand

Question Number : 147 Question Id : 67809439003 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a power plant, a reverse generating capacity, which is in operable condition and available for service, but not in operation is called the \_\_\_\_\_

Options :

1. spinning reverse
2. firm reverse
3. cold reverse
4. hot reverse

Question Number : 148 Question Id : 67809439004 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Advantages of the improved power factor are \_\_\_\_\_

Options :

1. increase in operating efficiency of the power system
2. improvement in voltage regulation
3. reduction in overall cost per unit
4. better utilization of kW capacities of prime movers, transformers, switchgear and the lines

A circuit breaker normally operates \_\_\_\_\_

Options :

1. when the power is to be supplied
2. when the line is to be tested
3. when the switch is to be put on
4. whenever fault occurs in the line

The RRRV depends upon the \_\_\_\_\_

Options :

1. type of the circuit breaker
2. capacitance of the system only
3. inductance of the system only
4. inductance and capacitance of the system

Threshold characteristics of a plain impedance relay in a complex Z plane is a \_\_\_

Options :

1. circle passing through origin
2. circle with the centre at the origin
3. straight line passing through the origin
4. straight line offset from the origin

Buchholz relay is \_\_\_\_\_

Options :

1. located in the conservator tank
2. located in the transformer tank itself
3. connected in the pipe connecting main tank of transformer and conservator
4. installed in the circuit breaker

Question Number : 153 Question Id : 67809439009 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the protection of stator winding of an alternator against internal fault involving ground, the relay used is a \_\_\_\_\_

Options :

1. biased differential relay
2. directional over current relay
3. plain impedance relay
4. Buchholz relay

Question Number : 154 Question Id : 67809439010 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a medium length transmission line, A is \_\_\_\_\_

Options :

1. equal to B
2. equal to C
3. equal to D
4. not equal to B,C,D

Question Number : 155 Question Id : 67809439011 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When is the Ferranti effect on long overhead lines experienced?

Options :

1. The line is lightly loaded

2. The line is heavily loaded
3. The line is fully loaded
4. The power factor is unity

Question Number : 156 Question Id : 67809439012 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hollow conductors are used in transmission lines to \_\_\_\_\_

Options :

1. reduce weight of copper
2. improve stability
3. reduce corona
4. increases power transmission capacity

Question Number : 157 Question Id : 67809439013 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The sag of a transmission line is least affected owing to \_\_\_\_\_

Options :

1. weight of the conductor
2. current through the conductor
3. atmospheric temperature
4. ice deposition on the conductor

Question Number : 158 Question Id : 67809439014 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the frequency of a transmission system is changed from 50 Hz to 100 Hz, the string efficiency \_\_\_\_\_

Options :

1. will increase
2. will decrease

3. remain unchanged
4. may increase or decrease depending on the line parameters

Question Number : 159 Question Id : 67809439015 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

HVDC transmission is preferred to EHV AC because \_\_\_\_\_

Options :

1. HVDC terminal equipment are inexpensive
2. VAR compensation is not required in HVDC system
3. system stability can be improved
4. harmonics problem is avoided

Question Number : 160 Question Id : 67809439016 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The inductance of a transmission line is minimum when \_\_\_\_\_

Options :

1. GMD is high
2. GMR is high
3. both GMD and GMR are high
4. GMD is low and GMR is high

Question Number : 161 Question Id : 67809439017 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Transmission lines are transposed to \_\_\_\_\_

Options :

1. reduce corona loss
2. reduce skin effect
3. prevent interference with neighboring telephone lines
4. prevent short circuit between any two lines

Question Number : 162 Question Id : 67809439018 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The main criterion for selection of the size of a distributor for a radial distribution system is \_\_\_\_\_

Options :

1. voltage drop
2. corona loss
3. temperature rise
4. capital cost

Question Number : 163 Question Id : 67809439019 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Capacitance grading of cable means \_\_\_\_\_

Options :

1. use of dielectrics in different concentrations
2. introduction of capacitances at various lengths of cable to counter the effect of inductance
3. use of dielectrics of different permittivities
4. grading according to capacitance per km length of the cable

Question Number : 164 Question Id : 67809439020 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The composite system (single phase AC to DC system) has been chosen for all future track electrification in India as \_\_\_\_\_

Options :

1. it needs light overhead catenary
2. it needs less number of substations
3. it combines the advantages of high voltage AC distribution at 50 Hz with DC series traction motors
4. It provides flexibility in the location of substations

Question Number : 165 Question Id : 67809439021 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum speed at which trains run on main line railway service is \_\_\_\_\_

Options :

1. 160 kmph
2. 120 kmph
3. 100 kmph
4. 200 kmph

Question Number : 166 Question Id : 67809439022 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The speed – time curve for urban service has no \_\_\_\_\_

Options :

1. coasting period
2. free running period
3. breaking period
4. acceleration period

Question Number : 167 Question Id : 67809439023 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Trapezoidal speed-time curve pertains to \_\_\_\_\_

Options :

1. main line service
2. urban service
3. suburban service
4. urban/suburban service

Question Number : 168 Question Id : 67809439024 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Specific energy consumptions becomes \_\_\_\_\_

Options :



1. more when distance between stops is more
2. more with the higher values of acceleration
3. more with high train resistance
4. less with the increase in crest speed

Question Number : 169 Question Id : 67809439025 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The DC series motor is most suitable for traction services but more particularly for urban/suburban services because \_\_\_\_\_

Options :

1. DC series motors are suitable for regenerative braking
2. DC series motors are capable of withstanding rapid fluctuations in supply Voltage
3. DC series motors are capable of developing high torque at start
4. DC series motors are capable of withstanding temporary interruption of supply without undue rush of current

Question Number : 170 Question Id : 67809439026 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Free running and costing periods are generally long in case of \_\_\_\_\_

Options :

1. city service
2. suburban service
3. main line service
4. outer suburban service

Question Number : 171 Question Id : 67809439027 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Tractive effort of an electric locomotive can be increased by \_\_\_\_\_

Options :

1. using low output motors

2. Increasing the supply voltage
3. decreasing dead weight over the driving axles
4. using high output motors and increasing dead weight over driving axles

Question Number : 172 Question Id : 67809439028 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The earth wire should be \_\_\_\_\_

Options :

1. good conductor of electricity
2. mechanically strong
3. good conductor and mechanically strong
4. mechanically strong but bad conductor of electricity

Question Number : 173 Question Id : 67809439029 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The short length of the conductor used to connect the line conductor on one side of the terminal pole to the line conductor on the other side of the pole is known as

Options :

1. Jumper
2. Petticoat
3. Guard
4. Guy

Question Number : 174 Question Id : 67809439030 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Inside the earth or pit, the earthing electrode should be placed \_\_\_\_\_

Options :

1. horizontally
2. vertically

3. inclined at  $45^{\circ}$

4. in any position

Question Number : 175 Question Id : 67809439031 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The cheapest system of internal wiring is \_\_\_\_\_ wiring

Options :

1. cleat

2. casing-capping

3. CTS or TRS

4. conduit

Question Number : 176 Question Id : 67809439032 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a NPN bipolar transistor, what is the main stream of current in the base region?

Options :

1. Drift of holes

2. Diffusion of holes

3. Drift of electrons

4. Diffusion of electrons

Question Number : 177 Question Id : 67809439033 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a junction FET in the pinch off region, as the drain voltage is increased, the drain current \_\_\_\_\_

Options :

1. becomes zero

2. abruptly decreases

3. abruptly increases

4. remains constant

Question Number : 178 Question Id : 67809439034 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a centre tap full wave rectifier, 100 V is the peak voltage between the centre tap and one end of the secondary. What is the maximum voltage across the reverse biased diode?

Options :

1. 200 V
2. 141 V
3. 100 V
4. 86 V

Question Number : 179 Question Id : 67809439035 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the differential and common mode gains of a differential amplifier are 50 and 0.2 respectively, then the CMRR will be \_\_\_\_\_

Options :

1. 10
2. 49.8
3. 50.2
4. 250

Question Number : 180 Question Id : 67809439036 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An ideal amplifier has \_\_\_\_\_

Options :

1. Positive feedback
2. uniform frequency response
3. Infinite voltage gain
4. responds only to signals at its input terminals

Question Number : 181 Question Id : 67809439037 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Barkhausen criterion for sustained oscillation is given by \_\_\_\_\_

Options :

1.  $A\beta=1$
2.  $|A\beta|\geq 1$
3.  $|A\beta|<1$
4.  $\angle A\beta=180^\circ$

Question Number : 182 Question Id : 67809439038 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a Wien bridge oscillator, the positive feedback attenuation is \_\_\_\_\_

Options :

1.  $1/3$
2.  $1/29$
3.  $-29$
4.  $3$

Question Number : 183 Question Id : 67809439039 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The binary equivalent of hexadecimal number 4F2D is \_\_\_\_\_

Options :

1. 0101 1111 0010 1100
2. 0100 1111 0010 1100
3. 0100 1110 0010 1101
4. 0100 1111 0010 1101

Question Number : 184 Question Id : 67809439040 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The logic function  $A+BC$  is the simplified form of which of the following?

Options :

1.  $AB+BC$

2.  $A+C$

3.  $A+B$

4.  $(A+B)(A+C)$

Question Number : 185 Question Id : 67809439041 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The AND function can be realized by using only n number of NOR gates. What is n equal to

Options :

1. 2

2. 3

3. 4

4. 5

Question Number : 186 Question Id : 67809439042 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Number of comparators required to build a 5-bit Analog to Digital converter is

Options :

1. 5

2. 11

3. 21

4. 31

Question Number : 187 Question Id : 67809439043 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A thyristor equivalent of a thyratron tube is \_\_\_\_\_

Options :

1. SCR

2. UJT
3. Diac
4. Triac

Question Number : 188 Question Id : 67809439044 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For an SCR,  $dv/dt$  protection is achieved through the use of \_\_\_\_\_

Options :

1. R-L in series with SCR
2. R-C across SCR
3. L in series with SCR
4. R-C in series with SCR

Question Number : 189 Question Id : 67809439045 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The TRIAC is equivalent to \_\_\_\_\_

Options :

1. Two SCRs connected in parallel
2. Two SCRs connected in antiparallel
3. One SCR, one diode connected in parallel
4. One diode, one SCR connected in antiparallel

Question Number : 190 Question Id : 67809439046 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Gate Turn Off (GTO) thyristor has capacity to \_\_\_\_\_

Options :

1. Amplify the gate current
2. Turn-off when positive current pulse is given at the gate

3. Turn-off when a gate pulse is given at the gate even though it is reverse biased

4. Turn-off when a negative current pulse is given at the gate

Question Number : 191 Question Id : 67809439047 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Commutation overlap in the phase-controlled AC to DC converter is due to \_\_\_\_\_

Options :

1. load inductance

2. harmonic content of load current

3. switching operation in the converter

4. source inductance

Question Number : 192 Question Id : 67809439048 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The advantage of using a freewheeling diode with bridge type AC/DC converter is

Options :

1. regenerative braking

2. reliable speed control

3. improved power factor

4. reduced cost of the system

Question Number : 193 Question Id : 67809439049 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A power chopper converts \_\_\_\_\_

Options :

1. AC to DC

2. DC to DC

3. DC to AC

4. AC to AC



Question Number : 194 Question Id : 67809439050 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

AC voltage regulators are widely used in \_\_\_\_\_

Options :

1. traction drives
2. fan drives
3. synchronous motor drives
4. slip power recovery scheme of slip-ring induction motor

Question Number : 195 Question Id : 67809439051 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The phase controlled rectifiers used in speed control of DC motors converts fixed AC supply voltage into \_\_\_\_\_ output voltage

Options :

1. variable DC
2. variable AC
3. variable frequency AC
4. full rectified AC

Question Number : 196 Question Id : 67809439052 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a UPS, the solid state switch normally transfer supply within \_\_\_\_\_

Options :

1. 4 ms
2. 30 ms
3. 48 ms
4. 30 s

Question Number : 197 Question Id : 67809439053 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The internal RAM memory of the 8051 is \_\_\_\_\_

Options :

1. 32 bytes
2. 64 bytes
3. 128 bytes
4. 256 bytes

Question Number : 198 Question Id : 67809439054 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The 8051 has \_\_\_\_\_ 16-bit counter/timers

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 199 Question Id : 67809439055 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The 8051 can handle \_\_\_\_\_ interrupt sources

Options :

1. 3
2. 4
3. 5
4. 6

Question Number : 200 Question Id : 67809439056 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The I/O ports that are used as address and data for external memory are \_\_\_\_\_

Options :

1. Ports 1 and 2

2. Ports 1 and 3

3. Ports 0 and 2

4. Ports 0 and 3