E003+E004 Online test Ref 1

Four resistors 1 ohm, 2 ohm , 3 ohm and 4 ohm are connected in series to 5V. Calculate the circuit current & potential difference across each resistor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1A,3V,2V,5V.7V | B | 0.5A,0.5V,1V,1.5V,2V |
| C | 3A,1V,5V,6V,7V | D | 0.A,1V,2V,3V,4V |
| Answer | |  |  |

Ref 2

A 2.2K Ω resistor is connected in series with a resistor of unknown value across 16V supply. If the

current is 5 mA, calculate the value of unknown resistor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2 KΩ | B | 3 KΩ |
| C | 4 KΩ | D | 1 KΩ |
| Answer | |  |  |

Ref 3

Two resistors are connected in series to a 115V supply, one is known to have 470 Ω and voltage

across it is 47V. Calculate (a) the value of second resistor (b) the circuit current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 680Ω, 0.1A | B | 800Ω, 0.2A |
| C | 100Ω, 1A | D | 1200Ω,0.1A |
| Answer | |  |  |

Ref 4

Resistors of 5 Ω, 10 Ω and 3 Ω are connected in parallel to 12V supply. Calculate the supply current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2A | B | 3A |
| C | 1A | D | 4A |
| Answer | |  |  |

Ref 5

Resistors of 33K Ω, and 68 KΩ are connected in parallel to 50V. Calculate (a) total circuit resistance

(b) total circuit current (c0 individual branch currents.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 44.5 K Ω, 4.5mA, 3mA,1.58mA | B | 30 K Ω, 3mA, 2mA,1mA |
| C | 22.2 K Ω, 2.25mA,1.5mA,0.79mA | D | 60 K Ω, 6mA,4mA,2mA |
| Answer | |  |  |

Ref 6

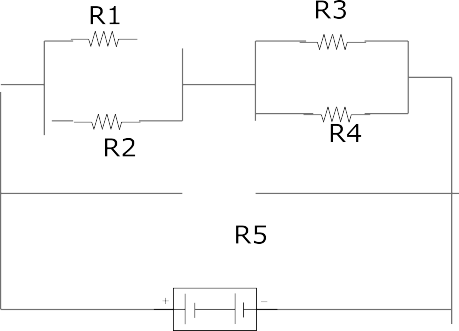
Resistors of values 12 Ω and 8 Ω are connected in parallel with R3 of unknown value across a 6V supply. When the current from the supply is 2.25A, calculate (a) the value of R3 (b) current flowing in R3.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6 Ω, 1A | B | 12 Ω, 0.5A |
| C | 24 Ω, 0.25A | D | 8 Ω, 1.25A |
| Answer | |  |  |

Ref 7

Five resistors are connected as follows. Find (a)Rt (b) It (c) 2 Ω resistor current.





R1=2 Ω, R2=8Ω , R3=3 Ω, R4= 6 Ω, R5=7.2 Ω. V= 6V

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3.6 Ω, 5A, 2.66A | B | 4.8 Ω, 5A, 7A |
| C | 2.4 Ω, 2.5A, 1.33A | D | 7.2 Ω, 7.5A, 4A |
| Answer | |  |  |

Ref 8

Resistors 1.8 KΩ and 1.2 KΩ are connected in series to 12V supply. Calculate the power dissipated in

each resistor and total power.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.0288W,0.0192W,0.048W | B | 0.0576W,0.0384W,0.096W |
| C | 0.0144W,0.009W,0.024W | D | 1W,0.5W,0.7W |
| Answer | |  |  |

Ref 9

A 1 Ω resistor is connected in series with parallel combination of 6 Ω and 3 Ω resistors to 6V supply.

Calculate (a) Rt (b) Each resistor current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6 Ω, 1A, 1.32A, 2.66A | B | 4 Ω, 1A, 2A, 3A |
| C | 10 Ω, 4A, 3A, 5A | D | 3 Ω, 2A, 0.66A, 1.33A |
| Answer | |  |  |

Ref 10

Resistors of 2.2K Ω and 7.88K Ω are connected in series and parallel across 3.3K Ω and 2.7K Ω series

combination. They are connected to 9V supply .Calculate (a) Rt (b) It (c) Each resistor current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3.75K Ω, 2.4mA,0.9mA,1.5mA | B | 7.5K Ω, 4.8mA,1.8mA,3mA |
| C | 2K Ω, 1.2mA,0.5mA,1mA | D | 10K Ω, 8mA,2mA,3mA |
| Answer | |  |  |

Ref 11

3 filament lamp indicators are each rated 12V and 0.36 w. If they are connected in series, what supply voltage should be used? Find supply voltage, the current and total power dissipated.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 72V,0.06A,2.16W | B | 108V,0.09A,3.24W |
| C | 36V,0.03A,108W | D | 18V,0.015A,0.54W |
| Answer | |  |  |

Ref 12

A circuit is fed with a 9V supply but a 4V ground potential is required at the base of a transistor. If this voltage is to be derived from12 KΩ resistor connected to ground. Calculate the value of second resistor forming potential divider.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30K Ω | B | 20K Ω |
| C | 15K Ω | D | 5K Ω |
| Answer | |  |  |

Ref 13 Find RX

If R1=1000 Ω, R2=1000 Ω,R3=2715 Ω, V= 1.5V at bridge balanced condition.



|  |  |  |  |
| --- | --- | --- | --- |
| A | 2715 Ω | B | 3000 Ω |
| C | 1000Ω | D | 2000 Ω |
| Answer | | A |  |

Ref 15

A cell has emf 1.5V and internal resistance 0.5 ohm. Calculate its terminal voltage at (a) No load (b) providing 200mA current (c) when connected to a load of 8 ohm.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3V, 2.8V, 2.8V | B | 1.5V, 1.4V, 1.41V |
| C | 6V, 1.4V, 1.4V | D | 3V, 1.4V, 1.41V |
| Answer | |  |  |

Ref 16

A battery is made by connection 8 cells in series. Each has 1.5V and internal resistance 0.35 ohm. Calculate (a) EMF & internal resistance of battery. (b) The terminal voltage when supplying 400mA.

(c) The current & terminal voltage when a load of resistance 20 ohm is connected to battery.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 12V, 2.8 Ω, 10.11V | B | 15V, 1.4 Ω, 5.1V |
| C | 12V, 2.8 Ω, 5.1V | D | 6V, 2.8 Ω, 10.11V |
| Answer | |  |  |

E025 Online Test Ref 17

For the given series resonance circuity, find I, Vr, Vl and Vc. If the resonance frequency is 4000Hz, Find the bandwidth . What power dissipated in circuit.





E = 10 0 V R= 2 Ohm, X l= 10 ohm, Xc= 10 ohm

|  |  |  |  |
| --- | --- | --- | --- |
| A | I = 5 Angle 0 amp, Vr= 10V,  Vl= 10 Angle 90V, Vc= 50 Angle -90 V | B | I = 10 Angle 0 amp, Vr= 5V,  Vl= 5 Angle 90V, Vc= 50 Angle +90 V |
| C | I = 10 Angle -90 amp, Vr= 10V,  Vl= 10 Angle 0V, Vc= 50 Angle +90 V | D | I = 10Angle 0 amp, Vr= 10V,  Vl= 10 Angle 90V, Vc= 50 Angle -90 V |
| Answer | |  |  |

Ref 18

In the given circuit, Quality factor (Q), Bandwidth of resonant frequency 5000HZ and power dissipated at half power frequency are



R = 2 ohm, Xl= 10 ohm, Xc= 10 ohm E= 10 0 V



|  |  |  |  |
| --- | --- | --- | --- |
| A | Q= 10, BW= 2000HZ, P (HPF)= 50W | B | Q= 5, BW= 1000HZ, P (HPF)= 25W |
| C | Q= 15, BW= 2000HZ, P (HPF)= 50W | D | Q= 20, BW= 3000HZ, P (HPF)= 25W |
| Answer | |  |  |

Ref 19

Q9. For the given network with fp provided.





R 1 = 40 KΩ, R 2= 10 Ω, , L = 1mH, fp = 0.04MHz



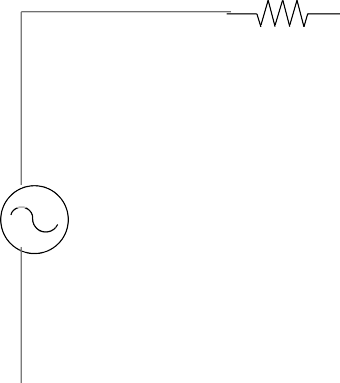
(a)Determine Ql (b)Determine Rp

1. Calculate Z tp
2. Find C at resonance
3. Find Qp
4. Calculate BW

|  |  |  |  |
| --- | --- | --- | --- |
| A | Q= 25.12, Rp= 6.31 KΩ, Ztp= 5.45 KΩ  C = 15.9 nF, Qp= 21.68, BW= 1.85 KHz | B | Q= 100, Rp= 10 KΩ, Ztp= 10KΩ  C = 20 nF, Qp= 50, BW= 1KHz |
| C | Q= 50, Rp= 12 KΩ, Ztp= 7 KΩ  C = 20 µF, Qp= 30, BW= 2KHz | D | Q= 25.12, Rp= 6.31 KΩ, Ztp= 5.45 KΩ  C = 15.9 µF, Qp= 21.68, BW= 1.85 KHz |
| Answer | |  |  |

Ref 20

The input voltage to the given circuit is e = 12 + 10 sin 2 t





R = 3 Ω, C = 1/8 F

The effective value of current ( I ) , Vc and the power dissipated in the circuit are

|  |  |  |  |
| --- | --- | --- | --- |
| A | I = 3 amp, Vc= 13.67 V, P eff= 6 w | B | I = 1.4142 amp, Vc= 20 V, P eff= 12 w |
| C | I = 1.4142 amp, Vc= 13.67 V, P eff= 6 w | D | I = 2 amp, Vc= 20 V, P eff= 12 w |
| Answer | |  |  |

Ref 21

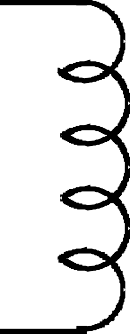
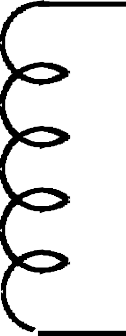
Determine the average value for given periodic pulse waveform.





X= 8 , Y = 2 , Z = 2, W = 6 , K = 12

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4.4 mV, 0.4 sec | B | 8 mV, 1 sec |
| C | 3 mV, 10 sec | D | 8 mV, 0.4 sec |
| Answer | |  |  |

Ref 22

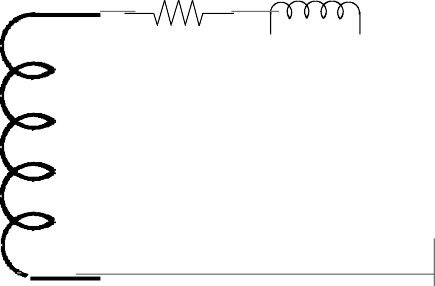
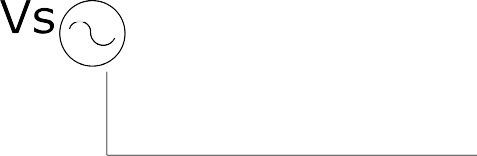
Ep= 200 V, Np= 50 , Es = 240V , Ns = ?

In the given transformer, maximum flux and secondary turn are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30mwb, 300 Turns | B | 15mwb, 1000 Turns |
| C | 70mwb, 300 Turns | D | 15.02mwb, 600 Turns |
| Answer | |  |  |

Ref 23





Ip = 10A, Rp=1 Ω, Xp=2 Ω a= 2, Rs= 1 Ω, Xs= 2 Ω Rl = 50 Ω

In above circuit, the voltage Vs is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2452V | B | 1000V |
| C | 300V | D | 5000V |
| Answer | |  |  |

Ref 24

If the system has a voltage gain of 36dB and output voltage 6.8V, the input voltage is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3V | B | 10V |
| C | 0.8V | D | 0.107V |
| Answer | |  |  |

Ref 25



E1= 25V, E2= 80 sinwt, E3= 20 sin 3wt R= 20 Ω, L = 0.2H

Total power dissipated in the given circuit is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 53.5W | B | 100W |
| C | 200W | D | 0.1W |
| Answer | |  |  |

Ref 26





V = 100V, A= -Π/4 , B= Π/2 , C= Π , D= 3 Π/2

The first four terms of the given trigonometric Fourier series are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0 + 400/ Π cos Ɵ + 0-400/ Π cos3 Ɵ | B | 400/ Π +400/ Π cos Ɵ +  400/ 2 Π cos2 Ɵ – 400/ 3 Π cos3 Ɵ |
| C | 0 +0 + 0 –+400/ 3 Π cos3 Ɵ | D | 400/ Π +0 + 0+ 400/ 3 Π cos3 Ɵ |
| Answer | |  |  |

E026 Online test Ref 27

Find Y

|  |  |  |  |
| --- | --- | --- | --- |
| A | X3 +C | B | 3X4 +C |
| C | 1/ X3 +C | D | Ln X +C |
| Answer | |  |  |

Ref 28

Solve y ‘’ = 3x – 2 , y(0)= 2 y ‘ (1) = -3, the generalized answer is

|  |  |  |  |
| --- | --- | --- | --- |
| A | X4 – X3 - X2 – 5/ 2 X +2 | B | X3– X2 - X2 – 5/ 2 X +2 |
| C | X2–3X +2 | D | X3– 3X +2 |
| Answer | |  |  |

Ref 29

Find general equation of (4X+XY2)dX+(Y +X2y)dY=0

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ln (1+ X2 ) + 1/ 2 Ln (4+Y2 ) | B | Ln (1+ X2 ) + 1/ 3 Ln (4+Y2 ) |
| C | 1/ (1+ X2 ) + 1 / (1+Y2 ) | D | (1+ X2 ) + ( 4+Y2 ) |
| Answer | |  |  |

Ref 30

Evaluate the following

#### Г(6)

2 Г(3)

|  |  |  |  |
| --- | --- | --- | --- |
| A | 10 | B | 30 |
| C | 15 | D | 25 |
| Answer | |  |  |

Ref 31

Evaluate the following

#### Г(5/2)

Г(1/2)

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 / 4 | B | 3 / 2 |
| C | 3 | D | 1 / 3 |
| Answer | |  |  |

Ref 32

Find the volume of region R bounded by parabolic cylinder Z = 4 - X2 & planes X = 0, Y=0, Y=6 ,Z=0

|  |  |  |  |
| --- | --- | --- | --- |
| A | 16 | B | 32 |
| C | 42 | D | 64 |
| Answer | |  |  |

Ref33

Laplace transform of 5 sin 2t – 3 cos 2t is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 10 – 3 S  S2 +4 | B | 3 S - 10  S2 +4 |
| C | 10  S2 +4 | D | 3 S  S2 +4 |
| Answer | |  |  |

S 2 + 4

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3/2 sin 2t – 4 cos 2t | B | 4 cos 2t – 3/2 sin 2t |
| C | 4 sin2t – 3/ 2 cos 2t | D | Sin3t – cos 4t |
| Answer | |  |  |

Ref 35

Find

Ł-1

#### 4S - 3

S 3/2

|  |  |  |  |
| --- | --- | --- | --- |
| A | 8 t- 1/2 – 5t  √ Π | B | 5 t2  √ Π |
| C | 8 t-1/2 – 5t- 1/2  √ Π | D | 8 t2 – 5  √ Π |
| Answer | |  |  |

## S 2+2S

|  |  |  |  |
| --- | --- | --- | --- |
| A | ½ t - ½ e-2t | B | t - e-t |
| C | ½ t - ½ et | D | 2 t - e2t |
| Answer | |  |  |

Ref37

The solution of the given differential equation y’ – 3y’+2y = 2 e –t where y(0) = 2 , y’ (00 = -1 by Laplace transform is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7 e2t+4 et+ e-t | B | 3 e2t+ et+ 3e-t |
| C | -7/3 e-2t+ 4et+ 1/3 e-t | D | -7 e-2t+ et+ 3 e-3t |
| Answer | |  |  |

Ref38

##### A resistor R = 10 Ω Inductor 2H and a voltage E volt are connected in series with switch S . At t = 0, the switch is closed and I = 0.

Find I for t >0 if E = 40V

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4t-4 e-5t | B | 4- e-t |
| C | 4t | D | 4 |
| Answer | |  |  |

Inverse matrix of the matrix for given equations

### 3X1 -2X2 +2X3 =10 X1 +2X2 -2X3 =-1 4X1 +X2 +2X3 =3 is

|  |  |  |  |
| --- | --- | --- | --- |
| A | ( 7 6 2      35 15 35   –14 –2 11   35 35 35   –7 –11 8     35 35 35  | B | ( 7 6 2   14 –2 11   –7 –11 8  |
| C | ( 1 6 1      35 35 35   –14 –2 11   –7 –11 –8  | D | ( 1 6 1   2 3 4   7 11 8  |
| Answer | |  |  |

E029+G012 Online Test 1 Ref40

3 voltages , phase to neutral are measured to be 220V, 215V and 210V on nominal 415V , 50Hz. The percentage voltage imbalance is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2.3% | B | 6% |
| C | 4.6% | D | 10% |
| Answer | |  |  |

Ref41

The synchronous speed is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ns = 120f / p | B | Ns = P / 120f |
| C | Ns=Pf / 120 | D | Ns= 120f |
| Answer | |  |  |

Ref42 Torque is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Torque α Voltage | B | Torque α 1/ voltage |
| C | Torque α Voltage2 | D | Torque α Voltage x Current |
| Answer | |  |  |

Ref43

Permissible starting current for two motors (a) 15KW , 415V & (b) 15KW , 415V are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 102.5A & 82.3A | B | 200A & 60A |
| C | 300A & 100A | D | 50A & 40A |
| Answer | |  |  |

Ref48

22 Kw , 4 poles , 415 V, full load current 38 amp, three phase induction motor

Locked rotor current = 600% of I fl. Locked rotor torque = 155% Tfl Starting current and starting torque for (i) Star / delta (ii) Primary resistance starting (iii) Auto transformer starting with 55% tapping are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 200%, 51.7%, 600%, 46.9% | B | 100%, 20%, 300%, 23% |
| C | 50%,50%,600%,46.9% | D | 100%,51.7%,300%,46.9% |
| Answer | |  |  |

Ref174



|  |  |  |  |
| --- | --- | --- | --- |
| A | L total = L 1 + L2 | B | L total = L 1 - L2 |
| C | L total = 1/ (L 1 + L2 ) | D | L total = L1 L 2 / (L 1 + L2 ) |
| Answer | |  |  |

Ref176

|  |  |  |  |
| --- | --- | --- | --- |
| A | C total = C 1 + C2 | B | C total = 1/ (C 1 + C2 ) |
| C | C total = C1 C2 / (C 1 + C2 ) | D | L total = C 1 - C2 |
| Answer | |  |  |

Ref177

X l is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Xl = L | B | Xl = 2 Π fL |
| C | Xl = 1/ 2 Π fL | D | Xl = 1/ 2fL |
| Answer | |  |  |

Ref179

|  |  |  |  |
| --- | --- | --- | --- |
| A | C total = C 1 + C2 | B | C total = 1/ (C 1 + C2 ) |
| C | C total = C1 C2 / (C 1 + C2 ) | D | L total = C 1 - C2 |
| Answer | |  |  |

Ref180

A welder needs to have 180 amp output and is to be connected to a 240V , 20A supply . What turn ratio is needed ? What voltage would be supplied to the electrode at output?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 9, 26.6V | B | 18, 26.6V |
| C | 9, 13.3V | D | 18, 13.3V |
| Answer | |  |  |

Ref182

The following connection is



|  |  |  |  |
| --- | --- | --- | --- |
| A | Series DC Machine | B | Shunt DC Machine |
| C | Long Shunt Compound DC Machine | D | Short Shunt Compound DC Machine |
| Answer | |  |  |

Ref183

Left hand rule is applied for

|  |  |  |  |
| --- | --- | --- | --- |
| A | DC Generator | B | DC Motor |
| C |  |  |  |
| Answer | |  |  |

Ref184

Which one is a reduced voltage starter

|  |  |  |  |
| --- | --- | --- | --- |
| A | Direct Online Starter | B | Star delta starter |
| C | Forward reverse starter | D | Dynamic braking |
| Answer | |  |  |

###### E046 Online Test

Ref66

The car is driven along a straight road for 8.4 Km at 70 Km/ hr. At which point the truck runs off the gasoline & stops. The next 30 minutes, the driver walks along the road for another 3 Km.

1. What is over all displacement?
2. What is time interval from the beginning of the drive to arrival at the station?
3. What is average velocity?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 20 km, 1 HR, 20 km/hr | B | 30 km, 2 HR, 30 km /hr |
| C | 10.4 km, 0.62 HR, 16.8 km/hr | D | 50 km, 5 HR, 70 km/hr |
| Answer | |  |  |

Ref70

On a hot day in Las Vegas, an oil tanker loaded 37000 L of diesel fuel. It encounters cold weather on Utah where temperature was 23 Degree K lower than in Las Vegas. How many litres did it deliver?

Volume expansion for diesel fuel is 9.5 x 10-4 / Deg C coefficient of linear expansion is 11 x 10 -6 /deg c

|  |  |  |  |
| --- | --- | --- | --- |
| A | 18380 L | B | 36190 L |
| C | 20000 L | D | 10000 L |
| Answer | |  |  |

Ref73

A cylinder contains 12 L of oxygen at 20 deg C and 15 atm. The temperature is raised to 35 deg C and the volume is reduced to 8.5L . What is the final pressure of the gas in atmosphere.?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 22 atm | B | 33 atm |
| C | 11 atm | D | 44 atm |
| Answer | |  |  |

Ref76

Three Carnot engines operate between reservoir temperatures of (a) 400 deg K and 500 deg K (b) 600 and 800 deg K (c) 400 and 600 deg K. rank the engineers according to thermal efficiencies.

Greatest first.

|  |  |  |  |
| --- | --- | --- | --- |
| A | c, b, a | B | a, b, c |
| C | b, c, a | D | Equal |
| Answer | |  |  |

Ref79

At t= 0, the displacement X(0) of the block is – 8.5 cm. The block’s velocity V(0) is -0.92 m/ s and it’s

acceleration a (0) is 47 m/s2.

* 1. What is the angular velocity w of this system?
  2. What are the phase constant φ and amplitude Xm ?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 22.5 rad/ s, 155 deg, 9.4 cm | B | 50 rad/ s, 30 deg, 18 cm |
| C | 100 rad/ s, 45 deg, 10 m | D | 15 rad/ s, 75 deg, 4cm |
| Answer | |  |  |

Ref82

The following equations give the position X (t) of a particle in four situations

(a) X = 8t-4 (b) x= -6t3+9t2 +6 (c) X = 3 / t2 - 9/ t (d) X = 7 t2 -4 To which of these situations? Do the constant acceleration formulae apply?

|  |  |  |  |
| --- | --- | --- | --- |
| A | a | B | b |
| C | c | D | d |
| Answer | |  |  |

Ref85

a = 3 I – 8 j b = -2 I + 4 j c = - 4 j Find the resultant vector for a+b+c

|  |  |  |  |
| --- | --- | --- | --- |
| A | 10i+2j | B | 7i+5j |
| C | 2.5i – 2.3 j | D | 0 |
| Answer | |  |  |

Ref88

1. kg Tin is accelerated at 3m /s2 in the direction shown by a over a frictionless horizontal surface. The acceleration is caused by three forces . What is the third force?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 20N | B | 10N |
| C | 1N | D | 12.5N |
| Answer | |  |  |

Ref91

Suppose that the coefficient of static friction µ between the rider’s clothing and the canvas is 0.4 and the cylinder radius “ R” is 2.1 m.

(a) What minimum speed (V) must the cylinder and the rider have if the rider is not to fall when the

floor drops? (b) If the rider’s mass is 49 Kg, what is the magnitude of centrifugal force on rider?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7.2 m/s, 1200N | B | 3.6 m/s, 600N |
| C | 21 m/s, 2000N | D | 30 m/s, 3000N |
| Answer | |  |  |

Ref94

F2 = 10N

40

30

Find total work done of the forces.

8.5 m F1 = 12N

|  |  |  |  |
| --- | --- | --- | --- |
| A | 306J | B | 153J |
| C | 469J | D | 73J |
| Answer | |  |  |

Ref97

The figure shows a uniform metal plate “ P “ of radius “ 2 R “ from which a disk of radius “R” has

been stamped out. Using the X-Y co-ordinate system shown, locate the centre of mass of the plate.



|  |  |  |  |
| --- | --- | --- | --- |
| A | Xt = R / 4, Yt = R | B | Xt = R, Yt = R |
| C | Xt = R / 2, Y t = R/ 2 | D | Xt = R / 3, Y t= 0 |
| Answer | |  |  |

Ref100

A coach roach rides the rim of a rotating merry go around. If the angular speed is constant, does the coach roach have (a) Radial acceleration ? (b) Tangential acceleration ? What angle Ѳ p should the arc subtend so that a 15. 4 kg at the point “P”.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 50 Deg | B | 30 Deg |
| C | 111 Deg | D | 200 Deg |
| Answer | |  |  |

Ref67

A rolling object has linear velocity 342.5 m/s radius =3 m mass =170 kg Calculate total kinetic energy.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1.5 x 10 7 J | B | 3 x 10 7 J |
| C | 4.5 x 10 7 J | D | 6 x 10 7 J |
| Answer | |  |  |

Ref68

The figure gives over view at a uniform rod in static equilibrium , the magnitude of the forces F1 & F2 are





|  |  |  |  |
| --- | --- | --- | --- |
|  | | | |
|  | | | |
|  |  |  |  |
|  |  |  |  |

X1= 4m, X2= 2m, X3=1m, X4 = 1m, Fa = 10 N ,Fb = 30N

|  |  |  |  |
| --- | --- | --- | --- |
| A | 90 N, 130 N | B | 22.5 N, 32.5 N |
| C | 45 N, 65 N | D | 100 N, 200 N |
| Answer | |  |  |

Ref 69

A living room has the floor dimension and height of 3.5 m x 4.2 m. A height of 2.4 m (a) What does the air in the room weigh when the air pressure is 1 atm? (b) What is the magnitude of the atmosphere downward force on the top of your head which we take to have an area of 0.04m2

|  |  |  |  |
| --- | --- | --- | --- |
| A | 420 N, 4 x 103 N | B | 840 N, 8 x 103 N |
| C | 210 N, 2 x 103 N | D | 1640 N, 6 x 103 N |
| Answer | |  |  |

###### E050 Online Test

Ref102

The degree of the following polynomial is 3X15+7.6 X8 -4X2

|  |  |  |  |
| --- | --- | --- | --- |
| A | 15 | B | 8 |
| C | c | D | 4 |
| Answer | |  |  |

Ref105

The factors of the followings are X2+4X+3

|  |  |  |  |
| --- | --- | --- | --- |
| A | (X+2)(X+1) | B | (X-3) (X+1) |
| C | (X+3) ( X+1) | D | (X-3) (X-1) |
| Answer | |  |  |

Ref108

Axis of symmetry , X axis crossing point and Y axis crossing point of the given graph are



Y = 2 X2 -12X + 3



|  |  |  |  |
| --- | --- | --- | --- |
| A | (3,-5)(0,3)(5.5,0.5) | B | (5,-3)(3,0) (0.5,5.5) |
| C | (0,0)(3,3)(5,0.5) | D | (3,-5) (1,2) (5.5,0.5) |
| Answer | |  |  |

The answer of

 2

J Sin 3X d X

is

|  |  |  |  |
| --- | --- | --- | --- |
| A | X/ 3 – Sin 6X +C | B | X 2 –Sin 3X +C |
| C | X/2 - 1/ 12 Sin 6X + C | D | X – 12 Sin 6X + C |
| Answer | |  |  |

Ref112

The average value of the following waveform is

(a) I (t)

Im

0.1 0.2 t

|  |  |  |  |
| --- | --- | --- | --- |
| A | Im / 3 | B | Im / 6 |
| C | Im / 12 | D | Im / 2 |
| Answer | |  |  |

Ref117

Sin (180 -Ɵ) is

|  |  |  |  |
| --- | --- | --- | --- |
| A | -sin Ɵ | B | sin Ɵ |
| C | Cos Ɵ | D | - Cos Ɵ |
| Answer | |  |  |

Cos (α – β) is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Cos α Cosβ+ Sinα Sinβ | B | Cos α Sinβ+ Sinα Cosβ |
| C | Sinα Sinβ -Cos α Cosβ | D | Sinα Cosβ + Cos α Sinβ |
| Answer | |  |  |

Ref124

If a body undergoes a displacement in 12 km due north followed by a displacement of 5 km due east. Find the displacement and direction.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 13, 22.6 deg | B | 17, 0 deg |
| C | 7, 90 deg | D | 13, 90 deg |
| Answer | |  |  |

Ref126

Find the area of shading

30m Diameter 5m

40m

|  |  |  |  |
| --- | --- | --- | --- |
| A | 900 m2 | B | 200 m2 |
| C | 1196.85 m2 | D | 450 m2 |
| Answer | |  |  |

The differential of Y = 5 X3 +6X2+7 is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | X2+3X | B | 15X + 2 |
| C | 15X2+12X | D | 12X2+15X |
| Answer | |  |  |

Ref133

Differential of d / dx ( Loge X2) is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1/X | B | 2/X |
| C | X2 | D | 1/ X2 |
| Answer | |  |  |

Ref136

The answer of eax

ʃ -------------- dx is

## eax +a

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1/a Ln (eax+a) | B | a Ln (eax+a) |
| C | Ln (eax+a) | D | 1/a |
| Answer | |  |  |

###### G001 Online Test

Ref137

The flux is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | φ = Fm / Rm | B | φ = Fm x Rm |
| C | φ = Rm / Fm | D | φ = Fm + Rm |
| Answer | |  |  |

Ref 138

Rm is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | lµ / A | B | L/µ A |
| C | Lµ A | D | µ A/l |
| Answer | |  |  |

Ref139

Flux density is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | φ A | B | A/ φ |
| C | φ/A | D | Φ+A |
| Answer | |  |  |

Ref140

The torque produced in electric motor is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | T = BL r | B | T = Br/ L |
| C | T = BL/ r | D | T + Br + L |
| Answer | |  |  |

Ref141

A plunger brake electro-magnetic operates at a flux density of 12 tesla. If the CSA of the magnetic circuit is 0.04 sq-m and reluctance is 12000 amp-turn / wb, what current is required to operate the magnet if the coil has 1000 turns.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.288A | B | 0.576A |
| C | 1.3A | D | 2.8A |
| Answer | |  |  |

Ref142

The induced voltage in conductor moving in magnetic field is

|  |  |  |  |
| --- | --- | --- | --- |
| A | E = BLV sinƟ | B | E = BLV cosƟ |
| C | E = BLV | D | E = BI sinƟ |
| Answer | |  |  |

Ref143

The voltage induced in coil of N turns is

|  |  |  |  |
| --- | --- | --- | --- |
| A | V = N φ | B | V = NI |
| C | V = N x d φ/ dt | D | V = N2 φ |
| Answer | |  |  |

Ref144

What is the velocity of a conductor 150 mm long and moving at right angle to magnetic field having a flux density of 0.4 tesla? The induced voltage is 4V.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6 m/s | B | 1.5 m/s |
| C | 12 m/s | D | 3.3 m/s |
| Answer | |  |  |

Ref145

The force between two current carrying conductors is

|  |  |  |  |
| --- | --- | --- | --- |
| A | F = 10-7 I / d | B | F = NI / d |
| C | F = 2 x 10-7 I / d | D | F = 4 Π10-7 I / d |
| Answer | |  |  |

Ref146

A transformer has 50 turns on the primary and 600 turns on secondary . If a flux of 0.25 wb is induced to zero in 10 ms, calculate the induced emf in each coil.

|  |  |  |  |
| --- | --- | --- | --- |
| A | E1 = 250V, E2 = 3000V | B | E1 = 2500V, E2 = 30000V |
| C | E1 = 300V, E2 = 25000V | D | E1 = E2 = 3000V |
| Answer | |  |  |

Ref147

If a conductor is being rotated at 2000 RPM in magnetic field and induces 400V . If it is rotated at 1000 RPM.. Find the induced emf.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 100V | B | 200V |
| C | 400V | D | 50V |
| Answer | |  |  |

Ref148

A 240 V coil 5000T produces magnetizing force 4000AT/ m . The magnetic circuit is 200 mm long. CSA 500 sq-mm. Find the resistance of the coil.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1500Ω | B | 3000Ω |
| C | 750Ω | D | 150Ω |
| Answer | |  |  |

###### G002 Online Test

Ref149

A sine wave voltage of 240V RMS is applied to a resistive circuit of 60Ω. Calculate(a) RMS value of current (b) Maximum value of current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2A, 4A | B | 4A, 5.65A |
| C | 2A, 2.8A | D | 1A, 2A |
| Answer | |  |  |

Ref150

A coil of negligible resistance draws a current of 0.2A (RMS) when connected to 240V, 50HZ.

(a) Determine inductive reactance (b) Coil inductance.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 600Ω , 3.8 H | B | 1200Ω , 1.9 H |
| C | 1200Ω , 3.8 H | D | 1800Ω , 7.6 H |
| Answer | |  |  |

Ref151

A 64 mH inductor is connected in series with a 300Ω resistor to a 1000HZ AC supply voltage of 10V rms. Find (a) the impedance (b) The phase angle (c) The current (d) the potential drop across resistor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 500Ω ,( 53.2 Deg),  0.002A (-53.2Deg),  6V,8V | B | 500Ω ,( 36.8 Deg),  0.001A (+53.2Deg),  8V,6V |
| C | 500Ω ,( 0 Deg),  0.002A (-0 Deg),  6V,8V | D | 500Ω ,( 90 Deg),  0.002A (-90 Deg),  6V,8V |
| Answer | |  |  |

Find the current in the circuit when an AC voltage 10V rms at 1000HZ is applied to 2 µF capacitor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.375A | B | 0.25A |
| C | 0.125A | D | 0.5A |
| Answer | |  |  |

Ref153

A 1 µF capacitor is connected in series with 200 Ω resistor to 10V rms. 1600HZ supply. Find (a0 the impedance (b) The phase angle (c) The current (d) Potential drop across resistor (e) Potential drop across capacitor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 111.3Ω ,( -26.5 Deg),  0.0224A (-26.5Deg),  4.5V,2.24V | B | 222.6Ω ,( +26.5 Deg),  0.0224A (-26.5Deg),  9V ,4.48V |
| C | 222.6Ω ,( 0 Deg),  0.0224A (0 Deg),  9V ,4.48V | D | 222.6Ω ,( -26.5 Deg),  0.0448A (+26.5Deg),  9V ,4.48V |
| Answer | |  |  |

Ref154

A series circuit is connected to a 10V rms AC supply. The circuit has resistance 100 Ω, inductive reactance 300 Ω , capacitive reactance 400 Ω. Find (a) Impedance (b) Current (c) Phase angle (d) Voltage drop across resistor (e) Voltage drop across inductor (f) Voltage drop across capacitor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 141 Ω (Angle -45 Deg), 0.071A, 45 Deg,  7.1V, 21.3V,28.4V | B | 70.7 Ω (Angle +45 Deg), 0.035A, 45 Deg,  3.35V, 10.65V,14.2V |
| C | 141 Ω(Angle 45 Deg), 0.071A,-45 Deg  7.1V, 28.4V, 21.3V | D | 141 Ω (Angle 0 Deg),0.071A, 0 Deg,  7.1V, 21.3V, 28.4V |
| Answer | |  |  |

The following is a diagram of a parallel circuit with a supply voltage 100V rms at 50Hz.Determine the followings.

(a)Total circuit current (b) Total circuit impedance (c) Phase angle between circuit current and applied voltage (d) Power factor of circuit.







Xc= 318.5 Ω, R=100 Ω,Xl = 94.2 Ω, V = 100 V, 50Hz

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1.8A (Angle -36.8 Deg), 206 Ω, 56.86 Deg,  0.8 | B | 0.97A (Angle +36.8 Deg),103 Ω, 36.8 Deg  0.59 |
| C | 0.97A (Angle -36.8 Deg),103 Ω, 36.8 Deg  0.59 | D | 0.97A (Angle +53.2 Deg),206 Ω, 53.2 Deg  0.59 |
| Answer | |  |  |

Ref156

A capacitor draws 0.971 Amp at PF 0.34 from 100V supply. Total power is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 36.8W | B | 100W |
| C | 52.43W | D | 70.7 W |
| Answer | |  |  |

Ref157

The phase voltage and current in 3 phase star connected current are 240V and 50A. Find the line voltage and line current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 415V rms, 50A | B | 240V rms, 50A |
| C | 415V rms, 86.5A | D | 240V rms, 86.5A |
| Answer | |  |  |

A delta connected load takes a line current 40A and line voltage 415V. Find (a) Phase current (b) Phase voltage

|  |  |  |  |
| --- | --- | --- | --- |
| A | 40A, 415V | B | 23.1A, 415V |
| C | 40A, 240V | D | 23.1A. 240V |
| Answer | |  |  |

Ref159

Three phase 415V, 37.3 KW, Delta connected alternator has efficiency 90% and PF 0.88 Lagging. Find

(a) Line current (b) Phase current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 130A, 75.6A | B | 65.5 A, 75.6A |
| C | 65.5A, 37.8A | D | 130A, 37.8A |
| Answer | |  |  |

Ref160

The force produced in three phase winding of AC machine is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 Im N ejwt  2 | B | Im N ejwt  2 |
| C | √3 Im N ejwt  2 | D | √3 Im N ejwt |
| Answer | |  |  |

###### G012 Online Test

Ref160

The force produced in three phase winding of AC machine is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 Im N ejwt  2 | B | Im N ejwt  2 |
| C | √3 Im N ejwt  2 | D | √3 Im N ejwt |
| Answer | |  |  |

Ref161

Three phase , 4 poles , 36 slots, 50HZ winding . The coil span is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7 | B | 8 |
| C | 9 | D | 10 |
| Answer | |  |  |

Ref162

The speed of 2 poles, 25 HZ motor is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3000 rpm | B | 1500 rpm |
| C | 750 rpm | D | 1000 rpm |
| Answer | |  |  |

Ref163

The measured speed of three phase , 4215V, 50HZ, 2 poles motor is 2700 rpm. . Slip and % slip are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.2, 20% | B | 0.15, 15% |
| C | 0.3, 30% | D | 0.1, 10% |
| Answer | |  |  |

Ref164

The relationship between voltage, current and number of turns of a transformer is

|  |  |  |  |
| --- | --- | --- | --- |
| A | V1/ V2 = N1/N2 = I2/I1 = a | B | V1/ V2 = N2/N1 = I2/I1 = a |
| C | V1/ V2 = N1/N2 = I1/I2 = a | D |  |
| Answer | |  |  |

Ref165

N = 350 Turns, Air Gap = 0.15mm, Core length = 1250mm, Flux density = 1.105 T , µ = 1800 The current I is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6.2 A | B | 9.3A |
| C | 1.26A | D | 3.16A |
| Answer | |  |  |

Ref166

The voltage regulation of a synchronous generator is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ef – V  - x 100 %  V | B | Ef  - x 100 %  V |
| C | V – Ef  x 100 %  V | D |  |
| Answer | |  |  |

Ref167

Synchronous impedance is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Z s = Voc / Isc | B | Z s = Vsc / Isc |
| C | Z s = Voc / Ioc | D |  |
| Answer | |  |  |

Ref168

The voltage equation for synchronous generator is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ef = V + I Zs | B | Ef = V – I Zs |
| C | Ef = V x I Zs | D | Ef = V / I Zs |
| Answer | |  |  |

Ref169

The voltage equation for synchronous motor is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ef = V + I Zs | B | Ef = V – I Zs |
| C | Ef = V x I Zs | D | Ef = V / I Zs |
| Answer | |  |  |

Ref170

A motor consumes 10 KW power when connected to 259V. Calculate the current

|  |  |  |  |
| --- | --- | --- | --- |
| A | 46A | B | 20A |
| C | 80A | D | 10A |
| Answer | |  |  |

Ref171

A resistance 10Ω is connected to 90V DC supply. Find the current and power

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4.5A, 405W | B | 9A, 405W |
| C | 4.5A, 810W | D | 9A, 810W |
| Answer | |  |  |

Ref172

A power station supplying 100 W at 10 KV . Find (a) current (b) If line impedance is 0.1Ω/ km , for 200 Km line, find line drop.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 100A, 2000V | B | 10A, 200V |
| C | 100A, 200V | D | 10A, 2000V |
| Answer | |  |  |

Ref173

If V rms is 100V, V max is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 70.7V | B | 141.42V |
| C | 200V | D | 100V |
| Answer | |  |  |

Ref174



|  |  |  |  |
| --- | --- | --- | --- |
| A | L total = L 1 + L2 | B | L total = L 1 - L2 |
| C | L total = 1/ (L 1 + L2 ) | D | L total = L1 L 2 / (L 1 + L2 ) |
| Answer | |  |  |

###### G015+G046 Online Test

Ref186

The transformer supplies a group of 4 feeders which have individual maximum demands of 2.5, 2.4,

4.3 and 1.6 MVA. If the diversity factor is 1.82, determine the maximum demand on transformer

|  |  |  |  |
| --- | --- | --- | --- |
| A | 5.93MVA | B | 4.3MVA |
| C | 10.8MVA | D | 2.4MVA |
| Answer | |  |  |

Ref191

Find the insulation resistance per km of conductor diameter 1.6 cm and internal sheath diameter

5.08 cm. ₰ = 6 x 10-14 Ω/ cm.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 500 M Ω | B | 100 M Ω |
| C | 1103 M Ω | D | 2000 M Ω |
| Answer | |  |  |

Ref196

The formula to calculate voltage regulation is

|  |  |  |  |
| --- | --- | --- | --- |
| A | IR cosφr +IX sin φr  %Reg =  Er | B | R cosφr +IXsin φr  %Reg =  -  Er |
| C | %Reg = IR cosφr +IX sin φr | D | R cosφr -IXsin φr  %Reg =  -  Er |
| Answer | |  |  |

Ref201

Which equipments is not included in trip circuit?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Sensor, potential transformer, current transformer | B | Battery |
| C | Relay contact | D | Circuit breaker |
| Answer | |  |  |

Ref206

Differential relay senses

|  |  |  |  |
| --- | --- | --- | --- |
| A | Only one input | B | Three inputs |
| C | Two inputs | D | Four inputs |
| Answer | |  |  |

Ref 211.

Maximum reach and maximum reach angle are found in

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Distance relay |
| Answer | |  |  |

Ref212

The operation of distance relay is based on

|  |  |  |  |
| --- | --- | --- | --- |
| A | Based on impedance | B | Based on current |
| C | Based on frequency | D | Based on power |
| Answer | |  |  |

Ref213

The characteristics curve of distance relay is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Concentric circles | B | Parabola |
| C | Straight line | D | Hyperbola |
| Answer | |  |  |

Ref214.

Zone protection of distance relay is based on

|  |  |  |  |
| --- | --- | --- | --- |
| A | Zoning in accordance with voltage | B | Zoning in accordance with current |
| C | Zoning in accordance with power | D | Zoning in accordance with impedance |
| Answer | |  |  |

Ref215.

Operating & restraining voltage and current are utilized in

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Thermal over load relay |
| Answer | |  |  |

Ref216

Power line can be effectively protected by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Distance relay |
| Answer | |  |  |

Ref217

Explain the operation of distance relay is based on .

|  |  |  |  |
| --- | --- | --- | --- |
| A | Based on impedance | B | Based on current |
| C | Based on frequency | D | Based on power |
| Answer | |  |  |

Ref218.

The shape of characteristics of over current relay is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Straight line | B | Circle |
| C | Curve | D | Pulse |
| Answer | |  |  |

Ref219.

Directional relay is also called

|  |  |  |  |
| --- | --- | --- | --- |
| A | Distance relay | B | Reverse power relay |
| C | Differential relay | D | Over current relay |
| Answer | |  |  |

Ref220

Earthing transformer is utilized at

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star connected winding side | B | Delta connected winding side |
| C | Zigzag connected winding side | D | None of above |
| Answer | |  |  |

Ref225

In CT, primary and secondary windings

|  |  |  |  |
| --- | --- | --- | --- |
| A | Closely linked | B | Loosely linked |
| C |  | D |  |
| Answer | |  |  |

Ref230

The following equation

Mc d2δ/ dt2 = Po - Pm sin δ is utilized to determine

|  |  |  |  |
| --- | --- | --- | --- |
| A | Stability of generation | B | Power flow |
| C | Phase sequence | D |  |
| Answer | |  |  |

Ref231

The suitable winding method for earthing transformer is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star/ Delta | B | Delta/Star |
| C | Delta/Delta | D | Zig Zag |
| Answer | |  |  |

Ref232

Reactors are utilized at busbar to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Provide inductance | B | Limit short circuit current |
| C | Increase disruptive critical voltage | D | Earth leakage current flow path |
| Answer | |  |  |

Ref233

The best way to increase the level of disruptive critical voltage to reduce the possibility of corona is

|  |  |  |  |
| --- | --- | --- | --- |
| A | To increase conductor diameter | B | To use longer cross arm |
| C | To use hollow conductor that increase the conductor diameter | D | To increase insulation resistance |
| Answer | |  |  |

Ref234

Switching voltage velocity is

|  |  |  |  |
| --- | --- | --- | --- |
| A | V = 1/ √LC | B | V = √LC |
| C | V = L/C | D | V = 1/LC |
| Answer | |  |  |

Ref235

Which equipment is used in static VAR compensation system?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Magnetic contactor | B | Thermal switch |
| C | Hall effect switch | D | Silicon Controlled Rectifier |
| Answer | |  |  |

Ref236

Poor power will cause

|  |  |  |  |
| --- | --- | --- | --- |
| A | Unnecessary over current flow in line | B | Smoother voltage |
| C | Ripple reduction | D | Wrong phase sequence |
| Answer | |  |  |

Ref237

Lighting strike near power transformer is protected by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

Ref238

Lightning protection for power line is provided by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

Ref239

Power surge protection is provided by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

Ref244

In large power distribution system, reactive power control is provided by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Synchronous motor | B | Capacitor bank |
| C | Static VAR Compensation System | D | Induction motor |
| Answer | |  |  |

Ref249

To withstand the voltage surge due to lightning strike, the power system equipments must have

|  |  |  |  |
| --- | --- | --- | --- |
| A | High VA value | B | High voltage rating |
| C | High current rating | D | Appropriate base impulse insulation level |
| Answer | |  |  |

Ref254

The following formula Eg = mδgbr Ln D/r is utilized to calculate

|  |  |  |  |
| --- | --- | --- | --- |
| A | Sending end voltage | B | Breakdown voltage to neutral |
| C | Visual critical voltage | D | Disruptive critical voltage. |
| Answer | |  |  |

Ref208

Can over current & earth fault protections be combined?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Not sure | B | No |
| C | Yes | D | Not applicable |
| Answer | |  |  |

Ref222

Buchholz relay should be utilized for

|  |  |  |  |
| --- | --- | --- | --- |
| A | Transformer protection | B | Motor protection |
| C | Generator protection | D | Power line protection |
| Answer | |  |  |

Ref224

For given CT , % composite error, secondary voltage and rated accuracy are 10P 150 F15

|  |  |  |  |
| --- | --- | --- | --- |
| A | 10%, 150V, 15 | B | 150%, 10V, 15 |
| C | 15%, 15V, 10 | D |  |
| Answer | |  |  |

Ref226

For 2000/1000/500/1 current transformer 10 Ps 250 is classified as

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2.5 Ps 1000 | B | 5 Ps 500 |
| C | 2.5Ps 500 | D | 10 Ps 250 |
| Answer | |  |  |

###### G037+G038+G039 Online Test

Ref257



Er= 200V, X = 5 Ω P = 1000 watt Q = 500 VAR

The value of Es is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 400V | B | 200V |
| C | 213.9V | D | 120V |
| Answer | |  |  |

Ref262

To provide physical damage to building & equipments due to direct and indirect lightning strike.

|  |  |  |  |
| --- | --- | --- | --- |
| A | Circuit protection device to be provided | B | Equalizer to be provided |
| C | Site earthing to be provided | D | PF must be improved. |
| Answer | |  |  |

Ref267

Which equipment is not included in power system equipment?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Main feeder | B | Consumer main |
| C | Sectionalising busbar | D | Recloser |
| Answer | |  |  |

Ref292

The current in a system is 62.5A in which 59 amp is fundamental. Calculate total harmonic distortion

. If the harmonic is combination of 3rd , 5th and 7th and third harmonic is 15.6A, 5th harmonic is 10.3A, find 7th harmonic.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 60% 10A | B | 34.9% 8.66A |
| C | 70% 3A | D | 15% 2A |
| Answer | |  |  |

Ref297

Earthing cable is to be connected to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star point of star connected winding | B | Neutral conductor |
| C | Circuit breaker | D |  |
| Answer | |  |  |

Ref302

Arc lengthening , arc splitting and arc cooling functions are provided in

|  |  |  |  |
| --- | --- | --- | --- |
| A | Relay | B | Circuit breaker |
| C | Busbar | D | Recloser |
| Answer | |  |  |

Ref307

Switching transient causes

|  |  |  |  |
| --- | --- | --- | --- |
| A | Disruption of normal operation | B | Degrading of components |
| C | Damage to equipments | D | All above |
| Answer | |  |  |

Ref312

The lightning strike can directly at

|  |  |  |  |
| --- | --- | --- | --- |
| A | SPZOA | B | SPZ1 |
| C | SPZ2 | D | SPZ3 |
| Answer | |  |  |

Ref317

The short duration reduction in the rms voltage between 0.1 and 0.9 pu caused by energizing the heavy load, single line to ground fault and load transfer from one source to remote source is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Sag | B | Swell |
| C | Surge | D |  |
| Answer | |  |  |

Ref322

Sinusoidal wave becomes other forms of wave is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Voltage imbalance | B | Transient |
| C | Waveform distortion | D | Voltage reduction |
| Answer | |  |  |

Ref327

If the voltage is increased , the solution is to provide

|  |  |  |  |
| --- | --- | --- | --- |
| A | Use properly tuned filter | B | Use surge detector |
| C | Use equalizer busbar | D | Use equipotential bonding |
| Answer | |  |  |

Ref332

The circuit consists of 100 V 60HZ and 5th harmonic 51V 300HZ in series with 24 ohm resistor & 18.6 mH inductor. Calculate total dissipated power.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 209 W | B | 104.5W |
| C | 418.6W | D | 836W |
| Answer | |  |  |

Ref337

Two units of generator maintain 66KV and 60KV line at the end of an interconnector of inductive reactance per phase of 40 ohm with negligible resistance and shunt capacitance . A load of 10 MW is to be transferred from 66KV unit to the other end. Calculate the PF of the current transmitted.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.1 | B | 0.2 |
| C | 0.3 | D | 0.4 |
| Answer | |  |  |

###### G037+G038+G039 Online Test

Ref257



Er= 200V, X = 5 Ω P = 1000 watt Q = 500 VAR

The value of Es is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 400V | B | 200V |
| C | 213.9V | D | 120V |
| Answer | |  |  |

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To provide physical damage to building & equipments due to direct and indirect lightning strike.

|  |  |  |  |
| --- | --- | --- | --- |
| A | Circuit protection device to be provided | B | Equalizer to be provided |
| C | Site earthing to be provided | D | PF must be improved. |
| Answer | |  |  |

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The current in a system is 62.5A in which 59 amp is fundamental. Calculate total harmonic distortion

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| --- | --- | --- | --- |
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| C | 70% 3A | D | 15% 2A |
| Answer | |  |  |

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Earthing cable is to be connected to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star point of star connected winding | B | Neutral conductor |
| C | Circuit breaker | D |  |
| Answer | |  |  |

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Arc lengthening , arc splitting and arc cooling functions are provided in

|  |  |  |  |
| --- | --- | --- | --- |
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| C | Busbar | D | Recloser |
| Answer | |  |  |

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Switching transient causes

|  |  |  |  |
| --- | --- | --- | --- |
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| C | Damage to equipments | D | All above |
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The lightning strike can directly at

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| --- | --- | --- | --- |
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| C | SPZ2 | D | SPZ3 |
| Answer | |  |  |

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The short duration reduction in the rms voltage between 0.1 and 0.9 pu caused by energizing the heavy load, single line to ground fault and load transfer from one source to remote source is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Sag | B | Swell |
| C | Surge | D |  |
| Answer | |  |  |

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|  |  |  |  |
| --- | --- | --- | --- |
| A | Voltage imbalance | B | Transient |
| C | Waveform distortion | D | Voltage reduction |
| Answer | |  |  |

Ref327

If the voltage is increased , the solution is to provide

|  |  |  |  |
| --- | --- | --- | --- |
| A | Use properly tuned filter | B | Use surge detector |
| C | Use equalizer busbar | D | Use equipotential bonding |
| Answer | |  |  |

Ref332

The circuit consists of 100 V 60HZ and 5th harmonic 51V 300HZ in series with 24 ohm resistor & 18.6 mH inductor. Calculate total dissipated power.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 209 W | B | 104.5W |
| C | 418.6W | D | 836W |
| Answer | |  |  |

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|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.1 | B | 0.2 |
| C | 0.3 | D | 0.4 |
| Answer | |  |  |

###### G040 Online Test

Ref339





Req= 0.3Ω, Xeq= 0.4 Ω, Rc= 200 Ω, Xc= 400 Ω, V = 200 V, Zl= 2.7 + j 3.6 Ω

Find efficiency

|  |  |  |  |
| --- | --- | --- | --- |
| A | 47% | B | 86.4% |
| C | 99% | D | 35% |
| Answer | |  |  |

Ref340

200/400V Transformer

Open circuit test—Io= 0.7A, Po= 60W

Short circuit test--- Vsc= 9V, Isc= 6A, Psc = 26 w. Find Re’, Xe’, Rc and Xc

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.12 Ω 0.4 Ω, 666.7 Ω, 317.8 Ω | B | 0.06 Ω 0.2 Ω, 333.35 Ω, 156 Ω |
| C | 1 Ω ,4 Ω, 666.7 Ω, 317.8 Ω | D | 2 Ω ,8 Ω, 500 Ω, 400 Ω |
| Answer | |  |  |

Ref341

KVA = 500, Copper loss = 4 KW, Iron loss = 2.4 KW. Find ½ load efficiency at 0.8 PF lagging.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 66% | B | 98.1% |
| C | 75% | D | 40% |
| Answer | |  |  |

Ref342

%Reg = % Req cosƟ+/- %Xeq sinƟ

+ for

|  |  |  |  |
| --- | --- | --- | --- |
| A | Leading | B | Lagging |
| C | Unity | D |  |
| Answer | |  |  |

Ref343

Dy, Yd connection is suitable for

|  |  |  |  |
| --- | --- | --- | --- |
| A | Small HV transformer | B | Large LV transformer |
| C | Power supply transformer | D | Earthing transformer |
| Answer | |  |  |

Ref344

10MVA Star/ Star connected transformer. 33KV/ 11KV

No load test Line voltage = 11KV, Line current = 15A, Power = 75KW

Short circuit test Line voltage= 1650V L-L, Line current = rated current, Power=90KW

Find Req, Xeq, Ro’, Xo’

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.98Ω, 5.3 Ω, 14.5KΩ,2.93 KΩ | B | 2Ω, 10 Ω, 20KΩ,5KΩ |
| C | 4Ω, 20 Ω, 40KΩ,15 KΩ | D | 1Ω, 5 Ω, 30KΩ,15 KΩ |
| Answer | |  |  |

Ref345

Find the load at maximum efficiency of the following single phase transformer. KVA = 5000, Voltage ratio = 6600/440, Iron loss = 2.9 KW, Full load copper loss = 4KW, Maximum efficiency is achieved at

0.8 PF lagging. Find maximum efficiency.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.7 , 90% | B | 0.851, 98.38% |
| C | 0.35, 75% | D | 0.45, 85% |
| Answer | |  |  |

Ref346

Find all day efficiency of the following transformer 100 KVA, single phase, Iron loss=750W Full load copper loss = 750W 24 hr load cycle.

|  |  |  |
| --- | --- | --- |
| Time | Power factor | Output |
| 8 hr | 0.8 Lag | 80KW |
| 6hr | 0.9 lag | 50 KVA |
| 4hr | 25KVA & 20 KW |  |
| 3hr | Energized with no load |  |
| The rest of time | De-energized |  |

Calculate all day efficiency.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 98.1% | B | 75% |
| C | 60% | D | 50% |
| Answer | |  |  |

Ref347

To operate two transformers in parallel , it needs

|  |  |  |  |
| --- | --- | --- | --- |
| A | Same voltage ratio | B | Same % impedance |
| C | Like polarity | D | All above |
| Answer | |  |  |

Ref348

2700KVA load PF 0.9 lagging is supplied by two transformers connected in parallel. Tr A = 2000KVA Z = 3+J2 ohm

TrB =1000KVA X=3+j5 ohm

Find load A transformer load share, B load share.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1350, 1350 KVA | B | 900, 1800 KVA |
| C | 1000KVA, 1700KVA | D | 721KVA, 2332KVA |
| Answer | |  |  |

Ref349

Which winding can not take away harmonic ?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star/Star without neutral | B | Star/Star with neutral |
| C | Delta/Delta | D | Star/Delta |
| Answer | |  |  |

Ref350

400/200 V , 50VA transformer needs to supply 600/200V. Find the rating.

|  |  |  |  |
| --- | --- | --- | --- |
| A | The same rating | B | 100VA |
| C | 33.3VA | D | 11VA |
| Answer | |  |  |

Ref351 ONAF is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Oil is naturally cooled by force air | B | Forced oil is cooled by forced air |
| C | Oil is naturally cooled by force oil | D | Oil is naturally cooled by natural air |
| Answer | |  |  |

###### G042 Online Test

Ref352

Circuit breaker is

|  |  |  |  |
| --- | --- | --- | --- |
| A | To cut off the circuit when fault occurs | B | To cool the arc after disconnecting the circuit |
| C | To reclose the switch | D | All above |
| Answer | |  |  |

Ref354

Find the input impedance and VSWR of a transmission line 4.3λ long when Zo=100Ω & Z2=200- j150Ω

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1+j2 Ω, 0.592 λ | B | 2-j1.5 Ω, 0.592 λ |
| C | 3+j4 Ω, 1.6 λ | D | 3-j4 Ω, 3.6 λ |
| Answer | |  |  |

Ref356





Z = 13+ j 92.6 Ω, Xc= -j2700 Ω

Find A, B, C, D constants

|  |  |  |  |
| --- | --- | --- | --- |
| A | A=1.8, B= 180, C =0.0007, D= 1.8 | B | A=2, B= 360, C =0.0012, D= 2 |
| C | A=3, B= 400, C =0.015, D= 5 | D | A=0.967, B= 93.5, C =0.0007, D=0.967 |
| Answer | |  |  |

Ref358

A 50Ω transmission line is connected to a load impedance 75+j60Ω. The forward wave voltage RMS

value on line is 25V. Calculate

1. Power delivered to resistive part of load impedance
2. RMS current in impedance reflected wave voltage RMS size
3. Peak voltage , forward and backward waves
4. Voltage standing wave ratio (VSWR)
5. Return loss in decibel

|  |  |  |  |
| --- | --- | --- | --- |
| A | 12.5W, 0.101A, 35.6V, 16.57V,  2.764,4.4dB | B | 25W, 0.38A, 70V, 32V, 5.3,8.8dB |
| C | 5W, 0.39A, 70V, 16V, 3, 4dB | D | 25W, 0.38A, 40V, 32V, 2.764,4.4dB |
| Answer | |  |  |

Ref360

The sum of $1000 is invested at 6% for 10 years at compound interest.

(a0 Calculate the sum at the end of 10 years (b) If instead of lump sum at the end of 10 years, te loan of $1000 is to be paid by fixed amount each year, calculate the annual amount.

|  |  |  |  |
| --- | --- | --- | --- |
| A | $1791, $ 135.90 | B | $3400, $270 |
| C | $1000,$70 | D | $500,$35 |
| Answer | |  |  |

Ref362

Attenuation is related to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Radiation loss | B | Dielectric loss |
| C | 23V, 24.8V, -0.96V, -0.76V, 2V | D | All |
| Answer | |  |  |

Ref364

Which is correct?

|  |  |  |  |
| --- | --- | --- | --- |
| A | ƛ = v/f | B | ƛ = f/v |
| C | ƛ = fv | D | ƛ = f+v |
| Answer | |  |  |

Ref366

In short transmission line,

|  |  |  |  |
| --- | --- | --- | --- |
| A | Load impedance dominates the circuit | B | Line impedance dominates the circuit |
| C | Load & line impedance equally influence the circuit | D | Load & line impedance do not influence the circuit |
| Answer | |  |  |

Ref368

Reflection coefficient is

|  |  |  |  |
| --- | --- | --- | --- |
| A | (Zl – Zo) / (Zl +Zo) | B | (Zl + Zo) / (Zl -Zo) |
| C | Zl Zo / (Zl +Zo) | D | Zl Zo / (Zl -Zo) |
| Answer | |  |  |

Ref 370

No magnetic field in direction of propagation is

|  |  |  |  |
| --- | --- | --- | --- |
| A | TM mode | B | TE mode |
| C | TEM mode | D | Hybrid mode |
| Answer | |  |  |

Ref372

G1

T1

Line

T2

Load

G2

G1-1000VA 250V Z = j0.2 pu G2-2000VA 250V Z = j0.8 pu

T1=4000VA 250/800V z= j0.1 pu

Line Z=50+j200 ohm

T2= 8000VA 800/400 V Z=j0.08 pu Load---2500VA 400V

Calculate PU impedance referred to base 5000VA 250V Base

.

|  |  |  |  |
| --- | --- | --- | --- |
| A | Generator= j 0.75 pu  TrA = j0.125 pu, Tr B = j0.125 pu Line = 0.39 + j1.56 pu  Load 0.5 pu | B | Generator= j 1.5 pu  TrA = j0.25 pu, Tr B = j0.25 pu Line = 0.78 + j3 pu  Load 1 pu |
| C | Generator= j 3 pu  TrA = j0.5 pu, Tr B = j0.5 pu Line = 1.56 + j6pu  Load 2 pu | D | Generator= j 3 pu  TrA = j0.5 pu, Tr B = j1pu Line = 3 + j4pu  Load 3pu |
| Answer | |  |  |

G043+G045 Online Test Ref374

Which is correct formula

|  |  |  |  |
| --- | --- | --- | --- |
| A | T= F x r  P = 9.55 / NT | B | T= F x r  P = NT/ 9.55 |
| C | T= F + r  P = NT/ 9.55 | D | T= F x r  P = 9.55 / N+T |
| Answer | |  |  |

Ref376

The heat taken away by blower is

|  |  |  |  |
| --- | --- | --- | --- |
| A | P = 640V (t2 – t1) | B | P = 320V (t2 – t1) |
| C | P = 1280V (t2 – t1) | D | P = 160V (t2 – t1) |
| Answer | |  |  |

Ref378

The 6 poles wound rotor induction motor is excited by three phase 60 HZ source. Calculate the rotor frequency for (a) Standstill (b) 500 rpm same direction (c) 500 rpm opposite direction.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 50HZ, 70 HZ, 170HZ | B | 60HZ, 35 HZ, 85 HZ |
| C | 25 HZ, 35 HZ, 40 HZ | D | 15 HZ, 35 HZ, 125 HZ |
| Answer | |  |  |

Ref380

A three phase induction motor having synchronous speed of 1200 rpm draws 80kw from three phase feeder. Copper loss & iron loss in stator amount to 5kw. If the motor runs at 11452 rpm, calculate the efficiency of motor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 45% | B | 87.5% |
| C | 75% | D | 35% |
| Answer | |  |  |

Ref382

Locked rotor test is performed to determine.

|  |  |  |  |
| --- | --- | --- | --- |
| A | Core parameter | B | Winding parameter |
| C | Load parameter | D | 35% |
| Answer | |  |  |

Ref384

A three phase 208 V induction motor having synchronous speed 1200 rpm runs at 1140 rpm. When connected to 215V , driving at constant load, calculate the speed if voltage is 240V

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1152 rpm | B | 800 rpm |
| C | 700 rpm | D | 500 rpm |
| Answer | |  |  |

Ref386

The system that reverses the supply connection to the motor terminals when the stop switch is pressed is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Dynamic braking | B | Plugging |
| C | Forward reverse | D | Time delay starter |
| Answer | |  |  |

Ref388

A 500HP 720 rpm synchronous motor connected to 3980V three phase line generates an excitation voltage Ef=1790V (L-N) when the dc excitation current is 25 amp. The synchronous reactance is 22Ω, torque angle between Ef & V is 30°.Calculate shaft torque.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2000 N-m | B | 3715 N-m |
| C | 1500 N-m | D | 750 N-m |
| Answer | |  |  |

Ref390

In a synchronous motor, when power factor is unity, the line current is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Maximum | B | Minimum |
| C | Unchanged | D |  |
| Answer | |  |  |

Ref392

Under excitation makes the power factor of a synchronous machine to become

|  |  |  |  |
| --- | --- | --- | --- |
| A | Unity | B | Leading |
| C | Lagging | D |  |
| Answer | |  |  |

###### G044 Online Test

Ref394

Power provided by dc generator is

|  |  |  |  |
| --- | --- | --- | --- |
| A | P = B I V | B | P = B L V I |
| C | P = B I L | D | P = B L V |
| Answer | |  |  |

Ref395



This connection is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Series | B | Shunt |
| C | Short shunt compound | D | Long shunt compound |
| Answer | |  |  |

Ref396

Calculate the coil span for

(a) 36 slots, 4 poles simplex lap (b) 36 slots, 2 poles, Duplex wave

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1 to 10, 1 to 39 & 1 to 35 | B | 1 to 9, 1 to 38 & 1 to 34 |
| C | 1 to 8, 1 to 37 & 1 to 33 | D | 1 to 7, 1 to 36 & 1 to 32 |
| Answer | |  |  |

Ref397

The brushes on a 0.4 m diameter commutator are rocked 0.03m circumferentially. The machine has 6 poles, simplex lap wound, 378 conductors 800 Armature current. Calculate cross magnetizing and de-magnetizing ampere turn / pole.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 600 AT/pole, 1500 AT /pole | B | 1250 AT/pole, 3000 AT /pole |
| C | 300 AT/pole, 750 AT /pole | D | 150 AT/pole, 375 AT /pole |
| Answer | |  |  |

Ref398

Motor particulars 3.75 KW, 230V, 18A, 1750 rpm Ra=0.3Ω , brush drop 2V on load.

Calculate final torque if field flux is reduced to 96%

|  |  |  |  |
| --- | --- | --- | --- |
| A | 50.56 N-m | B | 100 N-m |
| C | 150 N-m | D | 40 N-m |
| Answer | |  |  |

Ref399

7.5KW 230V 1750 rpm shunt motor, armature resistance 0.35Ω, shunt field resistance 62.2Ω

If no load current is 7.7 amp, full load efficiency 86% , brush drop 3V at full load & 1 V at no load. Calculate % regulation.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 5.7% | B | 10% |
| C | 12% | D | 15% |
| Answer | |  |  |

Ref400

The winding resistance of a 500V, 60KW dc shunt motor are Ra=0.2Ω Rf=200Ω, mechanical losses

are 1.4KW.Determine the efficiency of the machine. (a)When the line current is 102.5A (b) At full load.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 70%, 75% | B | 90.93%, 90.9% |
| C | 95%, 93% | D | 78%, 87% |
| Answer | |  |  |

The resistance of an armature winding at 25°C was found to be 0.26Ω. After a heat run , it becomes 0.296Ω. Calculate the temperature rise of the winding.

|  |  |  |  |
| --- | --- | --- | --- |
| A | ∆t = 70 °C | B | ∆t = 36 °C |
| C | ∆t = 15 °C | D | ∆t = 12 °C |
| Answer | |  |  |

Ref402

A 75KW 500V generator has a voltage regulation 4% , calculate

1. The open circuit voltage
2. Assuming the voltage varies uniformly between no load and full load current. Calculate the KW output of a terminal voltage 510V.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 500V, 20 KW | B | 250V, 10 KW |
| C | 520V, 38.25 KW | D | 500V, 10 KW |
| Answer | |  |  |

Ref403

A 4 poles wound armature operating in a field of flux 0.01wb in wound with360 armature

conductors. Determine the expression of torque as a function of speed. If Vt=250V and Ra=0.1Ω.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1000 – 1.3 N | B | 2000- 2N |
| C | 3000 – 4N | D | 2860 – 1.38N |
| Answer | |  |  |

The resistance of the armature of a 240V dc shunt motor is 0.5Ω . It is required that the current at

starting be limited to 200% of full load current & full load current is 15A.

Determine

1. Total resistance of armature current at starting
2. The number of studs on the starter
3. r3.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 8Ω, 4, 1Ω | B | 10Ω, 3, 0.5Ω |
| C | 8Ω, 2, 1Ω | D | 4Ω, 2, 1Ω |
| Answer | |  |  |

Ref405

Which is not a dc motor braking method?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Plugging | B | Dynamic braking |
| C | Mechanical braking | D | Ward Leonard |
| Answer | |  |  |

Ref 406

Which equipment does not produce ripple?

|  |  |  |  |
| --- | --- | --- | --- |
| A | PWM Switching | B | Rectifier circuit |
| C | DC Generator | D | PV Inverter |
| Answer | |  |  |

Ref407





V= 500V, Ra=0.1Ω, Rb=0.2Ω, Rc= 0.2Ω Rd = 0.1Ω

Ib = 5A, Ic = 10A, Id = 20A, Ie = 10A, Calculate line efficiency

|  |  |  |  |
| --- | --- | --- | --- |
| A | 96.8% | B | 90% |
| C | 80% | D | 75% |
| Answer | |  |  |

Ref408

Three towns A, B, C are located as follows. Determine the most suitable place to locate the electric power station to supply those towns.

A = 1000MW ( 10,20) km B= 600MW (5, 7) km

C= 500MW (10, 15) km

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7 km, 10 km | B | 3.57 km, 15.09 km |
| C | 4 km, 8 km | D | 12 km, 20 km |
| Answer | |  |  |

Ref409

√ a2 + b2 180 – tan-1 b / a is the answer of

|  |  |  |  |
| --- | --- | --- | --- |
| A | a+jb | B | a-jb |
| C | -a+jb | D | -a-jb |
| Answer | |  |  |

Copper requirement for dc 2 wires than AC three phase 3 wire is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 cos2 Ɵ | B | 1 / 3 cos2 Ɵ |
| C | cos Ɵ | D | cos2 Ɵ |
| Answer | |  |  |

Ref411 Z1

-------- Ɵ1 – Ɵ2 is answer of Z2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| A | Z1 Ɵ1 + Z2 Ɵ2 | B | Z1 Ɵ1 x Z2 Ɵ2 | | |
| C | Z1 Ɵ1 / Z2 Ɵ2 | D | Z2 Ɵ2 / Z1 | Ɵ1 |  |
|  | |
| Answer | |  |  | | |

Ref412

Z1 Z2 is answer of



Ɵ1 + Ɵ2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| A | Z1 Ɵ1 + Z2 Ɵ2 | B | Z1 Ɵ1 x Z2 Ɵ2 | | |
| C | Z1 Ɵ1 / Z2 Ɵ2 | D | Z2 Ɵ2 / Z1 | Ɵ1 |  |
|  | |
| Answer | |  |  | | |

Ref413

A transmission line has 200 m span between supports. The conductor weight is 20 N/ m and tension in conductor is 20 KN. Calculate sag.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7 m | B | 3.5 m |
| C | 4 m | D | 5 m |
| Answer | |  |  |

A 15V dc source with an internal resistance of 30Ω is connected to a transmission line of length “ L “

having an impedance of 200Ω by switch. The transmission line is terminated with a 1000Ω resistor. T

= amount of time required for signal to travel the length of the line. Calculate third reflection at load.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7.488V | B | 15V |
| C | 10V | D | 20V |
| Answer | |  |  |

Ref415

Determine the A, B, C, D constants of the network in which the following test results have been observed.

Receiver open circuit Vs = 100 0 V

Vr = 70.7 -45 V

Is =1.41 A

- 30

Ir = 0

Receiver short circuit V r= 0

Vs = 100 0 V

Is = 2 A

-90

Ir = 2 A

-90

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1.41 (Angle – 45 deg),  0.0141 (Angle 45 deg) , 50 (Angle 0 deg)  1 | B | 1.41 (Angle 45 deg),  0.0141(Angle -45 deg) ,50(Angle 90 deg)  1 |
| C | 1.41 (Angle 90 deg),  0.0141 (Angle -90 deg) , 50(Angle 0 deg)  1 | D | 1.41 (Angle – 90deg),  0.0141 (Angle 90 deg) , 50 (Angle 0 deg)  1 |
| Answer | |  |  |

T = 10 ms

Find the frequency

|  |  |  |  |
| --- | --- | --- | --- |
| A | 10HZ | B | !000HZ |
| C | 100HZ | D | 10000HZ |
| Answer | |  |  |

Ref417

A voltage is given by e= 30 sin wt + 60 sin (3wt+45) + 10 sin (5wt – 60) volt is applied to a circuit & the resulting current is given by

I = 0.8 sin (wt-20) + 0.15 sin (3wt-25) + 0.09 sin (5wt -120) Find total power applied and overall power factor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 12.18W, 0.43 | B | 20W, 0.5 |
| C | 30W, 0.6 | D | 6W, 0.4 |
| Answer | |  |  |

Ref418





R1= 2 Ω, R2= 4 Ω R3 = 1 Ω E1= 2V E2= 6V

Find I1 and I2 by using Kirchoff’s voltage law.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1A, 2A | B | 0.5A, 1A |
| C | -1A, -2A | D | -3A, -4A |
| Answer | |  |  |

Ref419







I = 2A R1= 4 Ω, R2= 2 Ω, R3= 7 Ω

Thevenin’s equivalent resistance and voltage of the given circuit are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6 Ω, 8V | B | 3 Ω, 4V |
| C | 12 Ω, 16V | D | 24 Ω, 32V |
| Answer | |  |  |





R1= 5 Ω, R2= 4 Ω,, Rl = 9 Ω I = 10A



Norton equivalent current of the given circuit is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 11A | B | 22A |
| C | 5.55A | D | 2.75A |
| Answer | |  |  |

Ref421

I1= 2A, R1 = 6 Ω, R2= 4 Ω, R3= 3 Ω I2= 3A



The voltages V1 & V2 solved by Nodal analysis are

|  |  |  |  |
| --- | --- | --- | --- |
| A | V1=-0.92V,V2=4.615V | B | 2V1= 1V, V2= 4V |
| C | V1= 2V, V2= 8V | D | V1= 3V, V2= 7V |
| Answer | |  |  |







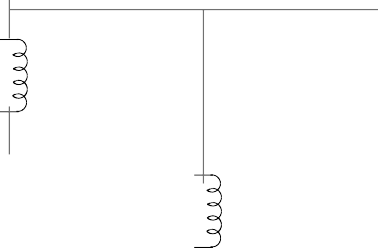
E1= 54V, R1= 24 Ω, R2= 12 Ω, R3= 4 Ω, E2= 48V

The current passing through R3 calculated by Superposition Theorem is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 5A | B | 7A |
| C | 2.5A | D | 1.25A |
| Answer | |  |  |

Ref423





E1= 10 0 V E1= 5 0 V

Z 1= j 4 Ω Z2= J 4 Ω Z3= -j3 Ω

The value of the current calculated by Superposition theorem is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6.25 Angle – 90 Deg | B | 6.25 Angle 0 Deg |
| C | 6.25 120 Deg | D | 6.25 Angle 90 Deg |
| Answer | |  |  |





E= 10(Angle 0) V, Xl = j 8 Ω Xc = - j 8 Ω

Thevenin’s equivalent voltage and impedance of the given network are

|  |  |  |  |
| --- | --- | --- | --- |
| A | Vth= 3.33 (Angle -120)V,  Zth = 2.67 (Angle -90) Ω | B | Vth= 3.33 (Angle -80)V,  Zth = 1.35 (Angle 0) Ω |
| C | Vth= 3.33 (Angle -180)V,  Zth = 2.67 (Angle- 90) Ω | D | Vth= 3.33 (Angle 0)V,  Zth = 2.67 (Angle 0) Ω |
| Answer | |  |  |



G049 Online Test Ref425



R= 100 Ω each, Eph= 173.2V

The neutral current flow in the given circuit is

|  |  |  |  |
| --- | --- | --- | --- |
| A | In = -0.5 + j 0.866 A | B | In = 8.66 – j0.5A |
| C | In = 0A | D | In = 8.66 + j0.5A |
| Answer | |  |  |

Ref426



Z = 50 (Angle 0 ) Ω E = 400V. The currents in A,B, C lines are

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ia= 13.9 -30 A, Ib=13.9 -150A  Ic=13.9 -90 A | B | Ia= 13.9 30 A, Ib=13.9 150A  Ic=13.9 90 A |
| C | Ia= 13.9 0 A, Ib=13.9 120A  Ic=13.9 -120 A | D | Ia= 13.9 0 A, Ib=13.9 -120A  Ic=13.9 120 A |
| Answer | |  |  |

Ref427

Three phase power and power factor angle measured by 2 watts meters method can be calculated by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Wt = W1=W2  Φ = tan-1 ( W1 –W2) / (W1+W2) | B | Wt = W1=W2  Φ = tan-1 ( W1 +W2) / (W1-W2) |
| C | Wt = W1+W2  Φ = tan-1√3 ( W1 –W2) / (W1+W2) | D | Wt = W1-W2  Φ = tan-1√3 ( W1 –W2) / (W1+W2) |
| Answer | |  |  |

Ref 428



Eph= 100V, Za= 100Ω, Zb =100Ω in series with 66.3µF, Zc=100Ω in series with139.2mH f= 50HZ. Calculate the current in neutral wire (In)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| A | In- 0.878 | 0.978 A | B | In- 0.878 | 0 | A |
| C | In- 0.878 | 30 A | D | In- 0 A | | |
| Answer | | |  |  | | |

Ref429



If the above star connection is converted to delta, Zab is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | (Za+Zb+Zc)/ Zc | B | (Za+Zb+Zc)/ ZaZbZc |
| C | (Za+Zb+Zc)/ Za | D | (ZaZb+ZbZc+ZcZa)/ Zc |
| Answer | |  |  |

Ref430

A three phase 415V system’s neutral wire is broken. The following line currents are flowing.

Za= 500 Ω, Ia= 1.55 -8.5 A

Zb= 50 0 Ω, Ib= 2.47 -170 A

Zc= 158 Ω, Ic= 1.03 -30 A

0

1. What is the voltage between new star point and original star point
2. Which phase got over voltage?

|  |  |  |  |
| --- | --- | --- | --- |
| A | A , 20 90 V | B | C , 40 16.59 V |
| C | B , 40 0 V | D | No line, 0V |
| Answer | |  |  |

Ref431

For one line to ground fault

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ia=Ib=2 I1 | B | Ia=Ib=√3 I1 |
| C | Ia=Ib= 3I1 | D | Ia=Ib=I1 |
| Answer | |  |  |

Ref432

Z1 = 65% Z2= 69% Zo = 40 % Base MVA = 100 MVA E = 132KV 2 Line to ground fault. Calculate fault current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 918 (Angle -60Degree)Amp | B | 918 (Angle 0 Degree)Amp |
| C | 1830 (Angle 0 Degree)Amp | D | 456 (Angle -60Degree)Amp |
| Answer | |  |  |

Ref433

Ia= 100 Amp Ib= 100 180 Amp Ia= 0 Amp

0

Find Ia1, Ib1 and Ic1

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ia1 = 57.7 0 A,Ib1=57.7 0 A,  Ic1=57.7 0 A | B | Ia1 = 57.7 -30 A, Ib1=57.7 -150 A,  Ic1=57.7 90 A |
| C | Ia1 = 57.7 0 A, Ib1=57.7 -120 A,  Ic1=57.7 120 A | D | Ia1 = 57.7 120A, Ib1=57.7 120 A,  Ic1=57.7 120 A |
| Answer | |  |  |

Ref434

Calculate the positive, negative and zero sequence equivalent diagram for the given power system.

TxA 20% TxC 30%

6% 16%

Gen A 65%

Line1 22%

Gen C 50%

Gen B 65%

TXB=20%

TxD 30%

Gen D 50%

Fault

|  |  |  |  |
| --- | --- | --- | --- |
| A | 25.5%. 25.5%, 15.1% | B | 25.5%. 25.5%, 25.5% |
| C | 50%,50%,50% | D | 10%,10%,10% |
| Answer | |  |  |

H011 Online Test Ref435

1



AC to DC pulsed DC Conversion

Regulation

Pulsed dc to smooth dc conversion

Load

The stage 1 is

|  |  |  |  |
| --- | --- | --- | --- |
| A | DC level conversion | B | AC level conversion |
| C | Input sensor | D | Providing protection |
| Answer | |  |  |

Ref436



The name of given circuit is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Single phase full wave rectifier | B | Single phase half wave rectifier |
| C | Three phase full wave rectifier | D | Three phase half wave rectifier |
| Answer | |  |  |

Ref437

The dc output voltage produced by centre tapped transformer rectifier is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Vdc= 0.5 Vmax | B | Vdc= 0.73 Vmax |
| C | Vdc= 0.636 Vmax | D | Vdc= 0.707 Vmax |
| Answer | |  |  |

Ref438

For bridge rectifier , ripple frequency is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Supply frequency | B | Three times supply frequency |
| C | Half of supply frequency | D | Two times supply frequency |
| Answer | |  |  |

Ref439

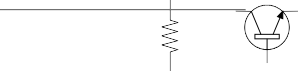
Calculate the load resistance & capacitance size of a full wave rectifier that supplies 40V dc with 3% ripple voltage at 250mA to a resistance load. The rectifier circuit is supplied with 60HZ AC. Ripple frequency 50HZ.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 160Ω, 31.25µF | B | 320Ω, 62.5µF |
| C | 100Ω, 10µF | D | 60Ω, 15µF |
| Answer | |  |  |

Ref440

The following circuit is





|  |  |  |  |
| --- | --- | --- | --- |
| A | Shunt transistor regulator | B | Regulator with feedback |
| C | Operational amplifier | D | Series transistor regulator |
| Answer | |  |  |

Ref441

The regulator with feedback is constructed with the following values. R2= 1 KΩ, R3= 2 KΩ, Rsc=0.6Ω

Calculate power output Pd

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30W | B | 60W |
| C | 90W | D | 15W |
| Answer | |  |  |

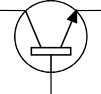
H013 Online Test Ref442

Which formula is wrong

|  |  |  |  |
| --- | --- | --- | --- |
| A | db AV= 20 log Vout/Vin | B | db AI= 20 log Iout/Iin |
| C | db Ap= 10 log Pout/Pin | D | Av = Vin /Vout |
| Answer | |  |  |

Ref443

The following transistor is

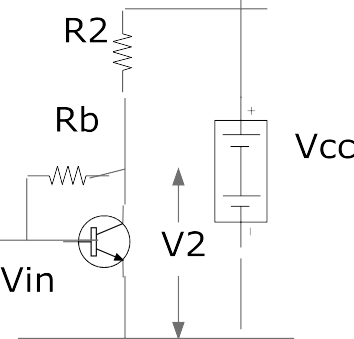


|  |  |  |  |
| --- | --- | --- | --- |
| A | NPN Transistor | B | PNP Transistor |
| C | FET | D | Zener |
| Answer | |  |  |

Ref444

The transistor which produces an output for half of input cycle (180°) is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Class A | B | Class B |
| C | Class AB | D | Class C |
| Answer | |  |  |



This circuit is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Base bias | B | Collector bias |
| C | Voltage divider | D | Dual supply bias |
| Answer | |  |  |

Ref446

To achieve high current power gain, voltage gain less than 1.medium to high input resistance ( 10Ω to 100K Ω) Low output resistance (Tens of ohms), Buffer and isolation stages)

|  |  |  |  |
| --- | --- | --- | --- |
| A | Common collector circuit is to be used | B | Common emitter circuit is to be used |
| C | Common base circuit is to be used | D |  |
| Answer | |  |  |

Ref447

The following formula

Av = Ai , Ai = Ic / IE RIN = re Ro= Rc can be used for

|  |  |  |  |
| --- | --- | --- | --- |
| A | CE Amplifier | B | CEAmplifier |
| C | CB Amplifier | D |  |
| Answer | |  |  |

In transistor, input is given at source and gain is less than 1

|  |  |  |  |
| --- | --- | --- | --- |
| A | Common source FET | B | Common drain FET |
| C | Common gate FET | D |  |
| Answer | |  |  |

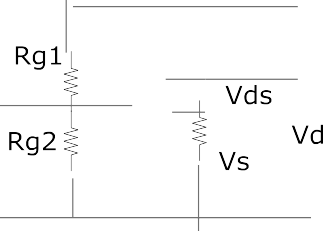
Ref449

This FET is

|  |  |  |  |
| --- | --- | --- | --- |
| A | N channel FET | B | P Channel FET |
| C |  | D |  |
| Answer | |  |  |

Ref450





This circuit is

|  |  |  |  |
| --- | --- | --- | --- |
| A | JFET bias | B | Voltage divider bias |
| C | Self bias | D |  |
| Answer | |  |  |

E003+E004 Online test Ref 1

Four resistors 1 ohm, 2 ohm , 3 ohm and 4 ohm are connected in series to 5V. Calculate the circuit current & potential difference across each resistor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1A,3V,2V,5V.7V | B | 3A,1V,5V,6V,7V |
| C | 0.5A,0.5V,1V,1.5V,2V | D | 0.A,1V,2V,3V,4V |
| Answer | |  |  |

Ref 2

A 2.2K Ω resistor is connected in series with a resistor of unknown value across 16V supply. If the

current is 5 mA, calculate the value of unknown resistor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2 KΩ | B | 1 KΩ |
| C | 4 KΩ | D | 3 KΩ |
| Answer | |  |  |

Ref 3

Two resistors are connected in series to a 115V supply, one is known to have 470 Ω and voltage

across it is 47V. Calculate (a) the value of second resistor (b) the circuit current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 800Ω, 0.2A | B | 680Ω, 0.1A |
| C | 100Ω, 1A | D | 1200Ω,0.1A |
| Answer | |  |  |

Ref 4

Resistors of 5 Ω, 10 Ω and 3 Ω are connected in parallel to 12V supply. Calculate the supply current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2A | B | 3A |
| C | 4A | D | 1A |
| Answer | |  |  |

Ref 5

Resistors of 33K Ω, and 68 KΩ are connected in parallel to 50V. Calculate (a) total circuit resistance

(b) total circuit current (c0 individual branch currents.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 22.2 K Ω, 2.25mA,1.5mA,0.79mA | B | 30 K Ω, 3mA, 2mA,1mA |
| C | 44.5 K Ω, 4.5mA, 3mA,1.58mA | D | 60 K Ω, 6mA,4mA,2mA |
| Answer | |  |  |

Ref 6

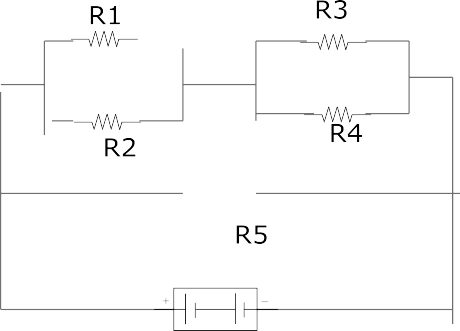
Resistors of values 12 Ω and 8 Ω are connected in parallel with R3 of unknown value across a 6V supply. When the current from the supply is 2.25A, calculate (a) the value of R3 (b) current flowing in R3.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 24 Ω, 0.25A | B | 12 Ω, 0.5A |
| C | 6 Ω, 1A | D | 8 Ω, 1.25A |
| Answer | |  |  |

Ref 7

Five resistors are connected as follows. Find (a)Rt (b) It (c) 2 Ω resistor current.





R1=2 Ω, R2=8Ω , R3=3 Ω, R4= 6 Ω, R5=7.2 Ω. V= 6V

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2.4 Ω, 2.5A, 1.33A | B | 4.8 Ω, 5A, 7A |
| C | 3.6 Ω, 5A, 2.66A | D | 7.2 Ω, 7.5A, 4A |
| Answer | |  |  |

Ref 8

Resistors 1.8 KΩ and 1.2 KΩ are connected in series to 12V supply. Calculate the power dissipated in

each resistor and total power.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.0144W,0.009W,0.024W | B | 0.0576W,0.0384W,0.096W |
| C | 0.0288W,0.0192W,0.048W | D | 1W,0.5W,0.7W |
| Answer | |  |  |

Ref 9

A 1 Ω resistor is connected in series with parallel combination of 6 Ω and 3 Ω resistors to 6V supply.

Calculate (a) Rt (b) Each resistor current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6 Ω, 1A, 1.32A, 2.66A | B | 3 Ω, 2A, 0.66A, 1.33A |
| C | 10 Ω, 4A, 3A, 5A | D | 4 Ω, 1A, 2A, 3A |
| Answer | |  |  |

Ref 10

Resistors of 2.2K Ω and 7.88K Ω are connected in series and parallel across 3.3K Ω and 2.7K Ω series

combination. They are connected to 9V supply .Calculate (a) Rt (b) It (c) Each resistor current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2K Ω, 1.2mA,0.5mA,1mA | B | 7.5K Ω, 4.8mA,1.8mA,3mA |
| C | 3.75K Ω, 2.4mA,0.9mA,1.5mA | D | 10K Ω, 8mA,2mA,3mA |
| Answer | |  |  |

Ref 11

1. filament lamp indicators are each rated 12V and 0.36 w. If they are connected in series, what supply voltage should be used? Find supply voltage, the current and total power dissipated.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 72V,0.06A,2.16W | B | 36V,0.03A,108W |
| C | 108V,0.09A,3.24W | D | 18V,0.015A,0.54W |
| Answer | |  |  |

Ref 12

A circuit is fed with a 9V supply but a 4V ground potential is required at the base of a transistor. If this voltage is to be derived from12 KΩ resistor connected to ground. Calculate the value of second resistor forming potential divider.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30K Ω | B | 15K Ω |
| C | 20K Ω | D | 5K Ω |
| Answer | |  |  |

Ref 13 Find RX

If R1=1000 Ω, R2=1000 Ω,R3=2715 Ω, V= 1.5V at bridge balanced condition.



|  |  |  |  |
| --- | --- | --- | --- |
| A | 1000Ω | B | 3000 Ω |
| C | 2715 Ω | D | 2000 Ω |
| Answer | |  |  |

Ref 15

A cell has emf 1.5V and internal resistance 0.5 ohm. Calculate its terminal voltage at (a) No load (b) providing 200mA current (c) when connected to a load of 8 ohm.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3V, 2.8V, 2.8V | B | 6V, 1.4V, 1.4V |
| C | 1.5V, 1.4V, 1.41V | D | 3V, 1.4V, 1.41V |
| Answer | |  |  |

Ref 16

A battery is made by connection 8 cells in series. Each has 1.5V and internal resistance 0.35 ohm. Calculate (a) EMF & internal resistance of battery. (b) The terminal voltage when supplying 400mA.

(c) The current & terminal voltage when a load of resistance 20 ohm is connected to battery.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6V, 2.8 Ω, 10.11V | B | 15V, 1.4 Ω, 5.1V |
| C | 12V, 2.8 Ω, 5.1V | D | 12V, 2.8 Ω, 10.11V |
| Answer | |  |  |

E025 Online Test Ref 17

For the given series resonance circuity, find I, Vr, Vl and Vc. If the resonance frequency is 4000Hz, Find the bandwidth . What power dissipated in circuit.





E = 10 0 V R= 2 Ohm, X l= 10 ohm, Xc= 10 ohm

|  |  |  |  |
| --- | --- | --- | --- |
| A | I = 10 Angle 0 amp, Vr= 5V,  Vl= 5 Angle 90V, Vc= 50 Angle +90 V | B | I = 5 Angle 0 amp, Vr= 10V,  Vl= 10 Angle 90V, Vc= 50 Angle -90 V |
| C | I = 10 Angle -90 amp, Vr= 10V,  Vl= 10 Angle 0V, Vc= 50 Angle +90 V | D | I = 10Angle 0 amp, Vr= 10V,  Vl= 10 Angle 90V, Vc= 50 Angle -90 V |
| Answer | |  |  |

Ref 18

In the given circuit, Quality factor (Q), Bandwidth of resonant frequency 5000HZ and power dissipated at half power frequency are



R = 2 ohm, Xl= 10 ohm, Xc= 10 ohm E= 10 0 V



|  |  |  |  |
| --- | --- | --- | --- |
| A | Q= 10, BW= 2000HZ, P (HPF)= 50W | B | Q= 15, BW= 2000HZ, P (HPF)= 50W |
| C | Q= 5, BW= 1000HZ, P (HPF)= 25W | D | Q= 20, BW= 3000HZ, P (HPF)= 25W |
| Answer | |  |  |

Ref 19

Q9. For the given network with fp provided.





R 1 = 40 KΩ, R 2= 10 Ω, , L = 1mH, fp = 0.04MHz



(a)Determine Ql (b)Determine Rp

1. Calculate Z tp
2. Find C at resonance
3. Find Qp
4. Calculate BW

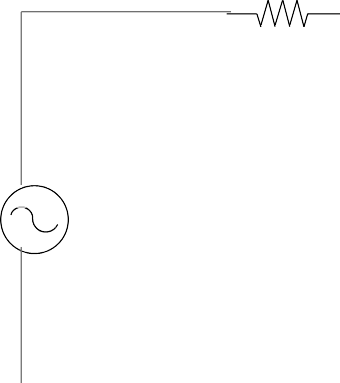
|  |  |  |  |
| --- | --- | --- | --- |
| A | Q= 100, Rp= 10 KΩ, Ztp= 10KΩ  C = 20 nF, Qp= 50, BW= 1KHz | B | Q= 25.12, Rp= 6.31 KΩ, Ztp= 5.45 KΩ  C = 15.9 nF, Qp= 21.68, BW= 1.85 KHz |
| C | Q= 50, Rp= 12 KΩ, Ztp= 7 KΩ  C = 20 µF, Qp= 30, BW= 2KHz | D | Q= 25.12, Rp= 6.31 KΩ, Ztp= 5.45 KΩ  C = 15.9 µF, Qp= 21.68, BW= 1.85 KHz |
| Answer | |  |  |

Ref 20

The input voltage to the given circuit is e = 12 + 10 sin 2 t

R = 3 Ω, C = 1/8 F



The effective value of current ( I ) , Vc and the power dissipated in the circuit are

|  |  |  |  |
| --- | --- | --- | --- |
| A | I = 3 amp, Vc= 13.67 V, P eff= 6 w | B | I = 1.4142 amp, Vc= 20 V, P eff= 12 w |
| C | I = 2 amp, Vc= 20 V, P eff= 12 w | D | I = 1.4142 amp, Vc= 13.67 V, P eff= 6 w |
| Answer | |  |  |

Ref 21

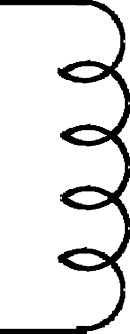
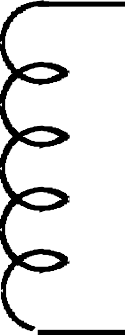
Determine the average value for given periodic pulse waveform.





X= 8 , Y = 2 , Z = 2, W = 6 , K = 12

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 mV, 10 sec | B | 8 mV, 1 sec |
| C | 4.4 mV, 0.4 sec | D | 8 mV, 0.4 sec |
| Answer | |  |  |

Ref 22

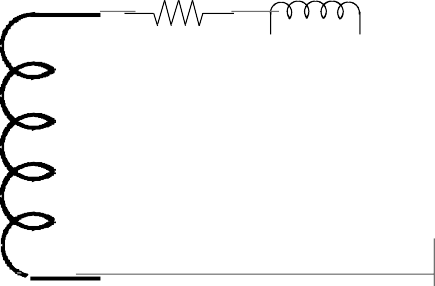
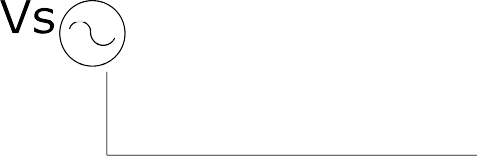
Ep= 200 V, Np= 50 , Es = 240V , Ns = ?

In the given transformer, maximum flux and secondary turn are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30mwb, 300 Turns | B | 15.02mwb, 600 Turns |
| C | 70mwb, 300 Turns | D | 15mwb, 1000 Turns |
| Answer | |  |  |

Ref 23





Ip = 10A, Rp=1 Ω, Xp=2 Ω a= 2, Rs= 1 Ω, Xs= 2 Ω Rl = 50 Ω

In above circuit, the voltage Vs is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 300V | B | 1000V |
| C | 2452V | D | 5000V |
| Answer | |  |  |

Ref 24

If the system has a voltage gain of 36dB and output voltage 6.8V, the input voltage is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3V | B | 0.107V |
| C | 0.8V | D | 10V |
| Answer | |  |  |

Ref 25



E1= 25V, E2= 80 sinwt, E3= 20 sin 3wt R= 20 Ω, L = 0.2H

Total power dissipated in the given circuit is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 100W | B | 200W |
| C | 53.5W | D | 0.1W |
| Answer | |  |  |

Ref 26





V = 100V, A= -Π/4 , B= Π/2 , C= Π , D= 3 Π/2

The first four terms of the given trigonometric Fourier series are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0 +0 + 0 –+400/ 3 Π cos3 Ɵ | B | 400/ Π +400/ Π cos Ɵ +  400/ 2 Π cos2 Ɵ – 400/ 3 Π cos3 Ɵ |
| C | 0 + 400/ Π cos Ɵ + 0-400/ Π cos3 Ɵ | D | 400/ Π +0 + 0+ 400/ 3 Π cos3 Ɵ |
| Answer | |  |  |

E026 Online test Ref 27

Find Y

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1/ X3 +C | B | 3X4 +C |
| C | X3 +C | D | Ln X +C |
| Answer | |  |  |

Ref 28

Solve y ‘’ = 3x – 2 , y(0)= 2 y ‘ (1) = -3, the generalized answer is

|  |  |  |  |
| --- | --- | --- | --- |
| A | X4 – X3 - X2 – 5/ 2 X +2 | B | X2–3X +2 |
| C | X3– X2 - X2 – 5/ 2 X +2 | D | X3– 3X +2 |
| Answer | |  |  |

Ref 29

Find general equation of (4X+XY2)dX+(Y +X2y)dY=0

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1/ (1+ X2 ) + 1 / (1+Y2 ) | B | Ln (1+ X2 ) + 1/ 3 Ln (4+Y2 ) |
| C | Ln (1+ X2 ) + 1/ 2 Ln (4+Y2 ) | D | (1+ X2 ) + ( 4+Y2 ) |
| Answer | |  |  |

Ref 30

Evaluate the following

#### Г(6)

2 Г(3)

|  |  |  |  |
| --- | --- | --- | --- |
| A | 10 | B | 25 |
| C | 15 | D | 30 |
| Answer | |  |  |

Ref 31

Evaluate the following

#### Г(5/2)

Г(1/2)

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 | B | 3 / 2 |
| C | 3 / 4 | D | 1 / 3 |
| Answer | |  |  |

Ref 32

Find the volume of region R bounded by parabolic cylinder Z = 4 - X2 & planes X = 0, Y=0, Y=6 ,Z=0

|  |  |  |  |
| --- | --- | --- | --- |
| A | 32 | B | 16 |
| C | 42 | D | 64 |
| Answer | |  |  |

Ref33

Laplace transform of 5 sin 2t – 3 cos 2t is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 10  S2 +4 | B | 3 S - 10  S2 +4 |
| C | 10 – 3 S  S2 +4 | D | 3 S  S2 +4 |
| Answer | |  |  |

Ref34

. Find

Ł-1

#### 4S - 3

S 2 + 4

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3/2 sin 2t – 4 cos 2t | B | Sin3t – cos 4t |
| C | 4 sin2t – 3/ 2 cos 2t | D | 4 cos 2t – 3/2 sin 2t |
| Answer | |  |  |

Ref 35

Find

Ł-1

#### 4S - 3

S 3/2

|  |  |  |  |
| --- | --- | --- | --- |
| A | 8 t-1/2 – 5t- 1/2  √ Π | B | 5 t2  √ Π |
| C | 8 t- 1/2 – 5t  √ Π | D | 8 t2 – 5  √ Π |
| Answer | |  |  |

Ref 36

. Find

Ł-1

1

# S 2+2S

|  |  |  |  |
| --- | --- | --- | --- |
| A | t - e-t | B | ½ t - ½ e-2t |
| C | ½ t - ½ et | D | 2 t - e2t |
| Answer | |  |  |

Ref37

The solution of the given differential equation y’ – 3y’+2y = 2 e –t where y(0) = 2 , y’ (00 = -1 by Laplace transform is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7 e2t+4 et+ e-t | B | -7/3 e-2t+ 4et+ 1/3 e-t |
| C | 3 e2t+ et+ 3e-t | D | -7 e-2t+ et+ 3 e-3t |
| Answer | |  |  |

Ref38

##### A resistor R = 10 Ω Inductor 2H and a voltage E volt are connected in series with switch S . At t = 0, the switch is closed and I = 0.

Find I for t >0 if E = 40V

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4t | B | 4- e-t |
| C | 4t-4 e-5t | D | 4 |
| Answer | |  |  |

Ref39

Inverse matrix of the matrix for given equations

### 3X1 -2X2 +2X3 =10 X1 +2X2 -2X3 =-1 4X1 +X2 +2X3 =3 is

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A |  1 6 1  | | | B |  7 | | 6 | 2  |
| 2 3 4 | | |  | 14 | | 2 | 11 |
|  |  7 11 8  | | |  |  7 | | 11 | 8  |
| C |  1 | 6 | 1  | D |            | 7  35  14 35  7 35 | 6 | 2  |
|  35 | 35 | 35 | 15 | 35 |
|  |  14 | 2 | 11 |  | 2 | 11 |
|  |  7 | 11 8  | |  | 35 | 35 |
|  |  | | 11 | 8 |
|  |  | | 35 | 35  |
| Answer | | | |  |  | | | |

E029+G012 Online Test Ref40

1. voltages , phase to neutral are measured to be 220V, 215V and 210V on nominal 415V , 50Hz. The percentage voltage imbalance is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2.3% | B | 6% |
| C | 4.6% | D | 10% |
| Answer | |  |  |

Ref41

The synchronous speed is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ns = 120f / p | B | Ns = P / 120f |
| C | Ns=Pf / 120 | D | Ns= 120f |
| Answer | |  |  |

Ref42 Torque is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Torque α Voltage | B | Torque α 1/ voltage |
| C | Torque α Voltage2 | D | Torque α Voltage x Current |
| Answer | |  |  |

Ref43

Permissible starting current for two motors (a) 15KW , 415V & (b) 15KW , 415V are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 102.5A & 82.3A | B | 200A & 60A |
| C | 300A & 100A | D | 50A & 40A |
| Answer | |  |  |

Ref45

The weight of a tabular steel column 120 mm outside diameter and 100 mm inside diameter and 3 m height is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1000N | B | 500N |
| C | 400N | D | 793.3N |
| Answer | |  |  |

Ref47



Diameter = 10 mm2 Force (F) = 37 KN The stress is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1200N/mm2 | B | 471N/mm2 |
| C | 1000N/mm2 | D | 200N/mm2 |
| Answer | |  |  |

Ref50

W = 100 kg



A 100 kg block rests on a plate. The coefficient of friction between all surface is 0.2. The force required to pull the plate is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 100 N | B | 392.4 N |
| C | 800 N | D | 700 N |
| Answer | |  |  |

Ref52

A car starts from the rest at the rate of 1.2 m /s2 for 15 sec. The velocity reached after 15 second is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 36 m/ s | B | 54 m/ s |
| C | 9 m/s | D | 18 m/s |
| Answer | |  |  |

Ref54

The work done for force 50N that moves a block to distance 3 m is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 300J | B | 450J |
| C | 750J | D | 150J |
| Answer | |  |  |

Ref57

A train of total mass 120 ton is travelling at 60 km/hr on level track. The tractive resistance is 80N/ton. Calculate the tractive effort required to accelerate the train to 100 km/hr in 35 second.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 108 KN | B | 37 KN |
| C | 72 KN | D | 54 KN |
| Answer | |  |  |

Ref60

Determine the torque required to accelerate a turbine rotor under going a dynamic balancing test from rest to a speed of 56000 rpm in 80sec. If the mass moment of inertia of rotor is 11.5 kg-m2 .

|  |  |  |  |
| --- | --- | --- | --- |
| A | 225.8 N-m | B | 112.5 N-m |
| C | 300 N-m | D | 400 N-m |
| Answer | |  |  |

Ref62

A train moving at 63 km/hr requires 40 KN of tractive effort at this speed . Determine the driving power.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 700 KW | B | 350 KW |
| C | 900 KW | D | 1000 KW |
| Answer | |  |  |

Ref64

A block of mass 2 kg is freely suspended on a string. A bullet of mass 75 g is fired horizontally into the block. If the velocity of the bullet before the impact is 415 m/s, calculate the velocity of block with the bullet embedded in it immediately after the impact.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30 m/s | C | 45 m/s |
| C | 60 m/s | D | 15 m/s |
| Answer | | D |  |

Ref65

When a golf ball having a mass 50 g is struck by club. The ball and club are in intact for 0.001 sec immediately after the impact. The ball travels at 45 m/s. Determine the average force of collision.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6000 N | C | 3000 N |
| C | 1500 N | D | 7500 N |
| Answer | |  |  |

Ref170

A motor consumes 10 KW power when connected to 259V. Calculate the current

|  |  |  |  |
| --- | --- | --- | --- |
| A | 46A | B | 20A |
| C | 80A | D | 10A |
| Answer | |  |  |

###### E046 Online Test

Ref68

The figure gives over view at a uniform rod in static equilibrium , the magnitude of the forces F1 & F2 are





|  |  |  |  |
| --- | --- | --- | --- |
|  | | | |
|  | | | |
|  |  |  |  |
|  |  |  |  |

X1= 4m, X2= 2m, X3=1m, X4 = 1m, Fa = 10 N ,Fb = 30N

|  |  |  |  |
| --- | --- | --- | --- |
| A | 90 N, 130 N | B | 22.5 N, 32.5 N |
| C | 45 N, 65 N | D | 100 N, 200 N |
| Answer | |  |  |

Ref71

How much heat must be absorbed by ice of mass m = 720 g at – 10 deg c to take the liquid state at 15 deg c.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 600 KJ | B | 400 KJ |
| C | 300 KJ | D | 150 KJ |
| Answer | |  |  |

Ref74

One mole of oxygen expands at a constant temperature T of 310 deg K from an initial volume V I of 12L to a final volume V f of 19 L. How much work is done by the gas during expansion?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2200 J | B | 3300 J |
| C | 4400 J | D | 1180 J |
| Answer | |  |  |

Ref77

. Imagine a Carnot engine that operates between the temperatures TH = 850 deg K and TL = 300 deg K

. the engine performs 1200J of work at each cycle which takes 0.25 sec.

1. What is the efficiency of this engine?
2. What is the average power “P” of this engine?
3. How much energy QH is expected as heat from the high temperature reservoir every cycle?
4. How much energy QL is delivered as heat to the low temperature reservoir each cycle?
5. By how much does the entropy of working substance change as a result of the energy transferred to it from the high temperature reservoir? From it to the low temperature reservoir?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 85%, 4.8 KW, 1855 J, 655 J, 3.6 J/Deg K,  -10 J/ Deg K | B | 65%, 4.8 KW, 1855 J, 655 J, 2.18 J/Deg K,  -2.18 J/ Deg K |
| C | 25%, 2.4 KW, 1855 J, 655 J, 7.2 J/Deg K,  -300 J/ Deg K | D | 10%, 1.2 KW, 900 J, 300 J, 2 J/Deg K,  -150 J/ Deg K |
| Answer | |  |  |

Ref80

A wave travelling along a string is described by Y (x,t) = 0.00328 Sin ( 97.1X – 2.92 t)

1. What is the amplitude of this wave?
2. What are the wave length, period and frequency of this wave?
3. What is the velocity of this wave?
4. What is the displacement Y at X = 22.5 cm and t = 18.9 sec?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7 mm, 0.01m, 7 rad/s, 4 sec, 0.5HZ,  0.04 m/s | B | 2.27 mm, 0.0871m, 2.72 rad/s, 2.31sec,  0.432HZ, 0.0377 m/s |
| C | 1 mm, 0.015m, 10 rad/s, 7 sec, 0.7HZ,  0.02 m/s | D |  |
| Answer | |  |  |

Ref84

The magnitude of a is 3 Km due East and b = 5 Km North of East. c = 1 Km due West. What is the greatest distance at third displacement?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4.8 km | B | 9.6 km |
| C | 112 km | D | 20 km |
| Answer | |  |  |

Ref88

1. kg Tin is accelerated at 3m /s2 in the direction shown by a over a frictionless horizontal surface. The acceleration is caused by three forces . What is the third force?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 20N | B | 10N |
| C | 1N | D | 12.5N |
| Answer | |  |  |

Ref91

Suppose that the coefficient of static friction µ between the rider’s clothing and the canvas is 0.4 and the cylinder radius “ R” is 2.1 m.

* 1. What minimum speed (V) must the cylinder and the rider have if the rider is not to fall when the

floor drops? (b) If the rider’s mass is 49 Kg, what is the magnitude of centrifugal force on rider?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7.2 m/s, 1200N | B | 3.6 m/s, 600N |
| C | 21 m/s, 2000N | D | 30 m/s, 3000N |
| Answer | |  |  |

Ref94

F2 = 10N

40

30

Find total work done of the forces.

8.5 m F1 = 12N

|  |  |  |  |
| --- | --- | --- | --- |
| A | 306J | B | 153J |
| C | 469J | D | 73J |
| Answer | |  |  |

Ref97

The figure shows a uniform metal plate “ P “ of radius “ 2 R “ from which a disk of radius “R” has

been stamped out. Using the X-Y co-ordinate system shown, locate the centre of mass of the plate.



|  |  |  |  |
| --- | --- | --- | --- |
| A | Xt = R / 4, Yt = R | B | Xt = R, Yt = R |
| C | Xt = R / 2, Y t = R/ 2 | D | Xt = R / 3, Y t= 0 |
| Answer | |  |  |

Ref100

A coach roach rides the rim of a rotating merry go around. If the angular speed is constant, does the coach roach have (a) Radial acceleration ? (b) Tangential acceleration ? What angle Ѳ p should the arc subtend so that a 15. 4 kg at the point “P”.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 50 Deg | B | 30 Deg |
| C | 111 Deg | D | 200 Deg |
| Answer | |  |  |

Ref101

Figure shows a uniform disk with mass M = 2.5 kg, R = 20 cm. A block of m = 1.2 kg hangs from a massless cord. Find acceleration of falling block.

T

M M

m

|  |  |  |  |
| --- | --- | --- | --- |
| A | 9.3 m / s2 | B | 4 m / s2 |
| C | 18 m / s2 | D | 3.8 m / s2 |
| Answer | |  |  |

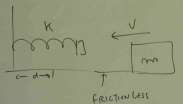
Ref92

If a falling cat reaches a first terminal speed of 97 Km/ hr while it is tucked in and then stretches out, doubling A, how fast is it falling when it reaches a new terminal speed?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3.4 m/s | B | 1.7 m/s |
| C | 13.6 m/s | D | 6.8 m/s |
| Answer | |  |  |

Ref95

A mass 0.4 Kg slides across a horizontal frictionless counter with speed V = 0.5 m/s . It then runs and compresses a spring of spring constant K = 750 N / m . Calculate the distance the spring compressed.



|  |  |  |  |
| --- | --- | --- | --- |
| A | 1.2 cm | B | 2.4 cm |
| C | 3.6 cm | D | 4.8 cm |
| Answer | |  |  |

Ref98

The angular position Ѳ(t) of a reference line on the disk is given by Ѳ = -1 – 0.6t +0.25 t2

1. Graph the angular position of the disk versus time ( -3 to 5.4 sec)
2. At what time does Ѳ(t) reach minimum value? What is the minimum value?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1.2 sec, 77 Deg | B | 2.4 sec, 97 Deg |
| C | 1.2 sec, 30 Deg | D | 3 sec, 45 Deg |
| Answer | |  |  |

###### E050 Online Test

Ref104

The answer of the following is (2X2=4X+1) (3X3-X2-2)

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3X6-2X5+12X4-3X3+X2+8X+2 | B | 6X6-2X5-12X4+3X3-X2+8X-2 |
| C | X6+X5+6X4+3X3+X2-8X-2 | D |  |
| Answer | |  |  |

Ref107

The answer of the following equation is 2t – 3 4

=

25 2t – 3

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2/ 13 | B | 13 |
| C | 6 | D | 13/2 |
| Answer | |  |  |

Ref110

The answer of the following

ʃ Sin 3 X Cos 7X dx is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1/20 cos 20X + 1/ 8 sin 4X | B | 1/10 cos 10X - 1 /8 sin 4x |
| C | cos 10X + sin X | D | -1/20 cos 10X + 1/8 cos 4X |
| Answer | |  |  |

The average value of the following waveform is I (wt)

T

Im

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.636Im | B | 0.5Im |
| C | 0.707Im | D | 1.4142Im |
| Answer | |  |  |

Ref116

Log 10 K / (K –X) = t Find X

|  |  |  |  |
| --- | --- | --- | --- |
| A | K x 10 t  X = ----------------  10t - 1 | B | K ( 10 t - 1) X = ----------------  10t |
| C | X = K x 10t | D | K  X =  10t |
| Answer | |  |  |

Ref119

Find period and angular velocity of 30MHz are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.033 µs , 188.4 x 106 rad/s | B | 0.33 µs , 188 x 103 rad/s |
| C | 0.3 ms , 188.4 x 103 rad/s | D | 0.3s , 188.4rad/s |
| Answer | |  |  |

Sin (A+B)

- is equal to

Cos (A-B)

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1+tanA tanB  tanA+tanB | B | tanA+ tanB  1+tanAtanB |
| C | tanA- tanB  1-tanAtanB | D | tana- tanB  1+tanAtanB |
| Answer | |  |  |

Ref125

Find the areas of the following shadings

20 m

5m

1m b 3m

|  |  |  |  |
| --- | --- | --- | --- |
| A | 20 m2 | B | 30 m2 |
| C | 90 m2 | D | 45 m2 |
| Answer | |  |  |

d Ɵ

|  |  |  |  |
| --- | --- | --- | --- |
| A | -sin3 Ɵ | B | -3sin3 Ɵ |
| C | 3sinƟ | D | Cos3nƟ |
| Answer | |  |  |

Ref131

Y = (X+1) 2 (X+3)3 , dy/ dx is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3(X+1) 2 (X+3)2+2 (X+3) 3 (X+1) | B | (X+1) (X+3)2+ (X+3) 2 (X+1)3 |
| C | 3(X+1) 2 (X+3)3+2 (X+3) (X+1)2 | D | 3(X+2) (X+1)+3 (X+3) (X+1)2 |
| Answer | |  |  |

Ref134

If Y = X3 +3 X2 +4

dy/dx, d2y/dx2 and d3y/ dx3 are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3X2 +6X, 6X+6, 6 | B | X2 +X, 6X+6, 0 |
| C | 3X2 , 6X+6, 6 | D | 3X+6, 6 , 0 |
| Answer | |  |  |

The answer of eax

ʃ -------------- dx is

# eax +a

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1/a Ln (eax+a) | B | a Ln (eax+a) |
| C | Ln (eax+a) | D | 1/a |
| Answer | |  |  |

###### G001 Online Test

Ref137

The flux is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | φ = Rm / Fm | B | φ = Fm x Rm |
| C | φ = Fm / Rm | D | φ = Fm + Rm |
| Answer | |  |  |

Ref 138

Rm is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | lµ / A | B | Lµ A |
| C | L/µ A | D | µ A/l |
| Answer | |  |  |

Ref139

Flux density is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | φ A | B | φ/A |
| C | A/ φ | D | Φ+A |
| Answer | |  |  |

Ref140

The torque produced in electric motor is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | T + Br + L | B | T = Br/ L |
| C | T = BL/ r | D | T = BL r |
| Answer | |  |  |

Ref141

A plunger brake electro-magnetic operates at a flux density of 12 tesla. If the CSA of the magnetic circuit is 0.04 sq-m and reluctance is 12000 amp-turn / wb, what current is required to operate the magnet if the coil has 1000 turns.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.288A | B | 1.3A |
| C | 0.576A | D | 2.8A |
| Answer | |  |  |

Ref142

The induced voltage in conductor moving in magnetic field is

|  |  |  |  |
| --- | --- | --- | --- |
| A | E = BLV cosƟ | B | E = BLV sinƟ |
| C | E = BLV | D | E = BI sinƟ |
| Answer | |  |  |

Ref143

The voltage induced in coil of N turns is

|  |  |  |  |
| --- | --- | --- | --- |
| A | V = N φ | B | V = N x d φ/ dt |
| C | V = NI | D | V = N2 φ |
| Answer | |  |  |

Ref144

What is the velocity of a conductor 150 mm long and moving at right angle to magnetic field having a flux density of 0.4 tesla? The induced voltage is 4V.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3.3 m/s | B | 1.5 m/s |
| C | 12 m/s | D | 6 m/s |
| Answer | |  |  |

Ref145

The force between two current carrying conductors is

|  |  |  |  |
| --- | --- | --- | --- |
| A | F = 10-7 I / d | B | F = NI / d |
| C | F = 4 Π10-7 I / d | D | F = 2 x 10-7 I / d |
| Answer | |  |  |

Ref146

A transformer has 50 turns on the primary and 600 turns on secondary . If a flux of 0.25 wb is induced to zero in 10 ms, calculate the induced emf in each coil.

|  |  |  |  |
| --- | --- | --- | --- |
| A | E1 = 250V, E2 = 3000V | B | E1 = 300V, E2 = 25000V |
| C | E1 = 2500V, E2 = 30000V | D | E1 = E2 = 3000V |
| Answer | |  |  |

Ref147

If a conductor is being rotated at 2000 RPM in magnetic field and induces 400V . If it is rotated at 1000 RPM.. Find the induced emf.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 50V | B | 200V |
| C | 400V | D | 100V |
| Answer | |  |  |

Ref148

A 240 V coil 5000T produces magnetizing force 4000AT/ m . The magnetic circuit is 200 mm long. CSA 500 sq-mm. Find the resistance of the coil.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 150Ω | B | 3000Ω |
| C | 750Ω | D | 1500Ω |
| Answer | |  |  |

###### G002 Online Test

Ref149

A sine wave voltage of 240V RMS is applied to a resistive circuit of 60Ω. Calculate(a) RMS value of current (b) Maximum value of current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2A, 4A | B | 1A, 2A |
| C | 2A, 2.8A | D | 4A, 5.65A |
| Answer | |  |  |

Ref150

A coil of negligible resistance draws a current of 0.2A (RMS) when connected to 240V, 50HZ.

(a) Determine inductive reactance (b) Coil inductance.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 600Ω , 3.8 H | B | 1200Ω , 1.9 H |
| C | 1800Ω , 7.6 H | D | 1200Ω , 3.8 H |
| Answer | |  |  |

Ref151

A 64 mH inductor is connected in series with a 300Ω resistor to a 1000HZ AC supply voltage of 10V rms. Find (a) the impedance (b) The phase angle (c) The current (d) the potential drop across resistor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 500Ω ,( 0 Deg),  0.002A (-0 Deg),  6V,8V | B | 500Ω ,( 36.8 Deg),  0.001A (+53.2Deg),  8V,6V |
| C | 500Ω ,( 53.2 Deg),  0.002A (-53.2Deg),  6V,8V | D | 500Ω ,( 90 Deg),  0.002A (-90 Deg),  6V,8V |
| Answer | |  |  |

Ref152

Find the current in the circuit when an AC voltage 10V rms at 1000HZ is applied to 2 µF capacitor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.375A | B | 0.125A |
| C | 0.25A | D | 0.5A |
| Answer | |  |  |

Ref153

A 1 µF capacitor is connected in series with 200 Ω resistor to 10V rms. 1600HZ supply. Find (a0 the impedance (b) The phase angle (c) The current (d) Potential drop across resistor (e) Potential drop across capacitor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 111.3Ω ,( -26.5 Deg),  0.0224A (-26.5Deg),  4.5V,2.24V | B | 222.6Ω ,( +26.5 Deg),  0.0224A (-26.5Deg),  9V ,4.48V |
| C | 222.6Ω ,( -26.5 Deg),  0.0448A (+26.5Deg),  9V ,4.48V | D | 222.6Ω ,( 0 Deg),  0.0224A (0 Deg),  9V ,4.48V |
| Answer | |  |  |

Ref154

A series circuit is connected to a 10V rms AC supply. The circuit has resistance 100 Ω, inductive reactance 300 Ω , capacitive reactance 400 Ω. Find (a) Impedance (b) Current (c) Phase angle (d) Voltage drop across resistor (e) Voltage drop across inductor (f) Voltage drop across capacitor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 141 Ω (Angle 0 Deg),0.071A, 0 Deg,  7.1V, 21.3V, 28.4V | B | 70.7 Ω (Angle +45 Deg), 0.035A, 45 Deg,  3.35V, 10.65V,14.2V |
| C | 141 Ω(Angle 45 Deg), 0.071A,-45 Deg7.1V, 28.4V, 21.3V | D | 141 Ω (Angle -45 Deg), 0.071A, 45 Deg,  7.1V, 21.3V,28.4V |
| Answer | |  |  |

Ref155

The following is a diagram of a parallel circuit with a supply voltage 100V rms at 50Hz.Determine the followings.

(a)Total circuit current (b) Total circuit impedance (c) Phase angle between circuit current and applied voltage (d) Power factor of circuit.





Xc= 318.5 Ω, R=100 Ω,Xl = 94.2 Ω, V = 100 V, 50Hz



|  |  |  |  |
| --- | --- | --- | --- |
| A | 1.8A (Angle -36.8 Deg), 206 Ω, 56.86 Deg,  0.8 | B | 0.97A (Angle +36.8 Deg),103 Ω, 36.8 Deg  0.59 |
| C | 0.97A (Angle +53.2 Deg),206 Ω, 53.2 Deg  0.59 | D | 0.97A (Angle -36.8 Deg),103 Ω, 36.8 Deg  0.59 |
| Answer | |  |  |

Ref156

A capacitor draws 0.971 Amp at PF 0.34 from 100V supply. Total power is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 36.8W | B | 52.43W |
| C | 100W | D | 70.7 W |
| Answer | |  |  |

Ref157

The phase voltage and current in 3 phase star connected current are 240V and 50A. Find the line voltage and line current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 415V rms, 50A | B | 240V rms, 50A |
| C | 240V rms, 86.5A | D | 415V rms, 86.5A |
| Answer | |  |  |

Ref158

A delta connected load takes a line current 40A and line voltage 415V. Find (a) Phase current (b) Phase voltage

|  |  |  |  |
| --- | --- | --- | --- |
| A | 23.1A. 240V | B | 23.1A, 415V |
| C | 40A, 240V | D | 40A, 415V |
| Answer | |  |  |

Ref159

Three phase 415V, 37.3 KW, Delta connected alternator has efficiency 90% and PF 0.88 Lagging. Find

(a) Line current (b) Phase current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 130A, 75.6A | B | 65.5A, 37.8A |
| C | 65.5 A, 75.6A | D | 130A, 37.8A |
| Answer | |  |  |

###### G012 Online Test

Ref160

The force produced in three phase winding of AC machine is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 Im N ejwt  2 | B | Im N ejwt  2 |
| C | √3 Im N ejwt  2 | D | √3 Im N ejwt |
| Answer | |  |  |

Ref161

Three phase , 4 poles , 36 slots, 50HZ winding . The coil span is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7 | B | 8 |
| C | 9 | D | 10 |
| Answer | |  |  |

Ref162

The speed of 2 poles, 25 HZ motor is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3000 rpm | B | 1500 rpm |
| C | 750 rpm | D | 1000 rpm |
| Answer | |  |  |

Ref163

The measured speed of three phase , 4215V, 50HZ, 2 poles motor is 2700 rpm. . Slip and % slip are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.2, 20% | B | 0.15, 15% |
| C | 0.3, 30% | D | 0.1, 10% |
| Answer | |  |  |

Ref164

The relationship between voltage, current and number of turns of a transformer is

|  |  |  |  |
| --- | --- | --- | --- |
| A | V1/ V2 = N1/N2 = I2/I1 = a | B | V1/ V2 = N2/N1 = I2/I1 = a |
| C | V1/ V2 = N1/N2 = I1/I2 = a | D |  |
| Answer | |  |  |

Ref165

N = 350 Turns, Air Gap = 0.15mm, Core length = 1250mm, Flux density = 1.105 T , µ = 1800 The current I is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6.2 A | B | 9.3A |
| C | 1.26A | D | 3.16A |
| Answer | |  |  |

Ref166

The voltage regulation of a synchronous generator is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ef – V  - x 100 %  V | B | Ef  - x 100 %  V |
| C | V – Ef  x 100 %  V | D |  |
| Answer | |  |  |

Ref167

Synchronous impedance is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Z s = Voc / Isc | B | Z s = Vsc / Isc |
| C | Z s = Voc / Ioc | D |  |
| Answer | |  |  |

Ref168

The voltage equation for synchronous generator is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ef = V + I Zs | B | Ef = V – I Zs |
| C | Ef = V x I Zs | D | Ef = V / I Zs |
| Answer | | A |  |

Ref169

The voltage equation for synchronous motor is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ef = V + I Zs | B | Ef = V – I Zs |
| C | Ef = V x I Zs | D | Ef = V / I Zs |
| Answer | |  |  |

Ref45

The weight of a tabular steel column 120 mm outside diameter and 100 mm inside diameter and 3 m height is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1000N | B | 500N |
| C | 400N | D | 793.3N |
| Answer | |  |  |

Ref46

A steel specimen 10 mm diameter rupture under 37KN , the ultimate strength is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 800N/mm2 | B | 1200N/mm2 |
| C | 471N/mm2 | D | 1024N/mm2 |
| Answer | |  |  |

Ref47



Diameter = 10 mm2 Force (F) = 37 KN The stress is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1200N/mm2 | B | 471N/mm2 |
| C | 1000N/mm2 | D | 200N/mm2 |
| Answer | |  |  |

Ref50

W = 100 kg



A 100 kg block rests on a plate. The coefficient of friction between all surface is 0.2. The force required to pull the plate is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 100 N | B | 392.4 N |
| C | 800 N | D | 700 N |
| Answer | |  |  |

Ref51

The total stopping distance of a car for total time taken from the point where the driver sights the danger if the driver’s reaction time before applying the brake is 0.9 sec with initial velocity 60 km/ hr and retardation due to brake is 7.5 m/ s2

|  |  |  |  |
| --- | --- | --- | --- |
| A | 60m | B | 33.5m |
| C | 100m | D | 150m |
| Answer | |  |  |

###### G015+G046 Online Test

Ref188 (a)

12 m pole is set 1.83 m in ground with three no 4/0 stranded conductors on a cross arm with the conductors level at the top of pole and 45.7 m balance of heavy load. The pole got 20.31 cm at top and 30.48 cm at bottom. No 4/0 conductor has diameter 1.34 cm and total ice thickness 2.54 cm. Wind pressure is 196.2 pa. Safety factor is in given table.

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of wood** | **Ultimate stress** | **Safety factor** | **Cost** |
| Northern White Cedar | 24.4 x 10 6 N/ m2 | 5 | Cheap |
| Western Red Cedar | 38.84 x 10 6 N/ m2 | 8 | Cheap |
| Long leaf yellow pine | 51.3 x 10 6 N/ m2 | 10 | Moderate |
| Wallaha | 72.79 x 10 6 N/ m2 | 15 | Expensive |

The best selection of wood is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Northern White Cedar | B | Western Red Cedar |
| C | Long leaf yellow pine | D | Wallaha |
| Answer | |  |  |

Ref188 (b)

In above problem, if the uniform diameter pole is utilized, the diameter is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | 22.8 cm | B | 15 cm |
| C | 30.48 cm | D | 40 cm |
| Answer | |  |  |

Ref189

Determine the maximum deviation allowed on 11KN pin insulator for a 7/3.50 hard drawn copper conductor with a span of 150 m .The ultimate strength of he conductor is 26600N. The wind load is to be taken as 500Pa and the diameter of conductor is 10.5mm. Tension in conductor must not be more than 50% of ultimate strength. Transverse loading on pin insulator is not to exceed 40% of ultimate strength.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 5 deg | B | 30 deg |
| C | 20 deg | D | 15.6 deg |
| Answer | |  |  |

Ref193

A 415V , 200 KVA, 50HZ , three phase load , power factor is improved from 0.75 to 0.9 lagging. Calculate the size of capacitor for delta connected capacitor bank.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 100µF | B | 200µF |
| C | 300µF | D | 150µF |
| Answer | |  |  |

Ref198

In which of the methods, the booster transformer can be utilized?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Controlling the sending end voltage | B | Controlling the receiving end voltage |
| C | Controlling the current in line that varies Powerfactor | D |  |
| Answer | |  |  |

Ref203

If a relay always operates at pre-determined current, voltage and time setting, it is

|  |  |  |  |
| --- | --- | --- | --- |
| A | reliable | B | economical |
| C | efficient | D | operational |
| Answer | |  |  |

Ref208

Can over current & earth fault protections be combined?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Not sure | B | No |
| C | Yes | D | Not applicable |
| Answer | |  |  |

Ref222

Buchholz relay should be utilized for

|  |  |  |  |
| --- | --- | --- | --- |
| A | Transformer protection | B | Motor protection |
| C | Generator protection | D | Power line protection |
| Answer | |  |  |

Ref227

If there are a lot of power flows out from the main line, the most suitable type of protection relay is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Distance relay | D | Reverse power relay |
| Answer | |  |  |

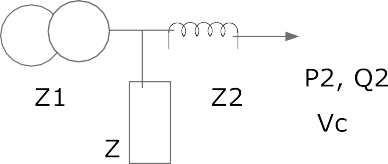
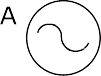
Ref241

A generator operating at 50HZ delivers 1 pu power to infinite busbar through network in which resistance may be neglected. A fault occurs which reduces the machine power transferable to 0.4pu whereas before the fault. This power was 1.8 pu and after the clearance of the fault , this power was

1.8 pu and after the clearance of the fault, it is 1.3 pu. By use of equal area criterion, determine the critical clearing angle.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 58.9 deg | B | 126 deg |
| C | 45 deg | D | 90 deg |
| Answer | |  |  |

Ref246



PF = 0.8 Za = j 1.5, Z1= j 0.25, Z2= j 0.5, P2= 0.5, Q2= 0.2 Vc = 1pu

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 pu | B | 2 pu |
| C | 1.29 pu | D | 5 pu |
| Answer | |  |  |

Ref251

The over current relays are allocated at they provide the protection for .

|  |  |  |  |
| --- | --- | --- | --- |
| A | At the start of line, generator | B | At the end of line, load |
| C | Line section, sections of line | D |  |
| Answer | |  |  |

Ref256

10 KV line with 700Ω. Is connected to 100Ω and 200Ω lines. Calculate maximum current at junction is .

|  |  |  |  |
| --- | --- | --- | --- |
| A | 17.4 A & 8.7 A | B | 5A & 10A |
| C | 10A & 20A | D | 30A & 50A |
| Answer | |  |  |

Ref 211.

Maximum reach and maximum reach angle are found in

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Distance relay |
| Answer | |  |  |

Ref212

The operation of distance relay is based on

|  |  |  |  |
| --- | --- | --- | --- |
| A | Based on impedance | B | Based on current |
| C | Based on frequency | D | Based on power |
| Answer | |  |  |

Ref213

The characteristics curve of distance relay is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Concentric circles | B | Parabola |
| C | Straight line | D | Hyperbola |
| Answer | |  |  |

Ref214.

Zone protection of distance relay is based on

|  |  |  |  |
| --- | --- | --- | --- |
| A | Zoning in accordance with voltage | B | Zoning in accordance with current |
| C | Zoning in accordance with power | D | Zoning in accordance with impedance |
| Answer | |  |  |

Ref215.

Operating & restraining voltage and current are utilized in

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Thermal over load relay |
| Answer | |  |  |

Ref216

Power line can be effectively protected by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Distance relay |
| Answer | |  |  |

Ref217

Explain the operation of distance relay is based on .

|  |  |  |  |
| --- | --- | --- | --- |
| A | Based on impedance | B | Based on current |
| C | Based on frequency | D | Based on power |
| Answer | |  |  |

Ref218.

The shape of characteristics of over current relay is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Straight line | B | Circle |
| C | Curve | D | Pulse |
| Answer | |  |  |

Ref219.

Directional relay is also called

|  |  |  |  |
| --- | --- | --- | --- |
| A | Distance relay | B | Reverse power relay |
| C | Differential relay | D | Over current relay |
| Answer | |  |  |

Ref220

Earthing transformer is utilized at

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star connected winding side | B | Delta connected winding side |
| C | Zigzag connected winding side | D | None of above |
| Answer | |  |  |

Ref231

The suitable winding method for earthing transformer is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star/ Delta | B | Delta/Star |
| C | Delta/Delta | D | Zig Zag |
| Answer | |  |  |

Ref232

Reactors are utilized at busbar to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Provide inductance | B | Limit short circuit current |
| C | Increase disruptive critical voltage | D | Earth leakage current flow path |
| Answer | |  |  |

Ref233

The best way to increase the level of disruptive critical voltage to reduce the possibility of corona is

|  |  |  |  |
| --- | --- | --- | --- |
| A | To increase conductor diameter | B | To use longer cross arm |
| C | To use hollow conductor that increase the conductor diameter | D | To increase insulation resistance |
| Answer | |  |  |

Ref234

Switching voltage velocity is

|  |  |  |  |
| --- | --- | --- | --- |
| A | V = 1/ √LC | B | V = √LC |
| C | V = L/C | D | V = 1/LC |
| Answer | |  |  |

Ref235

Which equipment is used in static VAR compensation system?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Magnetic contactor | B | Thermal switch |
| C | Hall effect switch | D | Silicon Controlled Rectifier |
| Answer | |  |  |

Ref236

Poor power will cause

|  |  |  |  |
| --- | --- | --- | --- |
| A | Unnecessary over current flow in line | B | Smoother voltage |
| C | Ripple reduction | D | Wrong phase sequence |
| Answer | |  |  |

Ref237

Lighting strike near power transformer is protected by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

Ref238

Lightning protection for power line is provided by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

Ref239

Power surge protection is provided by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

###### G037+G038+G039 Online Test

Ref259

Which one can most adversely damage the insulation in short time?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Chemical | B | Harmonic |
| C | Lightning strike/ travelling surge voltage | D | Under frequency |
| Answer | |  |  |

Ref264

Poor power factor can cause

|  |  |  |  |
| --- | --- | --- | --- |
| A | Downgrade line efficiency | B | Poor voltage regulation |
| C | Increased system losses | D | All above |
| Answer | |  |  |

Ref289

Transformer cooling , air breaking , polarity testing and interrupt control circuits are included

|  |  |  |  |
| --- | --- | --- | --- |
| A | Auxiliary system | B | Main system |
| C | Back up system | D | Emergency stop system |
| Answer | |  |  |

Ref294

In given equation , Et x Ef

P = ------------- δ-- stands for Xs

|  |  |  |  |
| --- | --- | --- | --- |
| A | PF Angle | B | Coupling angle |
| C | Load angle | D | Line deviation angle |
| Answer | |  |  |

Ref299

Reliability of the system can be achieved when

|  |  |  |  |
| --- | --- | --- | --- |
| A | Voltage must be constant | B | Frequency must be constant |
| C | Phase sequence must be constant | D | All above |
| Answer | |  |  |

Ref304

Lightning strike causes

|  |  |  |  |
| --- | --- | --- | --- |
| A | Electrical interference | B | Voltage surge |
| C | System insulation deteoriation | D | All above |
| Answer | |  |  |

Ref309

To reduce the harmonic interference

|  |  |  |  |
| --- | --- | --- | --- |
| A | Use of twisted pair wire | B | Provide shielding |
| C | Grounding for control circuit in distribution system | D | All above |
| Answer | |  |  |

Ref314

Spark gap and surge suppressor are installed.

|  |  |  |  |
| --- | --- | --- | --- |
| A | Before the power entry to building | B | At the terminal of equipments |
| C | Across the distribution switch | D | All above |
| Answer | |  |  |

Ref319

The measurement , analysis and improvement of the bus voltage to maintain a sinusoidal waveform at rated voltage and frequency is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Voltage regulation | B | System reliability |
| C | Power quality | D | Power stability |
| Answer | |  |  |

Ref324

The formula is to calculate

I1 + I2+ I3+-------------

I =

N – 1

|  |  |  |  |
| --- | --- | --- | --- |
| A | I rms | B | I avg |
| C | I max | D |  |
| Answer | |  |  |

Ref329

### Iabc (h) = Y (h) x

Vabc (h)

+ I f (h) is the model to calculate

|  |  |  |  |
| --- | --- | --- | --- |
| A | Harmonic currents in a, b, c lines | B | Steady state currents in a, b, c lines |
| C | Instantaneous currents in a, b, c lines | D | Average currents in a, b, c lines |
| Answer | |  |  |

Ref334

A 30 MVA , 15 KV , 60HZ AC generator has a synchronous reactance of 1.2 pu and AC resistance of

0.02 pu. Calculate the total full load copper losses.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30KW | B | 60KW |
| C | 120KW | D | 600KW |
| Answer | |  |  |

Ref328

Passive- Passive , Active- Active and Passive-Active filters are classifications of

|  |  |  |  |
| --- | --- | --- | --- |
| A | Passive filter | B | Active filter |
| C | Hybrid filter | D | Power factor |
| Answer | |  |  |

###### I006+ H012 Online Test

Ref502

Wheatstone bridge is basic signal conditioner.

|  |  |  |  |
| --- | --- | --- | --- |
| A | Active | B | Passive |
| C |  | D |  |
| Answer | |  |  |

Ref503



This circuit is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Low pass filter | B | High pass filter |
| C | Band pass filter | D | Band stop filter |
| Answer | |  |  |

Ref506

The equation F1/A1 = F2/A2 belongs to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Boyle’s law | B | Charle’s law |
| C | Bernaulli’s law | D | Pascal’s law |
| Answer | |  |  |

Ref509

1. bits ripple counter has a modulus of outputs.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4 | B | 8 |
| C | 12 | D | 16 |
| Answer | |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| A | TTL | B | DTL |
| C | HTL | D | ECL |
| Answer | |  |  |

Ref515





|  |  |  |  |
| --- | --- | --- | --- |
| A | Z = A B C | B | Z = A+B +C |
| C | Z= A B C | D |  |
| Answer | |  |  |

Ref518

1101- 0110 =

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0111 | B | 0101 |
| C | 0110 | D | 0100 |
| Answer | |  |  |

Ref521

In SR flipflop, when the signal presence at S, not presence at R, Q is 1 and Q is 0 result

|  |  |  |  |
| --- | --- | --- | --- |
| A | No change | B | Set |
| C | Reset | D | Invalid |
| Answer | |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| A | Divider | B | Multiplier |
| C | Multiplexer | D | De-multiplexer |
| Answer | |  |  |

Ref527

What is the output voltage of A 10 bit ADC with 10 V reference . If input is (a) 0010110101 (b) 20FH

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1.762528 V, 5.14 V | B | 3.47288 V, 10.283 V |
| C | 5.22789 V, 20.261 V | D |  |
| Answer | |  |  |

Ref530

The input to a 10 bit ADC with a 2.5V reference is 1.45V. What is the HEX output?. Suppose that the output was found to be 1B4H. What is the output voltage?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Vin = 1.06445 V | B | Vin = 1.12282 V |
| C | Vin = 2.22412 V | D | Vin = 3.22162 V |
| Answer | |  |  |

Ref533

Dual slope ADC R = 100KΩ, C= 0.01µF Vref= 1V. Conversion time = 10 ms. Find the conversion time for 6.8 V input

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6.8 ms | B | 6.8 sec |
| C | 6.8µS | D | 68 ms |
| Answer | |  |  |

Ref536 Thermistor is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Temperature dependent resistor | B | Resistance temperature detector |
| C |  | D |  |
| Answer | |  |  |

Ref539 Proportional mode

|  |  |  |  |
| --- | --- | --- | --- |
| A | Stabilizes the process | B | Resets the process |
| C | Compensates time lag in control loop | D |  |
| Answer | |  |  |

E029+G012 Online Test Ref44

A simple machine in figure, the load is 450N, effort is 60N. the load and effort movement is 100mm and 1200 mm respectively. The mechanical advantage and velocity ratio are



X = 1200 mm, Y = 100 mm

|  |  |  |  |
| --- | --- | --- | --- |
| A | 18, 6 | B | 20,10 |
| C | 10,12 | D | 9,12 |
| Answer | |  |  |

Ref46

A steel specimen 10 mm diameter rupture under 37KN , the ultimate strength is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 800N/mm2 | B | 1200N/mm2 |
| C | 471N/mm2 | D | 1024N/mm2 |
| Answer | |  |  |

Ref49

600 mL sulphuric acid has a mass of 1.11 Kg, The density and relative density are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3000 kg/ m3 , 3 | B | 4000 kg/ m3 , 4 |
| C | 5000 kg/ m3 , 1 | D | 1850 kg/ m3 , 1.85 |
| Answer | |  |  |

Ref51

The total stopping distance of a car for total time taken from the point where the driver sights the danger if the driver’s reaction time before applying the brake is 0.9 sec with initial velocity 60 km/ hr and retardation due to brake is 7.5 m/ s2

|  |  |  |  |
| --- | --- | --- | --- |
| A | 60m | B | 33.5m |
| C | 100m | D | 150m |
| Answer | |  |  |

Ref53

A flywheel makes 200 revolutions. Torque is 35 N-m. The work is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 44000J | B | 22000J |
| C | 11000J | D | 66000J |
| Answer | |  |  |

Ref55

The acceleration of a body of 25 kg mass due entirely to it’s own weight is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 9.81 m /s2 | B | 16 m /s2 |
| C | 29 m /s2 | D | 4 m /s2 |
| Answer | |  |  |

Ref56

a = 35 degree



The acceleration of a given mass sliding down the plane is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 20 m /s2 | B | 2 m /s2 |
| C | 5.63m /s2 | D | 3 m /s2 |
| Answer | |  |  |

Ref 58

A = 5 kg B = 2 kg



The acceleration of bodies A and B and the force tension in the cord are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1.51m /s2, 22.6N | B | 0.75 m /s2, 11.6N |
| C | 3m /s2, 30N | D | 4m /s2, 40N |
| Answer | |  |  |

Ref59

Determine the net torque required to give a flywheel with a mass moment of inertia 0.8kg-m2 , angular acceleration is 18 rad/s2 .

|  |  |  |  |
| --- | --- | --- | --- |
| A | 24 N-m | B | 12 N-m |
| C | 36 N-m | D | 54 N-m |
| Answer | |  |  |

Ref61

Determine the centrifugal force acting on a passenger of mass 75 kg in a car travelling at 90 km/hr around a curve of 100 m radius.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 900 N | B | 600 N |
| C | 468.75 N | D | 234 N |
| Answer | |  |  |

Ref63

Calculate the kinetic energy of mass moment of inertia of 61 kg-m2rotating at 250 rpm.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 10452 J | C | 20904 J |
| C | 30000 J | D | 40000 J |
| Answer | |  |  |

Ref65

When a golf ball having a mass 50 g is struck by club. The ball and club are in intact for 0.001 sec immediately after the impact. The ball travels at 45 m/s. Determine the average force of collision.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6000 N | C | 3000 N |
| C | 1500 N | D | 7500 N |
| Answer | |  |  |

Ref170

A motor consumes 10 KW power when connected to 259V. Calculate the current

|  |  |  |  |
| --- | --- | --- | --- |
| A | 46A | B | 20A |
| C | 80A | D | 10A |
| Answer | |  |  |

Ref171

A resistance 10Ω is connected to 90V DC supply. Find the current and power

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4.5A, 405W | B | 9A, 405W |
| C | 4.5A, 810W | D | 9A, 810W |
| Answer | |  |  |

Ref172

A power station supplying 100 W at 10 KV . Find (a) current (b) If line impedance is 0.1Ω/ km , for 200 Km line, find line drop.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 100A, 2000V | B | 10A, 200V |
| C | 100A, 200V | D | 10A, 2000V |
| Answer | |  |  |

###### E046 Online Test

Ref 69

A living room has the floor dimension and height of 3.5 m x 4.2 m. A height of 2.4 m (a) What does the air in the room weigh when the air pressure is 1 atm? (b) What is the magnitude of the atmosphere downward force on the top of your head which we take to have an area of 0.04m2

|  |  |  |  |
| --- | --- | --- | --- |
| A | 420 N, 4 x 103 N | B | 840 N, 8 x 103 N |
| C | 210 N, 2 x 103 N | D | 1640 N, 6 x 103 N |
| Answer | |  |  |

Ref72

A copper slug whose mass mc is 75 g is heated in a laboratory oven to a temperature T of 312 deg C

. The slug is then dropped into a glass beaker containing mass mw = 220 g of water. The heat capacity Cb of the beaker is 450 cal / deg K . The initial temperature T i of the water and the beaker is 12 deg

c. Assuming that the slug and the water does not vaporize. Find the final temperature Tf of the system at thermal equilibrium.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 60 Deg C | B | 30 Deg C |
| C | 90 Deg C | D | 15 Deg c |
| Answer | |  |  |

Ref75

The molar mass M of oxygen is 0.072 Kg/ mol (a) What is the average speed V avg of oxygen gas molecules at T = 300 deg K. What is the most probable Vp at 300 deg K.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 745 m/ s | B | 1500 m/s |
| C | 600 m/s | D | 300 m/s |
| Answer | |  |  |

Ref78

1. The block whose mass “m” is 680 g is fastened to spring whose spring constant K is 65 N/m . the block is pulled a distance X= 11 cm from it’s equilibrium position at X = 0 on a fractionless surface and released from rest at t= 0.
   1. What are angular frequency, the frequency and period of resulting motion?
   2. What is the amplitude of oscillation?
   3. What is the maximum speed Vm of the oscillating block and where is the block when it has this period?
   4. What is magnitude of oscillation?
   5. What is the phase constant φ for the motion?
   6. What is the displacement function?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 9.78 rad/s, 1.6 HZ, 0.64 sec, 11 cm,  1.1 m/s, 11 m/ s2 , 0.11 cos 9.78 t | B | 18 rad/s, 3 HZ, 1 sec, 11 cm, 3 m/s,  22 m/ s2 , 0.7 cos 18 t |
| C | 36 rad/s, 5 HZ, 7 sec, 40 cm, 10 m/s, 30 m/ s2 , 10cos 7.98 t | D |  |
| Answer | |  |  |

Ref81

The following equations give the position X(t) of a particle in four situation. (a) (a)X = 8t – 2 (b) X = -9t2-2 (c) x = 1/ 2t2 (d) x = -3

In which situation, the velocity V is constant

|  |  |  |  |
| --- | --- | --- | --- |
| A | a | B | b |
| C | c | D | d |
| Answer | |  |  |

Ref84

The magnitude of a is 3 Km due East and b = 5 Km North of East. c = 1 Km due West. What is the greatest distance at third displacement?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4.8 km | B | 9.6 km |
| C | 112 km | D | 20 km |
| Answer | |  |  |

Ref87

a = 4 I + 5 j + 7k b = 3 I + j + 4 k Find a X b

|  |  |  |  |
| --- | --- | --- | --- |
| A | -2i+8j-5k | B | 2i-8j+5k |
| C | 2i+8j+5k | D |  |
| Answer | |  |  |

Ref90

The circus performer is riding a bicycle in the loop with radius R = 2.7 m. What is the least speed at the top of the loop and the force. Mass = 20 kg.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 m/s | B | 2 m/s |
| C | 5.1 m/s | D | 10 m/s |
| Answer | |  |  |

Ref93

A locomotive is moving at 0.25 m/ s2 acceleration and it is weighed 1.2 x 106 N. What is kinetic energy? It moves for 3.2 Km.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2 MJ | B | 1MJ |
| C | 3MJ | D | 4MJ |
| Answer | |  |  |

Ref96

Three particles of masses m 1 = 1,2 Kg, m2 = 2.5 Kg and m3 = 3.4 kg form an equilateral triangle of edge length a = 140 cm. Where is the centre of mass of this system?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 116 cm | B | 29 cm |
| C | 14.5 cm | D | 58 cm |
| Answer | |  |  |

Ref99

A grind stone rotates at a constant angular acceleration α = 0.85 rad/ s2 . At time t = 0 , it has angular velocity w0 = -4.6 rad/ s and a reference line on it is horizontal at the angular position w = 0

1. At what time after t= 0 is the reference line at angular position Ѳ = 5 rev
2. Describe the rotation between t= 0 and t = 32 sec.
3. At what time t, does the grind stone momentarily stop?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 16 sec, 0.1 rad/s2 , 13 sec | B | 32 sec, -0.35 rad/s2 , 13 sec |
| C | 48 sec, -0.7 rad/s2 , 20 sec | D | 16 sec, 0rad/s2 , 13 sec |
| Answer | |  |  |

Ref100

A coach roach rides the rim of a rotating merry go around. If the angular speed is constant, does the coach roach have (a) Radial acceleration ? (b) Tangential acceleration ? What angle Ѳ p should the arc subtend so that a 15. 4 kg at the point “P”.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 50 Deg | B | 30 Deg |
| C | 111 Deg | D | 200 Deg |
| Answer | |  |  |

Ref101

Figure shows a uniform disk with mass M = 2.5 kg, R = 20 cm. A block of m = 1.2 kg hangs from a massless cord. Find acceleration of falling block.

T

M M

m

|  |  |  |  |
| --- | --- | --- | --- |
| A | 9.3 m / s2 | B | 4 m / s2 |
| C | 18 m / s2 | D | 3.8 m / s2 |
| Answer | |  |  |

Ref89

m= 5 kg α= 30 deg

Cord A cord pulls on a box up along a frictionless plane

. inclined at α = 30 degree. The box has mass m = 5 kg

T

m

α

The speed from the cord has magnitude T = 30N. What is

acceleration of the box?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.1 m/ s2 | B | 1 m/ s2 |
| C | 0.01 m/ s2 | D | 2 m/ s2 |
| Answer | |  |  |

Ref81

The following equations give the position X(t) of a particle in four situation. (a) (a)X = 8t – 2 (b) X = -9t2-2 (c) x = 1/ 2t2 (d) x = -3

In which situation, the velocity V is constant

|  |  |  |  |
| --- | --- | --- | --- |
| A | a | B | b |
| C | c | D | d |
| Answer | |  |  |

###### E050 Online Test

Ref108

Axis of symmetry , X axis crossing point and Y axis crossing point of the given graph are



Y = 2 X2 -12X + 3



|  |  |  |  |
| --- | --- | --- | --- |
| A | (3,-5)(0,3)(5.5,0.5) | B | (5,-3)(3,0) (0.5,5.5) |
| C | (0,0)(3,3)(5,0.5) | D | (3,-5) (1,2) (5.5,0.5) |
| Answer | |  |  |

Ref109

The answer of

 2

 Sin 3X d X

is

|  |  |  |  |
| --- | --- | --- | --- |
| A | X/ 3 – Sin 6X +C | B | X 2 –Sin 3X +C |
| C | X/2 - 1/ 12 Sin 6X + C | D | X – 12 Sin 6X + C |
| Answer | |  |  |

Ref110

The answer of the following

ʃ Sin 3 X Cos 7X dx is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1/20 cos 20X + 1/ 8 sin 4X | B | 1/10 cos 10X - 1 /8 sin 4x |
| C | cos 10X + sin X | D | -1/20 cos 10X + 1/8 cos 4X |
| Answer | |  |  |

Ref114

If Log3 81 = X , then X is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 | B | 2 |
| C | 4 | D | 1/2 |
| Answer | |  |  |

Ref115

If an amplifier has an input power at 1.7mw output 5.8 watts. Calculate power gain.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 35.3 | B | 70 |
| C | 17 | D | 25 |
| Answer | |  |  |

Ref116

Log 10 K / (K –X) = t Find X

|  |  |  |  |
| --- | --- | --- | --- |
| A | K x 10 t  X = ----------------  10t - 1 | B | K ( 10 t - 1) X = ----------------  10t |
| C | X = K x 10t | D | K  X =  10t |
| Answer | |  |  |

Find period and angular velocity of 30MHz are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.033 µs , 188.4 x 106 rad/s | B | 0.33 µs , 188 x 103 rad/s |
| C | 0.3 ms , 188.4 x 103 rad/s | D | 0.3s , 188.4rad/s |
| Answer | |  |  |

Ref121

Cos (α – β) is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Cos α Cosβ+ Sinα Sinβ | B | Cos α Sinβ+ Sinα Cosβ |
| C | Sinα Sinβ -Cos α Cosβ | D | Sinα Cosβ + Cos α Sinβ |
| Answer | |  |  |

Ref122 Sin (A+B)

- is equal to

Cos (A-B)

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1+tanA tanB  tanA+tanB | B | tanA+ tanB  1+tanAtanB |
| C | tanA- tanB  1-tanAtanB | D | tana- tanB  1+tanAtanB |
| Answer | |  |  |

If a body undergoes a displacement in 12 km due north followed by a displacement of 5 km due east. Find the displacement and direction.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 13, 22.6 deg | B | 17, 0 deg |
| C | 7, 90 deg | D | 13, 90 deg |
| Answer | |  |  |

Ref128

d cos 3 Ɵ

- is equal to

d Ɵ

|  |  |  |  |
| --- | --- | --- | --- |
| A | -sin3 Ɵ | B | -3sin3 Ɵ |
| C | 3sinƟ | D | Cos3nƟ |
| Answer | |  |  |

Ref131

Y = (X+1) 2 (X+3)3 , dy/ dx is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3(X+1) 2 (X+3)2+2 (X+3) 3 (X+1) | B | (X+1) (X+3)2+ (X+3) 2 (X+1)3 |
| C | 3(X+1) 2 (X+3)3+2 (X+3) (X+1)2 | D | 3(X+2) (X+1)+3 (X+3) (X+1)2 |
| Answer | |  |  |

###### G012 Online Test

Ref169

The voltage equation for synchronous motor is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ef = V + I Zs | B | Ef = V – I Zs |
| C | Ef = V x I Zs | D | Ef = V / I Zs |
| Answer | |  |  |

Ref170

A motor consumes 10 KW power when connected to 259V. Calculate the current

|  |  |  |  |
| --- | --- | --- | --- |
| A | 46A | B | 20A |
| C | 80A | D | 10A |
| Answer | |  |  |

Ref171

A resistance 10Ω is connected to 90V DC supply. Find the current and power

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4.5A, 405W | B | 9A, 405W |
| C | 4.5A, 810W | D | 9A, 810W |
| Answer | |  |  |

Ref172

A power station supplying 100 W at 10 KV . Find (a) current (b) If line impedance is 0.1Ω/ km , for 200 Km line, find line drop.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 100A, 2000V | B | 10A, 200V |
| C | 100A, 200V | D | 10A, 2000V |
| Answer | |  |  |

Ref173

If V rms is 100V, V max is

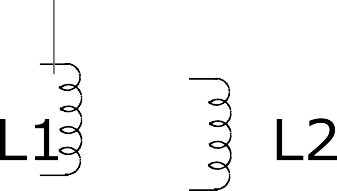
|  |  |  |  |
| --- | --- | --- | --- |
| A | 70.7V | B | 141.42V |
| C | 200V | D | 100V |
| Answer | |  |  |

Ref174



|  |  |  |  |
| --- | --- | --- | --- |
| A | L total = L 1 + L2 | B | L total = L 1 - L2 |
| C | L total = 1/ (L 1 + L2 ) | D | L total = L1 L 2 / (L 1 + L2 ) |
| Answer | |  |  |

Ref175



|  |  |  |  |
| --- | --- | --- | --- |
| A | L total = L 1 + L2 | B | L total = L1 L 2 / (L 1 + L2 ) |
| C | L total = 1/ (L 1 + L2 ) | D | L total = L 1 - L2 |
| Answer | |  |  |

Ref176

|  |  |  |  |
| --- | --- | --- | --- |
| A | C total = C 1 + C2 | B | C total = 1/ (C 1 + C2 ) |
| C | C total = C1 C2 / (C 1 + C2 ) | D | L total = C 1 - C2 |
| Answer | |  |  |

Ref177

X l is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Xl = L | B | Xl = 2 Π fL |
| C | Xl = 1/ 2 Π fL | D | Xl = 1/ 2fL |
| Answer | |  |  |

Ref178

Xc is equal to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Xc = C | B | Xc = 2 Π fC |
| C | Xlc= 1/ 2 Π fC | D | Xc = 1/ 2fC |
| Answer | |  |  |

Ref179

|  |  |  |  |
| --- | --- | --- | --- |
| A | C total = C 1 + C2 | B | C total = 1/ (C 1 + C2 ) |
| C | C total = C1 C2 / (C 1 + C2 ) | D | L total = C 1 - C2 |
| Answer | |  |  |

Ref180

A welder needs to have 180 amp output and is to be connected to a 240V , 20A supply . What turn ratio is needed ? What voltage would be supplied to the electrode at output?

|  |  |  |  |
| --- | --- | --- | --- |
| A | 9, 26.6V | B | 18, 26.6V |
| C | 9, 13.3V | D | 18, 13.3V |
| Answer | |  |  |

Ref181

For supply voltage 240V, 4 KW load , calculate the current for φ = 60 degree

|  |  |  |  |
| --- | --- | --- | --- |
| A | 66.6A | B | 13A |
| C | 100A | D | 33.3A |
| Answer | |  |  |

Ref182

The following connection is



|  |  |  |  |
| --- | --- | --- | --- |
| A | Series DC Machine | B | Shunt DC Machine |
| C | Long Shunt Compound DC Machine | D | Short Shunt Compound DC Machine |
| Answer | |  |  |

Ref183

Left hand rule is applied for

|  |  |  |  |
| --- | --- | --- | --- |
| A | DC Generator | B | DC Motor |
| C |  |  |  |
| Answer | |  |  |

Ref184

Which one is a reduced voltage starter

|  |  |  |  |
| --- | --- | --- | --- |
| A | Direct Online Starter | B | Star delta starter |
| C | Forward reverse starter | D | Dynamic braking |
| Answer | |  |  |

Ref45

The weight of a tabular steel column 120 mm outside diameter and 100 mm inside diameter and 3 m height is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1000N | B | 500N |
| C | 400N | D | 793.3N |
| Answer | |  |  |

Ref46

A steel specimen 10 mm diameter rupture under 37KN , the ultimate strength is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 800N/mm2 | B | 1200N/mm2 |
| C | 471N/mm2 | D | 1024N/mm2 |
| Answer | |  |  |

Ref47



Diameter = 10 mm2 Force (F) = 37 KN The stress is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1200N/mm2 | B | 471N/mm2 |
| C | 1000N/mm2 | D | 200N/mm2 |
| Answer | |  |  |

###### G015+G046 Online Test

Ref189

Determine the maximum deviation allowed on 11KN pin insulator for a 7/3.50 hard drawn copper conductor with a span of 150 m .The ultimate strength of he conductor is 26600N. The wind load is to be taken as 500Pa and the diameter of conductor is 10.5mm. Tension in conductor must not be more than 50% of ultimate strength. Transverse loading on pin insulator is not to exceed 40% of ultimate strength.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 5 deg | B | 30 deg |
| C | 20 deg | D | 15.6 deg |
| Answer | |  |  |

Ref194

Which system is least reliable?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Radial feeder | B | Parallel feeder |
| C | Ring feeder | D |  |
| Answer | |  |  |

Ref198

In which of the methods, the booster transformer can be utilized?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Controlling the sending end voltage | B | Controlling the receiving end voltage |
| C | Controlling the current in line that varies Powerfactor | D |  |
| Answer | |  |  |

Ref203

If a relay always operates at pre-determined current, voltage and time setting, it is

|  |  |  |  |
| --- | --- | --- | --- |
| A | reliable | B | economical |
| C | efficient | D | operational |
| Answer | |  |  |

Ref208

Can over current & earth fault protections be combined?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Not sure | B | No |
| C | Yes | D | Not applicable |
| Answer | |  |  |

Ref222

Buchholz relay should be utilized for

|  |  |  |  |
| --- | --- | --- | --- |
| A | Transformer protection | B | Motor protection |
| C | Generator protection | D | Power line protection |
| Answer | |  |  |

Ref227

If there are a lot of power flows out from the main line, the most suitable type of protection relay is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Distance relay | D | Reverse power relay |
| Answer | |  |  |

Ref241

A generator operating at 50HZ delivers 1 pu power to infinite busbar through network in which resistance may be neglected. A fault occurs which reduces the machine power transferable to 0.4pu whereas before the fault. This power was 1.8 pu and after the clearance of the fault , this power was

1.8 pu and after the clearance of the fault, it is 1.3 pu. By use of equal area criterion, determine the critical clearing angle.

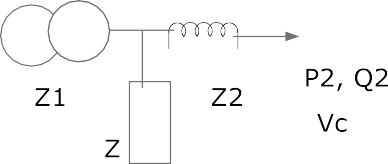
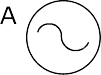
|  |  |  |  |
| --- | --- | --- | --- |
| A | 58.9 deg | B | 126 deg |
| C | 45 deg | D | 90 deg |
| Answer | |  |  |

Ref245

Fuel cell is a

|  |  |  |  |
| --- | --- | --- | --- |
| A | Electromechanical conversion device | B | Electromagnetic device |
| C | Electrohydraulic device | D | Electrochemical conversion device |
| Answer | |  |  |

Ref246



PF = 0.8 Za = j 1.5, Z1= j 0.25, Z2= j 0.5, P2= 0.5, Q2= 0.2 Vc = 1pu

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 pu | B | 2 pu |
| C | 1.29 pu | D | 5 pu |
| Answer | |  |  |

Ref251

The over current relays are allocated at they provide the protection for .

|  |  |  |  |
| --- | --- | --- | --- |
| A | At the start of line, generator | B | At the end of line, load |
| C | Line section, sections of line | D |  |
| Answer | |  |  |

Ref256

10 KV line with 700Ω. Is connected to 100Ω and 200Ω lines. Calculate maximum current at junction is .

|  |  |  |  |
| --- | --- | --- | --- |
| A | 17.4 A & 8.7 A | B | 5A & 10A |
| C | 10A & 20A | D | 30A & 50A |
| Answer | |  |  |

Ref 211.

Maximum reach and maximum reach angle are found in

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Distance relay |
| Answer | |  |  |

Ref212

The operation of distance relay is based on

|  |  |  |  |
| --- | --- | --- | --- |
| A | Based on impedance | B | Based on current |
| C | Based on frequency | D | Based on power |
| Answer | |  |  |

Ref213

The characteristics curve of distance relay is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Concentric circles | B | Parabola |
| C | Straight line | D | Hyperbola |
| Answer | |  |  |

Ref214.

Zone protection of distance relay is based on

|  |  |  |  |
| --- | --- | --- | --- |
| A | Zoning in accordance with voltage | B | Zoning in accordance with current |
| C | Zoning in accordance with power | D | Zoning in accordance with impedance |
| Answer | |  |  |

Ref215.

Operating & restraining voltage and current are utilized in

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Thermal over load relay |
| Answer | |  |  |

Ref216

Power line can be effectively protected by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Distance relay |
| Answer | |  |  |

Ref217

Explain the operation of distance relay is based on .

|  |  |  |  |
| --- | --- | --- | --- |
| A | Based on impedance | B | Based on current |
| C | Based on frequency | D | Based on power |
| Answer | |  |  |

Ref218.

The shape of characteristics of over current relay is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Straight line | B | Circle |
| C | Curve | D | Pulse |
| Answer | |  |  |

Ref219.

Directional relay is also called

|  |  |  |  |
| --- | --- | --- | --- |
| A | Distance relay | B | Reverse power relay |
| C | Differential relay | D | Over current relay |
| Answer | |  |  |

Ref220

Earthing transformer is utilized at

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star connected winding side | B | Delta connected winding side |
| C | Zigzag connected winding side | D | None of above |
| Answer | |  |  |

Ref231

The suitable winding method for earthing transformer is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star/ Delta | B | Delta/Star |
| C | Delta/Delta | D | Zig Zag |
| Answer | |  |  |

Ref232

Reactors are utilized at busbar to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Provide inductance | B | Limit short circuit current |
| C | Increase disruptive critical voltage | D | Earth leakage current flow path |
| Answer | |  |  |

Ref233

The best way to increase the level of disruptive critical voltage to reduce the possibility of corona is

|  |  |  |  |
| --- | --- | --- | --- |
| A | To increase conductor diameter | B | To use longer cross arm |
| C | To use hollow conductor that increase the conductor diameter | D | To increase insulation resistance |
| Answer | |  |  |

Ref234

Switching voltage velocity is

|  |  |  |  |
| --- | --- | --- | --- |
| A | V = 1/ √LC | B | V = √LC |
| C | V = L/C | D | V = 1/LC |
| Answer | |  |  |

Ref235

Which equipment is used in static VAR compensation system?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Magnetic contactor | B | Thermal switch |
| C | Hall effect switch | D | Silicon Controlled Rectifier |
| Answer | |  |  |

Ref236

Poor power will cause

|  |  |  |  |
| --- | --- | --- | --- |
| A | Unnecessary over current flow in line | B | Smoother voltage |
| C | Ripple reduction | D | Wrong phase sequence |
| Answer | |  |  |

Ref237

Lighting strike near power transformer is protected by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

Ref238

Lightning protection for power line is provided by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

Ref239

Power surge protection is provided by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

###### G015+G046 Online Test

Ref190

A single core 66KV cable has a conductor of 2 cm & sheathed inside diameter 5.3 cm. Find the maximum stress if two inter-sheaths are used. Find the best position E 1 and E2

|  |  |  |  |
| --- | --- | --- | --- |
| A | E1= 23.9 KV, E2= 41.1KV | B | E1= 10 KV, E2= 20KV |
| C | E1= 5 KV, E2= 10KV | D | E1= 40 KV, E2= 60KV |
| Answer | |  |  |

Ref195

Which insulator is utilized for guy wire?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Stay insulator | B | Pin insulator |
| C | Suspension insulator | D | Dic insulator |
| Answer | |  |  |

Ref200

Which quantity is not monitored by relay?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Voltage & current | B | Frequency |
| C | Power flow direction | D | Conductor sag |
| Answer | |  |  |

Ref205

Balanced beam relay operates when

|  |  |  |  |
| --- | --- | --- | --- |
| A | Operating mechanism is greater than restraining mechanism | B | Restraining mechanism is operating greater than mechanism |
| C | Operating mechanism is equal to restraining mechanism | D | Operating mechanism & restraining mechanism become zero |
| Answer | |  |  |

Ref210

If the main winding of power transformer is connected in star at primary side, the current transformer should be

|  |  |  |  |
| --- | --- | --- | --- |
| A | Connected in delta | B | Connected in star |
| C | Connected in zigzag | D | Connected in parallel |
| Answer | |  |  |

Ref224

For given CT , % composite error, secondary voltage and rated accuracy are 10P 150 F15

|  |  |  |  |
| --- | --- | --- | --- |
| A | 10%, 150V, 15 | B | 150%, 10V, 15 |
| C | 15%, 15V, 10 | D |  |
| Answer | |  |  |

Ref229

Which quantity should be utilized for operating coil

|  |  |  |  |
| --- | --- | --- | --- |
| A | Voltage | B | Current |
| C | Power | D | Power factor |
| Answer | |  |  |

Ref243

Static VAR compensation system is utilized to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Control power | B | Control current |
| C | Control power factor | D | Provide protection |
| Answer | |  |  |

Ref248

Can IP based system be utilized in active & reactive power flow in power system?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Not applicable | B | No |
| C | Yes | D |  |
| Answer | |  |  |

Ref253

Corona forms when the voltage of a conductor disruptive critical voltage.

|  |  |  |  |
| --- | --- | --- | --- |
| A | Is lower than | B | passes |
| C | equal to | D |  |
| Answer | |  |  |

Ref 211.

Maximum reach and maximum reach angle are found in

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Distance relay |
| Answer | |  |  |

Ref212

The operation of distance relay is based on

|  |  |  |  |
| --- | --- | --- | --- |
| A | Based on impedance | B | Based on current |
| C | Based on frequency | D | Based on power |
| Answer | |  |  |

Ref213

The characteristics curve of distance relay is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Concentric circles | B | Parabola |
| C | Straight line | D | Hyperbola |
| Answer | |  |  |

Ref214.

Zone protection of distance relay is based on

|  |  |  |  |
| --- | --- | --- | --- |
| A | Zoning in accordance with voltage | B | Zoning in accordance with current |
| C | Zoning in accordance with power | D | Zoning in accordance with impedance |
| Answer | |  |  |

Ref215.

Operating & restraining voltage and current are utilized in

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Thermal over load relay |
| Answer | |  |  |

Ref216

Power line can be effectively protected by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Over current relay | B | Differential relay |
| C | Directional relay | D | Distance relay |
| Answer | |  |  |

Ref217

Explain the operation of distance relay is based on .

|  |  |  |  |
| --- | --- | --- | --- |
| A | Based on impedance | B | Based on current |
| C | Based on frequency | D | Based on power |
| Answer | |  |  |

Ref218.

The shape of characteristics of over current relay is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Straight line | B | Circle |
| C | Curve | D | Pulse |
| Answer | |  |  |

Ref219.

Directional relay is also called

|  |  |  |  |
| --- | --- | --- | --- |
| A | Distance relay | B | Reverse power relay |
| C | Differential relay | D | Over current relay |
| Answer | |  |  |

Ref220

Earthing transformer is utilized at

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star connected winding side | B | Delta connected winding side |
| C | Zigzag connected winding side | D | None of above |
| Answer | |  |  |

Ref231

The suitable winding method for earthing transformer is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Star/ Delta | B | Delta/Star |
| C | Delta/Delta | D | Zig Zag |
| Answer | |  |  |

Ref232

Reactors are utilized at busbar to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Provide inductance | B | Limit short circuit current |
| C | Increase disruptive critical voltage | D | Earth leakage current flow path |
| Answer | |  |  |

Ref233

The best way to increase the level of disruptive critical voltage to reduce the possibility of corona is

|  |  |  |  |
| --- | --- | --- | --- |
| A | To increase conductor diameter | B | To use longer cross arm |
| C | To use hollow conductor that increase the conductor diameter | D | To increase insulation resistance |
| Answer | |  |  |

Ref234

Switching voltage velocity is

|  |  |  |  |
| --- | --- | --- | --- |
| A | V = 1/ √LC | B | V = √LC |
| C | V = L/C | D | V = 1/LC |
| Answer | |  |  |

Ref235

Which equipment is used in static VAR compensation system?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Magnetic contactor | B | Thermal switch |
| C | Hall effect switch | D | Silicon Controlled Rectifier |
| Answer | |  |  |

Ref236

Poor power will cause

|  |  |  |  |
| --- | --- | --- | --- |
| A | Unnecessary over current flow in line | B | Smoother voltage |
| C | Ripple reduction | D | Wrong phase sequence |
| Answer | |  |  |

Ref237

Lighting strike near power transformer is protected by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

Ref238

Lightning protection for power line is provided by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

Ref239

Power surge protection is provided by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Arcing horn | B | Lightning arrester |
| C | Surge absorber | D | Arcing ring |
| Answer | |  |  |

Ref189

Determine the maximum deviation allowed on 11KN pin insulator for a 7/3.50 hard drawn copper conductor with a span of 150 m .The ultimate strength of he conductor is 26600N. The wind load is to be taken as 500Pa and the diameter of conductor is 10.5mm. Tension in conductor must not be more than 50% of ultimate strength. Transverse loading on pin insulator is not to exceed 40% of ultimate strength.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 5 deg | B | 30 deg |
| C | 20 deg | D | 15.6 deg |
| Answer | |  |  |

Ref192

In above problem, if the cable is subject to 66 KV, three phase line, find the dielectric loss.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3 watt | B | 1.316 watt |
| C | 7 watt | D | 10 watt |
| Answer | |  |  |

Ref193

A 415V , 200 KVA, 50HZ , three phase load , power factor is improved from 0.75 to 0.9 lagging. Calculate the size of capacitor for delta connected capacitor bank.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 100µF | B | 200µF |
| C | 300µF | D | 150µF |
| Answer | |  |  |

Ref194

Which system is least reliable?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Radial feeder | B | Parallel feeder |
| C | Ring feeder | D |  |
| Answer | |  |  |

Ref226

For 2000/1000/500/1 current transformer 10 Ps 250 is classified as

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2.5 Ps 1000 | B | 5 Ps 500 |
| C | 2.5Ps 500 | D | 10 Ps 250 |
| Answer | |  |  |

###### G037+G038+G039 Online Test

Ref260

Which step will you do first to protect the insulation from external voltage?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Study the break down voltage | B | Provide band pass filter and band stop filter |
| C | Provide chemical leakage protection | D | Investigate the source of impact |
| Answer | | D |  |

Ref265

Harmonic distribution depends on

|  |  |  |  |
| --- | --- | --- | --- |
| A | Level of harmonic generation | B | System frequency response characteristics |
| C | Temperature rise, vibration, life time shortage, heating | D | All above |
| Answer | | D |  |

Ref290

Which protection system is not assigned to substation?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Differential protection | B | Voltage surge diverter |
| C | Distance relaying | D | Booster |
| Answer | | C |  |

Ref295

Two power systems A & B each has a regulation R1 of 0.1 pu on respective capacity base and a stiffness U of 1 pu. The capacity of system (a0 is 1500MW and B 1000MW. The systems are interconnected through a tie line and are initially at 60HZ if there is 100MW load change in the (a), calculate the change in steady state value of frequency and power transformer.

|  |  |  |  |
| --- | --- | --- | --- |
| A | -0.034 Hz, - 6 MW | B | 1 HZ, 6 MW |
| C | 0.5 HZ, 132 MW | D | -0.34 HZ, 6 MW |
| Answer | | A |  |

Ref300

Voltage variation is caused by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Voltage at the source can not be controlled | B | Voltage at secondary transformer varies |
| C | Voltage drop in transmission & distribution lines | D | All above |
| Answer | | D |  |

Ref305

Which one can not reduce harmonic?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Delta connected 3 limbs transformer | B | Five limbs transformer |
| C | Harmonic filter | D | Bigger size neutral wire |
| Answer | | A |  |

Ref310

fn= (Kp +/- 1) f 1

|  |  |  |  |
| --- | --- | --- | --- |
| A | fn is fundamental frequency and f1 is harmonic frequency | B | fn is nth harmonic frequency and f1 is fundamental frequency |
| C | fn is synchronous frequency and f1 is normal frequency | D | All above |
| Answer | | D |  |

Ref315

The main objective of earthing electrical system at the power system is

|  |  |  |  |
| --- | --- | --- | --- |
| A | To provide the equipotential bonding | B | To allow earth leakage current to flow |
| C | To protect voltage surge | D | To establish a common reference potential for power supply system |
| Answer | | D |  |

Ref320

Sudden frequency change in steady condition of voltage , current or both is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Impulsive transient | B | Oscillatory transient |
| C | Voltage imbalance | D |  |
| Answer | | A |  |

Ref325

To improve power quality

|  |  |  |  |
| --- | --- | --- | --- |
| A | Provide harmonic cancellation | B | Filtering |
| C | Use of isolation transformer and derating | D | All above |
| Answer | | D |  |

Ref330

To improve reliability

|  |  |  |  |
| --- | --- | --- | --- |
| A | Use fast interrupting switch and fault current limiter | B | Reduction of voltage sag during short circuit |
| C | Improvement of power system stability | D | All above |
| Answer | | D |  |

Ref335

A 250 MVA , 25 KV three phase steam turbine generator has a synchronous reactance 1.6pu and a transient reactance Xd ‘ of 0.23 pu , it delivers it’s rated output at a power factor of 100%. A short circuit suddenly occurs on the line close to generator station.

Calculate steady state value of short circuit current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3400A | B | 1700A |
| C | 5000A | D | 6800A |
| Answer | | D |  |

Ref336

An isolated 75MVA synchronous generator feeds it’s own load and operates initially at no load at 3000 RPM, 50HZ. A 20 MW load is suddenly applied and the steam valve to the turbine commence to open after 0.5 sec due to the time lag in the governor system. Calculate the frequency to which the generated voltage drops before the steam flow meets the new load. The stored energy for the machine is 4KW – S- per KVA of generator capacity

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30HZ | B | 49.2HZ |
| C | 56HZ | D | 70HZ |
| Answer | | B |  |

###### G037+G038+G039 Online Test

Ref261

The wave front of lightning strike wave is the tail of the wave.

|  |  |  |  |
| --- | --- | --- | --- |
| A | much longer than | B | equal to |
| C | much shorter than | D |  |
| Answer | |  |  |

Ref266

To calculate the filter

|  |  |  |  |
| --- | --- | --- | --- |
| A | Total harmonic distortion needs to be calculated | B | Harmonic frequency needs to be calculated |
| C | PF needs to be calculated | D | Power flow needs to be calculated |
| Answer | |  |  |

Ref291

Soil resistivity effectively impacts on

|  |  |  |  |
| --- | --- | --- | --- |
| A | Ground resistance | B | Surge impedance |
| C | Matching impedance | D | Step voltage |
| Answer | |  |  |

Ref296

To avoid physical damage to building and equipments due to light ing strike, which service is to be provided?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Power line earthing | B | Power stability control |
| C | Booster | D | Load sharing system |
| Answer | |  |  |

Ref301

Voltage control is provided by

|  |  |  |  |
| --- | --- | --- | --- |
| A | Tap changer | B | Booster |
| C | Synchronous motor & load PF control | D | All above |
| Answer | |  |  |

Ref306

Which is the correct formula to calculate peak lightning voltage?

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A | Surge  Peak impedance Lightning= ---------------  Voltage 2 | X | Lightning current | B | Peak Lightning voltage | = | Surge impedance X | Lightning current |
| C | Surge  Peak impedance Lightning= --------------- Voltage 3 | X | Lightning current | D |  | | | |
| Answer | | | |  |  | | | |

Ref311

Electrical shielding is provided for

|  |  |  |  |
| --- | --- | --- | --- |
| A | Metallic equipments | B | Enclosure cabinet |
| C | Structural steel in building | D | All above |
| Answer | |  |  |

Ref316

By driving the multiple earth electrodes

|  |  |  |  |
| --- | --- | --- | --- |
| A | Total earth resistance is increased | B | Total earth resistance is reduced |
| C | To maintain the total earth resistance | D |  |
| Answer | |  |  |

Ref321

Sudden frequency change in the steady state condition of voltage, current (a0 both that includes +/- polarity voltage is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Impulsive transient | B | Oscillatory transient |
| C | Voltage imbalance | D |  |
| Answer | |  |  |

Ref326

The possible impacts of power quality in transformer are

|  |  |  |  |
| --- | --- | --- | --- |
| A | Core saturation , core losses and copper losses | B | Malfunctioning of relays |
| C | Reduction of efficiency , derating , PF decreases, parallel resonance | D | All above |
| Answer | |  |  |

Ref331

Which action is to be done during before emergency?

|  |  |  |  |
| --- | --- | --- | --- |
| A | Optimal load shedding occurred to maintain essential load | B | Cut off the circuit breaker by relay reclosing |
| C | Perform efficiency improvement | D | All above |
| Answer | |  |  |

Ref336

An isolated 75MVA synchronous generator feeds it’s own load and operates initially at no load at 3000 RPM, 50HZ. A 20 MW load is suddenly applied and the steam valve to the turbine commence to open after 0.5 sec due to the time lag in the governor system. Calculate the frequency to which the generated voltage drops before the steam flow meets the new load. The stored energy for the machine is 4KW – S- per KVA of generator capacity

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30HZ | B | 49.2HZ |
| C | 56HZ | D | 70HZ |
| Answer | |  |  |

Ref337

Two units of generator maintain 66KV and 60KV line at the end of an interconnector of inductive reactance per phase of 40 ohm with negligible resistance and shunt capacitance . A load of 10 MW is to be transferred from 66KV unit to the other end. Calculate the PF of the current transmitted.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.1 | B | 0.2 |
| C | 0.3 | D | 0.4 |
| Answer | |  |  |

Ref501

provides the operation necessary to transform the sensor output into a form necessary to interface with other elements of process control lop.

|  |  |  |  |
| --- | --- | --- | --- |
| A | Analogue signal conditioning | B | Digital signal conditioning |
| C |  | D |  |
| Answer | |  |  |

Ref502

Wheatstone bridge is basic signal conditioner.

|  |  |  |  |
| --- | --- | --- | --- |
| A | Active | B | Passive |
| C |  | D |  |
| Answer | |  |  |

Ref503



This circuit is

|  |  |  |  |
| --- | --- | --- | --- |
| A | Low pass filter | B | High pass filter |
| C | Band pass filter | D | Band stop filter |
| Answer | |  |  |

Ref504



V1=5V, R1=R2=34KΩ, ,R3=R4=R5=10 KΩ,



|  |  |  |  |
| --- | --- | --- | --- |
| A | Vout= 1.7 Vin + 5 | B | Vout = 3.4 Vin |
| C | Vout = 1.7 Vin | D | Vout= 3.4 Vin +5 |
| Answer | |  |  |

Ref505

Vout = ( 1 + R2/R1) Vin is an equation for

|  |  |  |  |
| --- | --- | --- | --- |
| A | Non inverting amplifier | B | Inverting amplifier |
| C | Emitter follower | D | Summing amplifier |
| Answer | |  |  |

Ref506

The equation F1/A1 = F2/A2 belongs to

|  |  |  |  |
| --- | --- | --- | --- |
| A | Boyle’s law | B | Charle’s law |
| C | Bernaulli’s law | D | Pascal’s law |
| Answer | |  |  |

Ref507

TTL 74LS 193 A CMOS 4035 ICs are used for

|  |  |  |  |
| --- | --- | --- | --- |
| A | Parallel in / Parallel out function | B | Serial in / Parallel out function |
| C | Parallel in / Serial out function | D | Serial in / Serial out function |
| Answer | |  |  |

Ref508

The following circuit is Q0 Q1 Q2 Q3

Input

Clk

Q

T

Clk

Q

T

Clk

Q

T

Clk

Q

T

|  |  |  |  |
| --- | --- | --- | --- |
| A | Up counter | B | Down counter |
| C | Asynchronous counter | D | Synchronous counter |
| Answer | |  |  |

Ref509

4 bits ripple counter has a modulus of outputs.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4 | B | 8 |
| C | 12 | D | 16 |
| Answer | |  |  |

Ref510

The number of data signal lines required for 7 segments display is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 7 | B | 8 |
| C | 9 | D | 10 |
| Answer | |  |  |

Ref511

In display multiplexing, the switches are used to connect the selected binary value to .

|  |  |  |  |
| --- | --- | --- | --- |
| A | Encoder | B | Analyzer |
| C | Decoder | D | Follower |
| Answer | |  |  |

Ref512

To interface with high noise immunity industrial control system, which of device is to be used?

|  |  |  |  |
| --- | --- | --- | --- |
| A | TTL | B | DTL |
| C | HTL | D | ECL |
| Answer | |  |  |

Events occur after the previous event is completed. The device is .

|  |  |  |  |
| --- | --- | --- | --- |
| A | Combinational logic | B | Sequential logic |
| C | Synchronous logic | D | Asynchronous logic |
| Answer | |  |  |

Ref514

This table stands for

|  |  |  |
| --- | --- | --- |
| A | B | C |
| 0 | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 0 |

|  |  |  |  |
| --- | --- | --- | --- |
| A | AND | B | OR |
| C | NOT | D | NOR |
| Answer | |  |  |

Ref515





|  |  |  |  |
| --- | --- | --- | --- |
| A | Z = A B C | B | Z = A+B +C |
| C | Z= A B C | D |  |
| Answer | |  |  |

4510 =

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1011012 | B | 1001012 |
| C | 1110012 | D | 1010102 |
| Answer | |  |  |

E003+E004 Online test Ref 1

Four resistors 1 ohm, 2 ohm , 3 ohm and 4 ohm are connected in series to 5V. Calculate the circuit current & potential difference across each resistor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 1A,3V,2V,5V.7V | B | 0.5A,0.5V,1V,1.5V,2V |
| C | 3A,1V,5V,6V,7V | D | 0.A,1V,2V,3V,4V |
| Answer | |  |  |

Ref 2

A 2.2K Ω resistor is connected in series with a resistor of unknown value across 16V supply. If the

current is 5 mA, calculate the value of unknown resistor.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2 KΩ | B | 3 KΩ |
| C | 4 KΩ | D | 1 KΩ |
| Answer | |  |  |

Ref 3

Two resistors are connected in series to a 115V supply, one is known to have 470 Ω and voltage

across it is 47V. Calculate (a) the value of second resistor (b) the circuit current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 680Ω, 0.1A | B | 800Ω, 0.2A |
| C | 100Ω, 1A | D | 1200Ω,0.1A |
| Answer | |  |  |

Ref 4

Resistors of 5 Ω, 10 Ω and 3 Ω are connected in parallel to 12V supply. Calculate the supply current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2A | B | 3A |
| C | 1A | D | 4A |
| Answer | |  |  |

Ref 5

Resistors of 33K Ω, and 68 KΩ are connected in parallel to 50V. Calculate (a) total circuit resistance

(b) total circuit current (c0 individual branch currents.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 44.5 K Ω, 4.5mA, 3mA,1.58mA | B | 30 K Ω, 3mA, 2mA,1mA |
| C | 22.2 K Ω, 2.25mA,1.5mA,0.79mA | D | 60 K Ω, 6mA,4mA,2mA |
| Answer | |  |  |

Ref 6

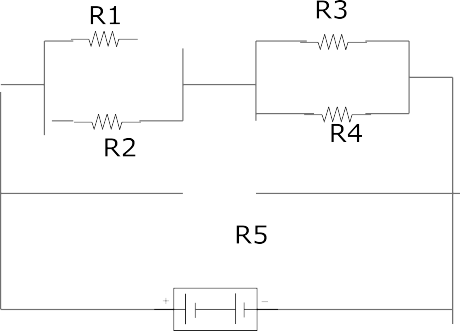
Resistors of values 12 Ω and 8 Ω are connected in parallel with R3 of unknown value across a 6V supply. When the current from the supply is 2.25A, calculate (a) the value of R3 (b) current flowing in R3.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6 Ω, 1A | B | 12 Ω, 0.5A |
| C | 24 Ω, 0.25A | D | 8 Ω, 1.25A |
| Answer | |  |  |

Ref 7

Five resistors are connected as follows. Find (a)Rt (b) It (c) 2 Ω resistor current.





R1=2 Ω, R2=8Ω , R3=3 Ω, R4= 6 Ω, R5=7.2 Ω. V= 6V

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3.6 Ω, 5A, 2.66A | B | 4.8 Ω, 5A, 7A |
| C | 2.4 Ω, 2.5A, 1.33A | D | 7.2 Ω, 7.5A, 4A |
| Answer | |  |  |

Ref 8

Resistors 1.8 KΩ and 1.2 KΩ are connected in series to 12V supply. Calculate the power dissipated in

each resistor and total power.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0.0288W,0.0192W,0.048W | B | 0.0576W,0.0384W,0.096W |
| C | 0.0144W,0.009W,0.024W | D | 1W,0.5W,0.7W |
| Answer | |  |  |

Ref 9

A 1 Ω resistor is connected in series with parallel combination of 6 Ω and 3 Ω resistors to 6V supply.

Calculate (a) Rt (b) Each resistor current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 6 Ω, 1A, 1.32A, 2.66A | B | 4 Ω, 1A, 2A, 3A |
| C | 10 Ω, 4A, 3A, 5A | D | 3 Ω, 2A, 0.66A, 1.33A |
| Answer | |  |  |

Ref 10

Resistors of 2.2K Ω and 7.88K Ω are connected in series and parallel across 3.3K Ω and 2.7K Ω series

combination. They are connected to 9V supply .Calculate (a) Rt (b) It (c) Each resistor current.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3.75K Ω, 2.4mA,0.9mA,1.5mA | B | 7.5K Ω, 4.8mA,1.8mA,3mA |
| C | 2K Ω, 1.2mA,0.5mA,1mA | D | 10K Ω, 8mA,2mA,3mA |
| Answer | |  |  |

Ref 11

1. filament lamp indicators are each rated 12V and 0.36 w. If they are connected in series, what supply voltage should be used? Find supply voltage, the current and total power dissipated.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 72V,0.06A,2.16W | B | 108V,0.09A,3.24W |
| C | 36V,0.03A,108W | D | 18V,0.015A,0.54W |
| Answer | |  |  |

Ref 12

A circuit is fed with a 9V supply but a 4V ground potential is required at the base of a transistor. If this voltage is to be derived from12 KΩ resistor connected to ground. Calculate the value of second resistor forming potential divider.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30K Ω | B | 20K Ω |
| C | 15K Ω | D | 5K Ω |
| Answer | |  |  |

Ref 13 Find RX

If R1=1000 Ω, R2=1000 Ω,R3=2715 Ω, V= 1.5V at bridge balanced condition.



|  |  |  |  |
| --- | --- | --- | --- |
| A | 2715 Ω | B | 3000 Ω |
| C | 1000Ω | D | 2000 Ω |
| Answer | | A |  |

Ref 15

A cell has emf 1.5V and internal resistance 0.5 ohm. Calculate its terminal voltage at (a) No load (b) providing 200mA current (c) when connected to a load of 8 ohm.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3V, 2.8V, 2.8V | B | 1.5V, 1.4V, 1.41V |
| C | 6V, 1.4V, 1.4V | D | 3V, 1.4V, 1.41V |
| Answer | |  |  |

Ref 16

A battery is made by connection 8 cells in series. Each has 1.5V and internal resistance 0.35 ohm. Calculate (a) EMF & internal resistance of battery. (b) The terminal voltage when supplying 400mA.

(c) The current & terminal voltage when a load of resistance 20 ohm is connected to battery.

|  |  |  |  |
| --- | --- | --- | --- |
| A | 12V, 2.8 Ω, 10.11V | B | 15V, 1.4 Ω, 5.1V |
| C | 12V, 2.8 Ω, 5.1V | D | 6V, 2.8 Ω, 10.11V |
| Answer | |  |  |

E025 Online Test Ref 17

For the given series resonance circuity, find I, Vr, Vl and Vc. If the resonance frequency is 4000Hz, Find the bandwidth . What power dissipated in circuit.





E = 10 0 V R= 2 Ohm, X l= 10 ohm, Xc= 10 ohm

|  |  |  |  |
| --- | --- | --- | --- |
| A | I = 5 Angle 0 amp, Vr= 10V,  Vl= 10 Angle 90V, Vc= 50 Angle -90 V | B | I = 10 Angle 0 amp, Vr= 5V,  Vl= 5 Angle 90V, Vc= 50 Angle +90 V |
| C | I = 10 Angle -90 amp, Vr= 10V,  Vl= 10 Angle 0V, Vc= 50 Angle +90 V | D | I = 10Angle 0 amp, Vr= 10V,  Vl= 10 Angle 90V, Vc= 50 Angle -90 V |
| Answer | |  |  |

Ref 18

In the given circuit, Quality factor (Q), Bandwidth of resonant frequency 5000HZ and power dissipated at half power frequency are



R = 2 ohm, Xl= 10 ohm, Xc= 10 ohm E= 10 0 V



|  |  |  |  |
| --- | --- | --- | --- |
| A | Q= 10, BW= 2000HZ, P (HPF)= 50W | B | Q= 5, BW= 1000HZ, P (HPF)= 25W |
| C | Q= 15, BW= 2000HZ, P (HPF)= 50W | D | Q= 20, BW= 3000HZ, P (HPF)= 25W |
| Answer | |  |  |

Ref 19

Q9. For the given network with fp provided.





R 1 = 40 KΩ, R 2= 10 Ω, , L = 1mH, fp = 0.04MHz



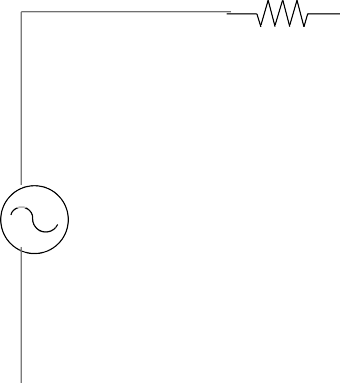
(a)Determine Ql (b)Determine Rp

1. Calculate Z tp
2. Find C at resonance
3. Find Qp
4. Calculate BW

|  |  |  |  |
| --- | --- | --- | --- |
| A | Q= 25.12, Rp= 6.31 KΩ, Ztp= 5.45 KΩ  C = 15.9 nF, Qp= 21.68, BW= 1.85 KHz | B | Q= 100, Rp= 10 KΩ, Ztp= 10KΩ  C = 20 nF, Qp= 50, BW= 1KHz |
| C | Q= 50, Rp= 12 KΩ, Ztp= 7 KΩ  C = 20 µF, Qp= 30, BW= 2KHz | D | Q= 25.12, Rp= 6.31 KΩ, Ztp= 5.45 KΩ  C = 15.9 µF, Qp= 21.68, BW= 1.85 KHz |
| Answer | |  |  |

Ref 20

The input voltage to the given circuit is e = 12 + 10 sin 2 t





R = 3 Ω, C = 1/8 F

The effective value of current ( I ) , Vc and the power dissipated in the circuit are

|  |  |  |  |
| --- | --- | --- | --- |
| A | I = 3 amp, Vc= 13.67 V, P eff= 6 w | B | I = 1.4142 amp, Vc= 20 V, P eff= 12 w |
| C | I = 1.4142 amp, Vc= 13.67 V, P eff= 6 w | D | I = 2 amp, Vc= 20 V, P eff= 12 w |
| Answer | |  |  |

Ref 21

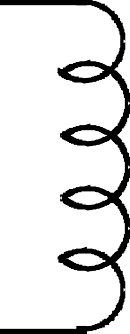
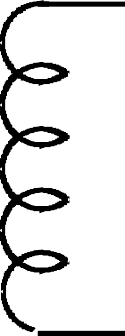
Determine the average value for given periodic pulse waveform.





X= 8 , Y = 2 , Z = 2, W = 6 , K = 12

|  |  |  |  |
| --- | --- | --- | --- |
| A | 4.4 mV, 0.4 sec | B | 8 mV, 1 sec |
| C | 3 mV, 10 sec | D | 8 mV, 0.4 sec |
| Answer | |  |  |

Ref 22

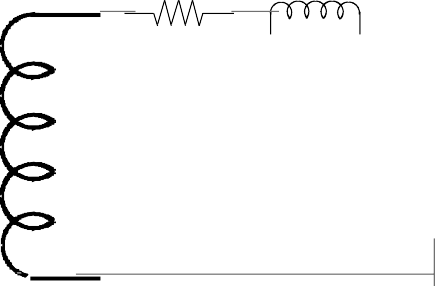
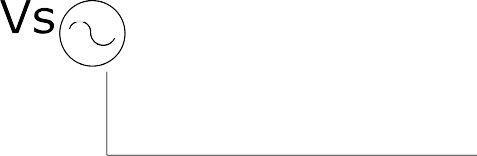
Ep= 200 V, Np= 50 , Es = 240V , Ns = ?

In the given transformer, maximum flux and secondary turn are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 30mwb, 300 Turns | B | 15mwb, 1000 Turns |
| C | 70mwb, 300 Turns | D | 15.02mwb, 600 Turns |
| Answer | |  |  |

Ref 23





Ip = 10A, Rp=1 Ω, Xp=2 Ω a= 2, Rs= 1 Ω, Xs= 2 Ω Rl = 50 Ω

In above circuit, the voltage Vs is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 2452V | B | 1000V |
| C | 300V | D | 5000V |
| Answer | |  |  |

Ref 24

If the system has a voltage gain of 36dB and output voltage 6.8V, the input voltage is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 3V | B | 10V |
| C | 0.8V | D | 0.107V |
| Answer | |  |  |

Ref 25



E1= 25V, E2= 80 sinwt, E3= 20 sin 3wt R= 20 Ω, L = 0.2H

Total power dissipated in the given circuit is

|  |  |  |  |
| --- | --- | --- | --- |
| A | 53.5W | B | 100W |
| C | 200W | D | 0.1W |
| Answer | |  |  |

Ref 26





V = 100V, A= -Π/4 , B= Π/2 , C= Π , D= 3 Π/2

The first four terms of the given trigonometric Fourier series are

|  |  |  |  |
| --- | --- | --- | --- |
| A | 0 + 400/ Π cos Ɵ + 0-400/ Π cos3 Ɵ | B | 400/ Π +400/ Π cos Ɵ +  400/ 2 Π cos2 Ɵ – 400/ 3 Π cos3 Ɵ |
| C | 0 +0 + 0 –+400/ 3 Π cos3 Ɵ | D | 400/ Π +0 + 0+ 400/ 3 Π cos3 Ɵ |
| Answer | |  |  |