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Q.1 The dielectric strength of the transformer oil should be \_\_\_\_\_.

5 kV

132 kV

100 V

~~100 V~~ 30 kV

{ 27-08-2018 }  
shift 2

The critical temperature at which high ferromagnetic materials lose their magnetism is called \_\_\_\_\_.

~~LA~~ Curie point

Hysteresis

Transition temperature

Standard temperature

Q.3 The rating of a battery is expressed in \_\_\_\_\_.

- ☒ (A) ampere-hours
- ☐ watt-hours
- ☐ amperes
- ☐ watts

Q.4 During capacitor charging, the voltage actually rises to 63.2 per cent of its final value.

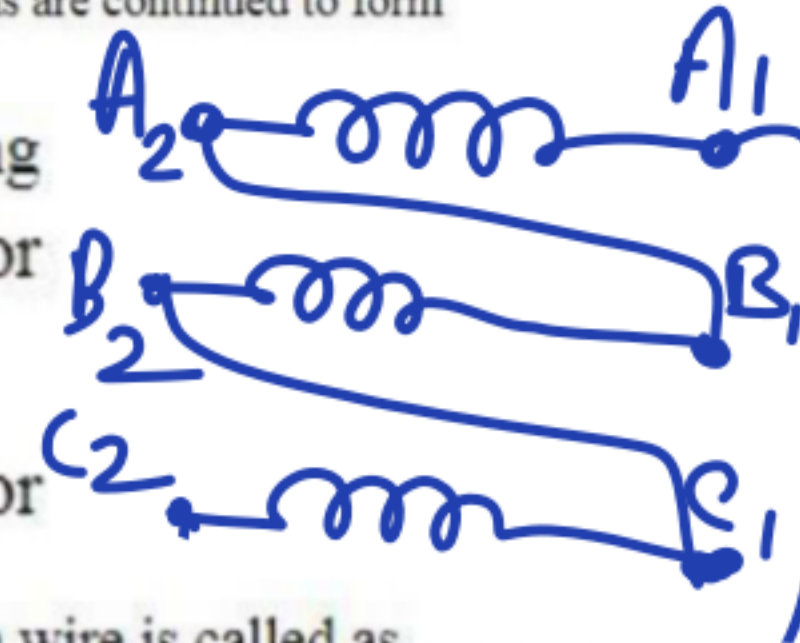
- ☒ (A) 63.2, initial
- ☐ 63.2, final
- ☐ 37, initial
- ☐ 37, final

$$\underline{V_c = V(1 - e^{-t/Rc})}$$



**Q.7** The delta in a three-phase system is formed by connecting \_\_\_\_\_ and the connections are continued to form a closed loop.

- (A) one end of the winding to the starting end of other winding
- one end of an inductor to the starting end of the resistor
- one end of the resistor to the inductor
- one end of an inductor to the neutral end of the resistor



**Q.8** The characteristics of the material that allows it to be pulled out into a wire is called as \_\_\_\_\_.

solderability

malleability

~~ductility~~

superconductivity

Q.9 An alternating voltage of 50 Hz frequency and 100 V maximum value is given by \_\_\_\_\_.

~~(b)~~  $v = 200 \sin 628t$

$v = 100 \sin 314t$

$v = 100\sqrt{2} \sin 157t$

$v = 100\sqrt{2} \sin 314t$

$V = V_m \sin \omega t$   
 $V = 100$

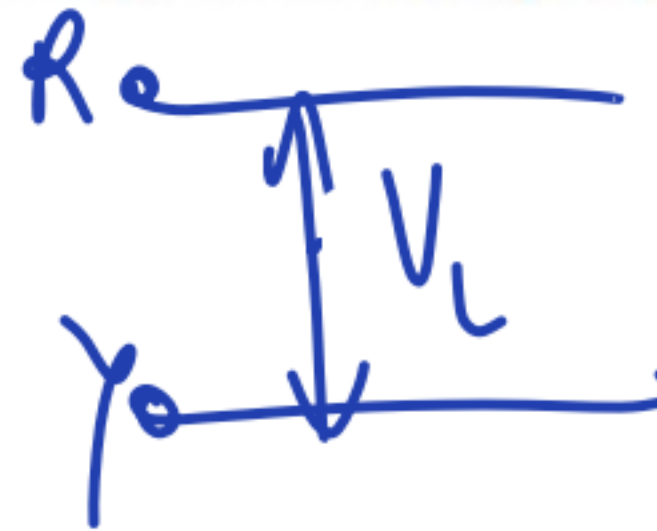
Q.10 The potential difference between any two lines of supply in a three-phase system is called \_\_\_\_\_.

~~(b)~~ phase current

line voltage

line current

phase voltage



**Q.12** A balanced three-phase star-connected load draws power from a 440 V supply. The two connected wattmeters, W1 and W2, indicate 5 kW and 1200 W. Calculate the total power.

5 kW

6,200 kW

62 kW

6,200 W

**Q.13** Three identical impedances, each of  $(9.8 + j10) \Omega$ , are connected to a 400 V 50 Hz, AC power supply. The power supplied to the load is measured by the two-wattmeter method. If the impedances are connected in a delta, find the readings of the two wattmeters.

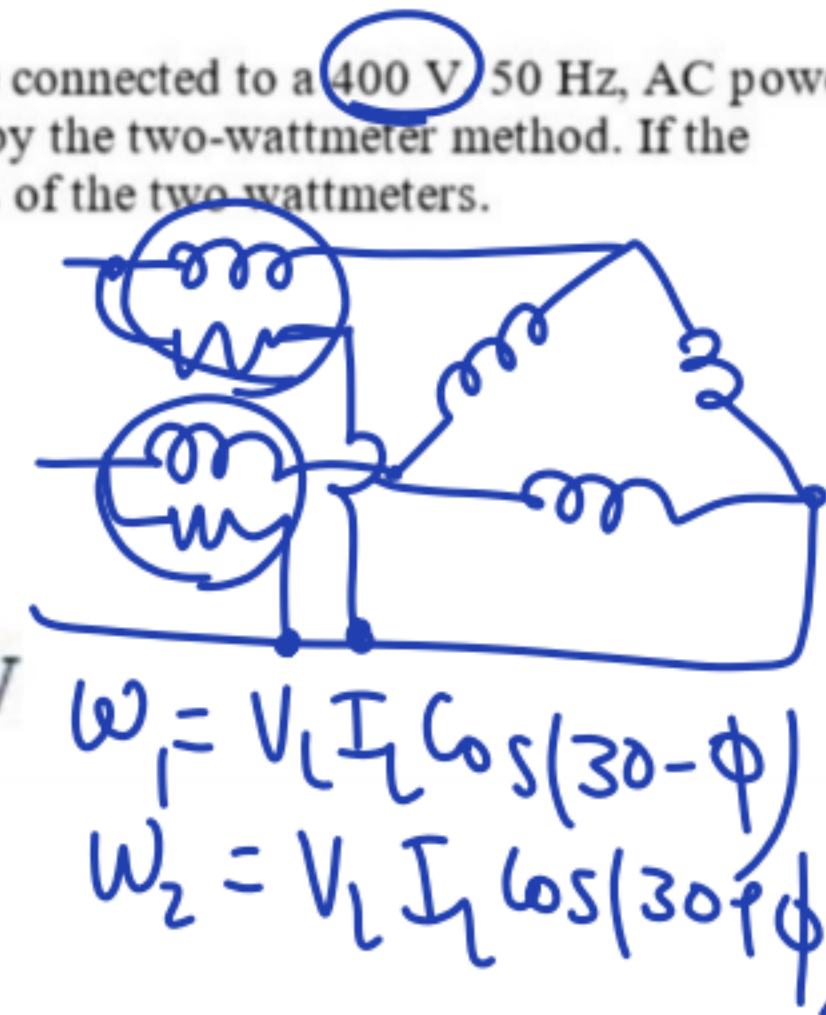
W1 = -4.4 kW and W2 = 1 kW

W1 = 1 kW and W2 = 4.4 kW

W1 = 19 kW and W2 = 4.9 kW

W1 = 6.36 kW and W2 = 1.64 kW

$$I_p = \frac{400}{9.8 + j10} = \frac{400}{14.00}$$



$$W_1 = V_L I_L \cos(30^\circ - \phi)$$

$$W_2 = V_L I_L \cos(30^\circ + \phi)$$



$$\underline{I}_{ph} = \left( \frac{400}{9.8 + j10} \right)$$

$$\phi = \cos^{-1} \frac{9.8}{14} = 45.54^\circ$$

$$I_L = \sqrt{3} \cdot I_{ph} = \sqrt{3} \cdot \frac{400}{28.57} = 28.57 \times \sqrt{3}$$

$$W_1 = 400 \times (28.57) \times \sqrt{3} \cos(30 - 45.54^\circ)$$

$$W_1 = 19.11 \text{ Kw}$$

$$W_2 = 400 \times 28.57 \times \sqrt{3} \cos 75.57$$

$$W_2 = 4.9 \text{ kw}$$



**Q.14** A 3-phase 10 kV·A load has a power factor of 0.342. The power is measured by the two-wattmeter method.

Find the reading of each wattmeter when the power factor is leading.

- ~~(A)~~ W1 = -1 kW and W2 = 4.4 kW  
W1 = -4.4 kW and W2 = 1 kW  
W1 = 1 kW and W2 = 4.4 kW  
W1 = 4.4 kW and W2 = 1 kW

$$\begin{aligned} P &= \boxed{\sqrt{3} V_L I_L \cos \phi} \leftarrow 10 \text{ kVA} \\ &= 10 \times 1000 \times 0.342 \\ &= 3.42 \text{ kW} \end{aligned}$$

**Q.16** Which of the following compounds is widely used in the manufacture of ferrites?

- ~~(A)~~ Fe<sub>2</sub>O<sub>3</sub>  
CuO  
FeO  
MgO

Q.17 The term ' $\omega L$ ' is called the inductive reactance and is given by:

~~(c)~~  $\frac{1}{(2\pi f l)}$   
 $\frac{2\pi f c}{2\pi f l}$   
 $\frac{1}{(2\pi f c)}$

Q.19 Find the input power when a 7.46 kW, three-phase induction motor having 85% efficiency is connected to a 400V, 50Hz AC supply.

- 74.6 kW  
7.46 kW  
6.87 kW  
~~(d)~~ 8.78 kW

$$\eta = \frac{o/p}{i/p} \times 100$$

$$0.85 = \frac{7.46}{i/p}$$

$$i/p = 7.46 / 0.85 =$$

**Q.20** What happens when the paramagnetic material is heated above the Curie temperature?

It becomes anti-ferromagnetic.

☒ It becomes diamagnetic.

It becomes ferromagnetic.

It becomes non-magnetic.

11

**Q.21** What capacitance must be placed in series with a  $15\text{-}\mu\text{F}$  capacitor to obtain a total capacitance of  $5\text{ }\mu\text{F}$ ?

☐  $25\text{ }\mu\text{F}$

☒  $7.5\text{ }\mu\text{F}$

☐  $10\text{ }\mu\text{F}$

☐  $4\text{ }\mu\text{F}$

$$\begin{array}{c} 15\mu\text{f} \quad 7.5\mu\text{f} \\ \text{---}||\text{---}||\text{---} \end{array} \quad \begin{array}{r} 5 \\ \cancel{15 \times 7.5} \\ \hline 22.5 \\ \underline{3} \end{array}$$

Q.22 स्थिर विद्युत प्रभार के आसपास के क्षेत्र को \_\_\_\_\_ कहा जाता है।

चुंबकीय क्षेत्र

विद्युत चुंबकीय क्षेत्र

~~(C)~~ विद्युत क्षेत्र (Electric field)

विद्युत यांत्रिक क्षेत्र

Q.26 कुछ धातुओं या यौगिकों का प्रतिरोध \_\_\_\_\_ नामक विशेषता के कारण कुछ स्थितियों में गायब हो जाता है।

~~(A)~~ अतिचालकता (Superconductivity)

अर्ध-चालकता (semiconductivity)

क्यूरी बिंदु

चुंबकीय विरूपण (magnetostriction)



**Q.29** In ferroelectric materials, the hysteresis loop is the \_\_\_\_\_ function of the applied electric field.

parabolic

~~(c)~~ non-linear

exponential

linear

**Q.31** The relation  $V_L = \sqrt{3}V_{ph}$  in a three-phase system is applicable to a \_\_\_\_\_.

six-phase system too

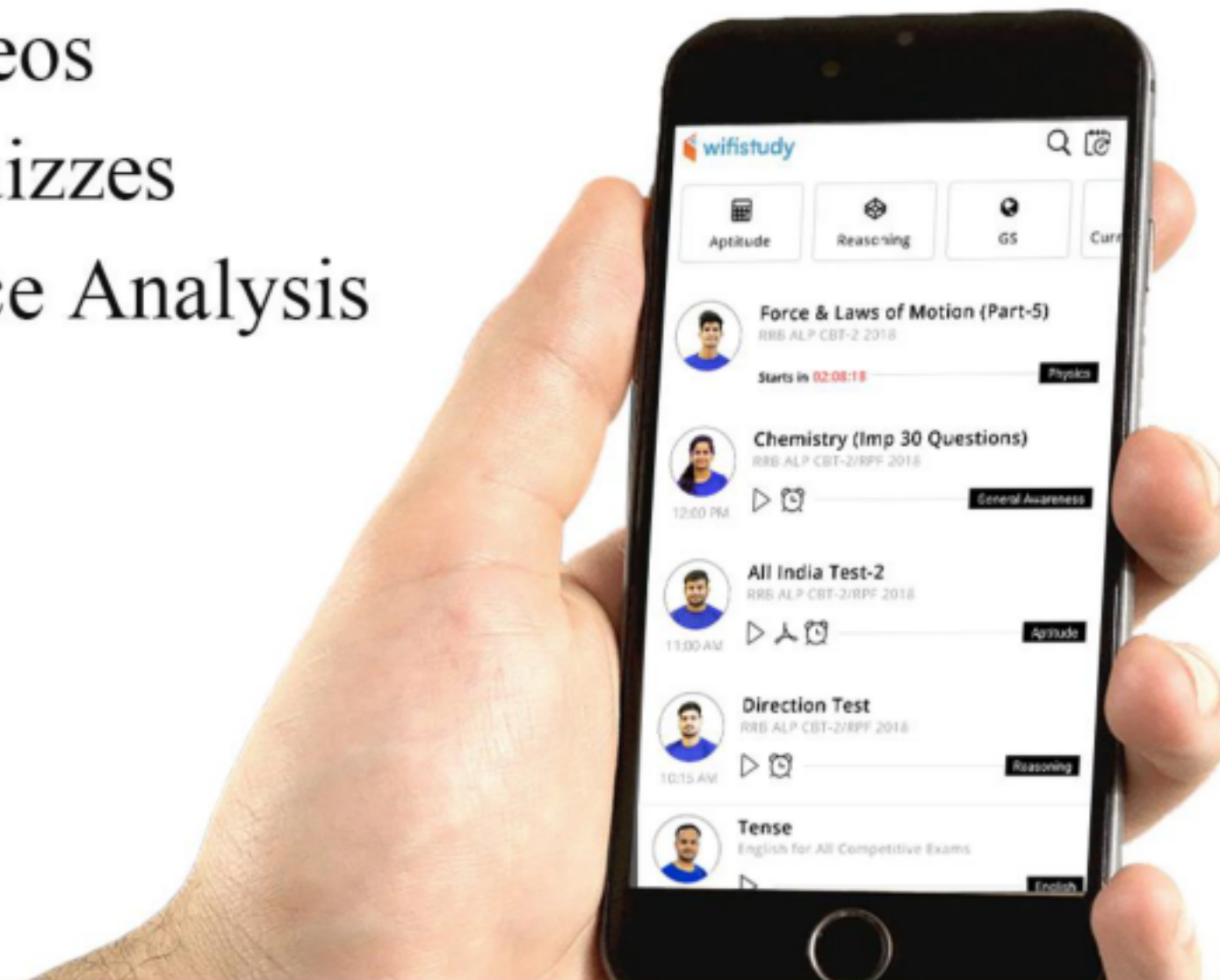
delta-connected load

star-connected load without a neutral point

~~(d)~~ star-connected load



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