

SRI KRISHNA MATRIC HIGHER SECONDARY SCHOOL,  
ODDANCHATRAM

STD: XII PHYSICS WEEKLY TEST

MARKS: 40

UNIT-4 ELECTROMAGNETIC INDUCTION & ALTERNATING CURRENT

I. CHOOSE THE CORRECT ANSWER:

8X1=8

1. A current of 2.5 A flows through a coil of inductance 5 H. The flux linked with the coil is

- a) 0.5 Wb      b) 12.5 Wb      c) zero      d) 2 Wb

2. In an a.c. circuit the e.m.f and the current at any instant are given by

$$E = E_m \sin \omega t, \quad i = I_m \sin (\omega t - \Phi)$$

The average power in the circuit over one cycle of a.c is

- a)  $\frac{E_o I_o}{2} \cos \Phi$       b)  $E_o I_o$       c)  $\frac{E_o I_o}{2}$       d)  $\frac{E_o I_o}{2} \sin \Phi$

3. A 100 mH coil carries a current of 1A. Energy stored in its magnetic field is

- a) 0.5 J      b) 1 J      c) 0.05 J      d) 0.1 J

4. A transformer is used to light 100 W and 110 V lamp from a 220 V mains. If

the main current is 0.5 A ,then the efficiency of the transformer is :

- a) 11%      b) 50%      c) 80%      d) 90%

5. The flux linked with a coil at any instant t is given by  $\Phi = 10t^2 - 50t + 250$ .

The

induced emf at t=3 S is:

- a) 10 V      b) 190 V      c) -190 V      d) -10 V



IV. Answer the following question:

3X5=15

20. Show mathematically that the rotation of a coil in a magnetic field over one

rotation induces an alternating emf of one cycle.

21. Prove that total energy is conserved during LC oscillation.

22. Explain the construction and working of transformer.

23. Derive an expression for phase angle between the applied voltage and current in a series RLC circuit.

- All the best-

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