SRI KRISHNA MATRIC HIGHER SECONDARY SCHOOL, ODDANCHATRAM

STD: XII	TD: 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 W	/b	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 ωt, i= I _m sin (ωt $-\Phi$)						
The average power in the circuit over one cycle of a.c is						
a) $\frac{E_{o}I_{o}}{2}$	cos Ф	b) E _o I _o	c) E _o l _o	d) $\frac{E_o I_o}{2}$		
sinΦ						
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 lamb 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		
7						

6. The SI unit of inductance, the Henry can be written as						
a) weber/ampere	b) volt second/ampere					
c) joule/ampere ²	d) all the above					
7. In AC circuit with capacitor						
a)Voltage leads current by п/2	b) Voltage lags current by					
п/2		X				
c) in phase	d) Voltage lead current by π/3					
8. Q- factor of a series RLC circuit which resonates at 400 kHz has 80μH inductor, 2000pF capacitor and 50 Ω resistor is						
a)100 b) 4	c) 50	d) 8				
II. Answer the following question.		5X2=10				
9. State Flemings right hand rule.						
10. Define Q- factor.						
11. Define RMS value of alternating current.						
12. Capacitor does not allow DC to pass. why?						
13.Mention the way of producing induced emf.						
14. Define electric resonance.						
III. Answer the following question.		4X3=12				
15. Mention various energy losses in a transformer.						
16. Derive energy stored in an inductor.						
17. Derive the production of induced emf by changing the area of the coil.						
18. Write the advantages and disadvantages of AC over DC.						
19.Derive an expression for phase angle between the applied voltage						
and						
current in AC with resistor.						

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-

S. Rengaraj M.Sc,M.Ed,Mphil
PG ASSISTANT in physics ,
SRI KRISHNA MATRIC HR SEC SCHOOL,
oddanchatram,
Dindigul Dt. 624619