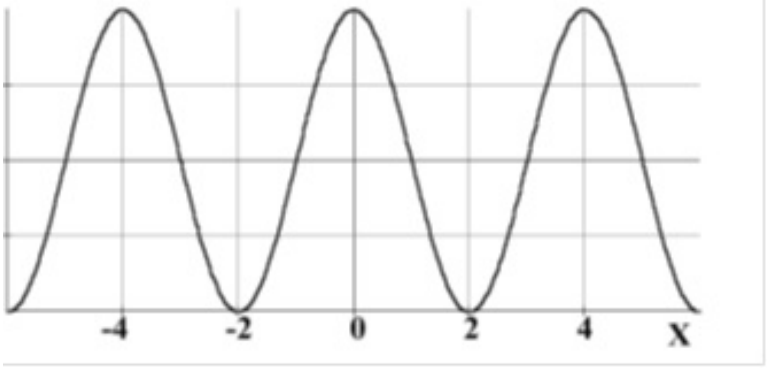
B.Sc. DEGREE EXAMINATION,NOVEMBER 2018
III Year V Semester
Core Major - Paper IX
ELECTROMAGNETISM

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. For an AC circuit the ratio of the voltage to the current is called the ____.
2. If the effective voltage to an electric stove is 208 V, what is the peak voltage?
3. What is the value of the magnetic flux through a closed surface?
4. An emf of 2.00 V is induced in an inductor when the current is changing at the rate of 8.00 A/sec. What is the self-inductance of the inductor?
5. What is back emf?
6. Why does a bulb connected in series with a self – inductance glows brilliantly for a moment when the current in the circuit is switched off?
7. Most large alternators have a small dc generator built into them. What is its purpose?
8. The current drawn by the armature of DC motor is directly proportional to ____.
9. What is meant by displacement current?
10. The graph shows a plot of the function $y = \cos(kx)$. The value of k is



11. The Power factor of which of the following components will be zero. (a) Resistance
    (b) Inductance (c) Capacitance (d) both (b) and (c).
12. Power factor of electric bulb is ____.

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. In a series LCR circuit R=200 W and the voltage and the frequency of the mains supply is 200V and 50 Hz respectively. On taking out the capacitance from the circuit the current lags behind the voltage by 450 . On taking out the inductor from the circuit the current leads the voltage by 450. Calculate the power dissipated in the LCR circuit?
14. What is eddy current? List out the applications of eddy currents.
15. Derive an expression for self-inductance of coaxial cylinder.
16. Explain the construction and working of DC motor.
17. Discuss the propagation of Electromagnetic waves in free space.
18. Explain choke coil with neat diagram.
19. Find the mutual inductance of two coaxial solenoids of 5.00 cm radius and 30.0 cm long if one coil has 10 turns and the second has 1000 turns.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Obtain an expression for impedance and current in series LCR circuit. Deduce an expression for the frequency of an LCR series resonating circuit?
21. What is meant by self-induction? Derive an expression for self-inductance of coil by Raleigh's method.
22. Derive an expression for induced emf in a conducting rod moving through a uniform magnetic field.
23. Explain the construction and working of shunt wound dynamo and compound wound dynamo with neat diagram.
24. Define Poynting Vector. Describe Hertz experiment for the production of Electromagnetic waves.

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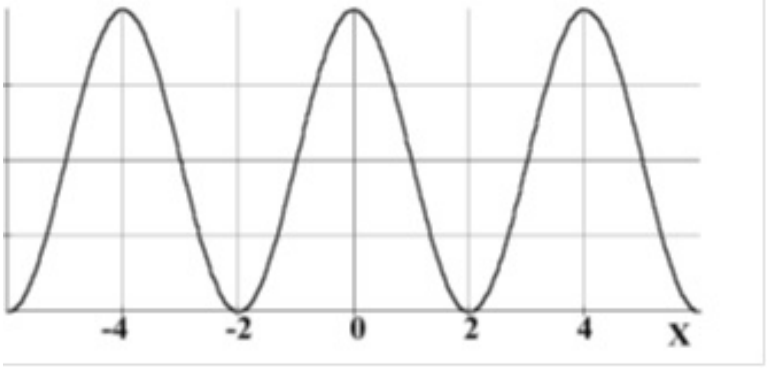

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