

XII - PHYSICS

Unit (4) Model Questions - 2019

Total Marks: - 50M

Section - A

1X10=10M

I Multiple choice questions

- ① The unit of magnetic flux is
 a) ampere b) ohm
 c) weber d) volt
- ② The SI unit of mutual Inductance is
 a) Tesla b) weber
 c) henry d) coulomb
- ③ Which one of the following devices is based on Electromagnetic Induction?
 a) galvanometer b) Ammeter
 c) dynamo d) Voltmeter.
- ④ The maximum value of the induced emf is
 a) $e = E_0 \cos^2 \omega t$ b) $E_0 = NAB\omega$
 c) $e = e_0 \sin \omega t$ d) $e = E_0^2 \sin \omega t$
- ⑤ In a three phase AC generator the coils are displaced from each other by
 a) 90° b) 180°
 c) 120° d) 360°
- ⑥ select the odd man out of the following
 a) WbA^{-1} b) ohm s^{-1}
 c) Wb d) VA s^{-1}

- 7) The frequency of unidirectional current is
 a) ∞ b) 0 c) unity d) finite
- 8) The dimensional formula of impedance is
 a) $[ML^2T^{-2}I^{-2}]$ b) $[M^{-1}L^2T^3]I^2$
 c) $[M^{-1}L^{-2}T^{-2}I^2]$ d) $[MLT^{-2}I^{-1}]$
- 9) The flux linked with a coil at any instant (t) is given by $\phi_B = 10t^2 - 50t + 250$. The induced emf at $t = 3s$ is
 a) $-190V$ b) $-10V$ c) $10V$ d) $190V$
- 10) A step-down transformer reduces the supply voltage from $220V$ to $11V$ and increase the current from $6A$ to $100A$. Then its efficiency
 a) 1.2 b) 0.83 c) 0.12 d) 0.9

Section-B

4x2 = 8M

II Answer any four questions (Q. No. ~~is~~ compulsory):-

- 11) What are phasors?
- 12) How will you define a factor?
- 13) What are the applications of eddy currents?
- 14) A straight conducting wire is dropped horizontally from a certain height with its length along east-west direction. Will an emf be induced in it? Your answer.

- 15) what is Resonant frequency in LCR circuit?
- 16) what is efficiency of an ideal transformer? why?
- 17) what are the examples of power factors

Section - C

4x3=12M

III

Answer any four questions
(Q. No 19 compulsory)

- 18) what are the disadvantages of AC over DC?
- 19) write down the equation for a sinusoidal voltage of 50Hz and its peak value is 20V. Draw the corresponding voltage versus time graph.
- 20) Difference between self and mutual Inductance
- 21) what is meant by wattless current?
- 22) what are LC oscillations
- 23) Give the principle of AC generator
- 24) How is Eddy current produced?

Section - D

4x5=20M

III Answer all the questions

- 25) a) prove that energy is conserved during electromagnetic induction
(or)

b) Explain Faraday's experiment that lead to Faraday's laws of electromagnetic induction

26) a) Discuss the effect of series resonance

(or)

b) compare the Electrical system and Mechanical system

27) a) Explain the construction and working of transformer

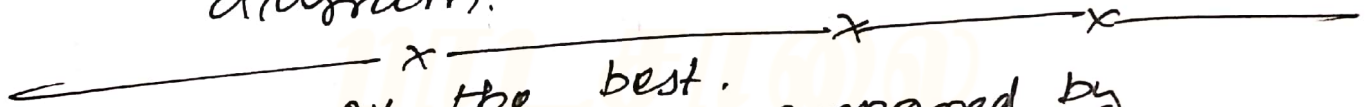
(or)

b) Discuss the drawbacks of eddy currents

28) a) mention the various energy losses in a transformer

(or)

b) Explain working of a single phase AC generator with necessary diagram.



All the best.

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