

## XII - PHYSICS UNIT - 5

MODEL QUESTION PAPER Total mark 30 - 50m

## Section - A

I choose the correct answer

1x10=10m

- ① The value of " $\mu_0$ " is —
- a)  $4\pi \times 10^{-7} \text{ A/m}$       b)  $4\pi \times 10^{-7} \text{ H/m}$   
 c)  $4\pi \times 10^{-8} \text{ A/m}$       d)  $4\pi \times 10^8 \text{ H/m}$
- ② Unit of "magnetic flux" is —
- a) Weber      b) Weber/m<sup>2</sup>  
 c) Tesla      d) Weber/m
- ③ The "relative permeability" can be expressed as
- a)  $\mu_r = 1 + \mu_0$       b)  $\mu_r = 1 + k$   
 c)  $\mu_r = 1 + \frac{k}{\mu_0}$       d)  $\mu_r = \mu_0 + k$
- ④ "Nickel" is a — — — — material
- a) dia      b) ferro  
 c) para      d) None of the above
- ⑤ which one of the following material is used for making "permanent magnet"?
- a) bronze      b) Copper  
 c) platinum      d) Alnico
- ⑥ "seebeck" effect is —
- a) Reversible      b) Irreversible  
 c) heating      d) chemical

- 7) "cyclotron" was devised by  
 a) oversted                      b) saraday  
 c) Lawrence                      d) Lorentz
- 8) The unit of "Thomson Coefficient" is  
 a) volt                              b) ampere  
 c) volt per °C                      d) ohm
- 9) which of the following principles is used in a "Thermopile"?  
 a) Thomson effect                      b) Peltier effect  
 c) Seebeck effect                      d) Joule's effect
- 10) A long closely wound "helical" coil is called  
 a) circular loop                      b) coil  
 c) solenoid                      d) toroid.

Section - B

4 × 2 = 8 M.

Answer any four questions  
 (A. No (14) compulsory)

- 11) what is "magnetic permeability"?
- 12) what are unit and dimension of "magnetic flux"?
- 13) Mention examples for "paramagnetic" materials
- 14) derive the relation between  $\mu_m$  and  $\mu_r$ .
- 15) what is "toroid"?
- 16) state "limitations of cyclotron"
- 17) state "Curie's law."

## Section - C

Answer any four questions  $4 \times 3 = 12 \text{ M}$   
 (Q. No (20) compulsory) :-

- 18) state "Biot-Savart law"
- 19) what is "coercivity"?
- 20) At (i) "equator" and (ii) "poles" what will be vertical component of Earth's magnetic field?
- 21) draw a graph to show the variation of "magnetic susceptibility" with absolute "temperature"
- 22) what is "magnetic dipole moment"?
- 23) Define "ampere"
- 24) what is meant by "hysteresis"?

## Section - D

 $4 \times 5 = 20 \text{ M}$ 

Answer all the Questions

- 25) a) calculate the magnetic induction at a point on the "axial" line of a bar magnet (or)  
 b) properties of "bar magnet"
- 26) a) obtain expressions for the magnetic field of a "toroid" (or)

b) Explain the principle and working of a "moving coil galvanometer"

q7) a) calculate the "magnetic field" at the centre of a square loop which carries a current of 1.5 A, length of each loop is 50 cm

(or)  
b) calculate the magnetic field inside and outside of the long solenoid using "Ampere's circuital law"

q8) a) obtain an expression for the force acting on a current carrying conductor placed "in a magnetic field"  
(or)

b) discuss the working of "cyclotron" in detail

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All the best.

prepared by.

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