A.V. Education Society's

Degloor College, Degloor (114)

FACULTY OF SCIENCE

Examination Summer-2020

Class: B.Sc. F.Y. **Semester : II**

Name of Subject: *Physics* **Time :1 Hour**

Paper Title and NO.: *Electricity and Magnetism (IV)* **Max. Marks: 40**

N.B. i) Attempt all questions

ii) All question carry equal marks

iii) Use OMR answer sheet

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1. Space around the charged body within which its influence can be felt by other small charge is.
   a) Electric field b) Magnetic field
   c) Gravitational field d) Both electric and magnetic field
2. The electric field lines begins from
   a) Negative charge b) Positive charge
   c) Neutral charge d) None
3. Gauss law is
   a) $\frac{1}{\varepsilon_0}$ b) $\frac{q}{\varepsilon_0}$ c) $q\varepsilon_0$ d) $\frac{\varepsilon_0}{q}$
4. Force between two charges separated by a distance "r" varies as
   a) r^2 b) r^{-1} c) r d) r^{-2}
5. SI unit of magnetic flux is
   a) weber b) Wb/m^2 c) tesla d) Ampere
6. When a charged particle having charge q moves in a region of electric and magnetic field, it experiences a net force is
   a) Biot-Savert law b) Coulomb law c) Lorentz law d) Ampere law
7. Ampere's circuital law is
   a) $\oint \vec{B}\,\vec{dl} = \mu_0 I$ b) $\oint \vec{B}\,\vec{dl} = \mu_0$ c) $B\vec{dl} = \mu_0 I$ d) $\oint \vec{B}\,\vec{dl} = I$
8. Biot-Savert law is
   a) $\frac{\mu_0}{4\pi} = \frac{I\,dl\,sin\theta}{r^3}$ b) $\frac{\mu_0}{4\pi} = \frac{I\,dl\,sin\theta}{r^2}$ c) $\frac{\mu_0}{2\pi} = \frac{I\,dl\,sin\theta}{r^2}$ d) $\frac{\mu_0}{2\pi} = \frac{I\,dl\,sin\theta}{r^3}$
9. SI unit of magnetic induction is
   a) Wb/m2 b) tesla c) Both ä and "b" d) None
10. 1 tesla = …… gauss
    a) 10^3 b) 10^2 c) 10^5 d) 10^4
11. Moving coil galvanometer is used to detect
    a) Small electric current b) Large electric current c) Resistance in circuit d) None
12. Deflection of coil is directly proportional to i.e. $\theta \propto$….
    a) N b) A c) B d) I
13. Magnetic dipole moment =…..

a) Current x area b) Current/ area c) Current x volume d) Current/ volume

14. Magnetic dipole moment per unit volume is called
a) Intensity of magnetising field b) Intensity of magnetisation
c) Magnetic permeability d) Magnetic susceptibility

15 Relation between Magnetic permeability and Magnetic susceptibility is
a) $\mu = (1 + \chi_m)$ b) $\mu = \mu_0(1 + \chi_m)$ c) $\mu = \mu_0(1 - \chi_m)$ d) $\mu = (1 - \chi_m)$

16. Relative magnetic permeabilityμ_r is defined as
a) $\mu\ /\ H$ b) $\mu\ /\ \mu_r$ c) $\mu\ /\ \mu_0$ d) m /H

17. If ϕ is flux passing normally through a substance of area A, then ϕ=
a) BA sin θ b) BA cos θ c) BA tanθ d) BA/ sinθ

18. Hysteresis curve is the graph between.
a) Magnetic induction B and magnetic intensity H
b) Magnetic induction B and magnetisation M
c) Magnetic induction B and magnetic susceptibility χ
d) All of these

19. Constant value of permeability μ_0 is
a) $2\pi \times 10^{-7}$ TmA^{-1} b) $4\pi \times 10^{-7}$ TmA^{-1} c) $2\pi \times 10^{-6}$ TmA^{-1} d) $4\pi \times 10^{-6}$ TmA^{-1}

20. Magnetic susceptibility of diamagnetic substance is
a) Negative b) Positive c) Zero d) None

21. Magnetic flux is
a) Scalar b) Vector c) Tensor d) Phasor

22. SI unit of self induction is
a) ampere b) Hendry c) coulomb d) weber

23. Faradays law is
a) $|\epsilon| = \frac{dq}{dt}$ b) $|\epsilon| = -\frac{d\emptyset}{dt}$ c) $|\epsilon| = \frac{d\emptyset}{dt}$ d) $|\epsilon| = -\frac{dq}{dt}$

24. Energy stored in an inductor is
a) LI^2 b) $\frac{1}{2}LI$ c) $\frac{1}{2}L^2$I d) $\frac{1}{2}LI^2$

25. Coefficient of self induction is
a) $\frac{\phi}{I}$ b) ϕI c) $\frac{\mathrm{I}}{\phi}$ d) $\frac{\mathrm{M}}{\mathrm{I}}$

26. A moving conductor coil produces an induced emf is accordance with
a) Lenz's law b) coulomb's law c) Faraday's law d)Ampere's law

27. Uniform magnetic field inside the solenoid is
a) $\mu_0 I$ b) $2\mu_0 nI$ c) $2\mu_0 I^2$ d) $\mu_0 In$

28. Dimensional formula for self induction is
a) $[M^1L^2T^2A^{-2}]$ b) $[M^0L^2T^{-2}A^{-2}]$ c) $[M^1L^2T^{-2}A^{-2}]$ d) $[M^1L^1T^{-2}A^{-2}]$

29. For Mutual induction …
a) Only primary coil is required b) Only secondary coil is required
c) Both primary and secondary coils required d) None

30. Mutual inductance of two long co-axial solenoid is
a) $\frac{\mu_0 N_1 N_2 I_1 A}{L}$ b) $\frac{\mu_0 N_1 N_2 I_1}{L}$ c) $\frac{N_1 N_2 I_1 A}{L}$ d) $\frac{\mu_0 N_1 N_2 I_1 A^2}{L}$

31. Sinusoidal alternating current is expressed as
a) I=Sin ωt b) I=I_0 Sin ωt c) I=I_0 Sin ω^2t d) I=I_0 2Sin ωt

32. Angular frequency of oscillation in the circuit is
a) $\frac{1}{2\pi\sqrt{LC}}$ b) $\frac{\sqrt{LC}}{2\pi}$ c) $\frac{1}{\sqrt{LC}}$ d) $\sqrt{LC}$

33. Power factor of series LCR circuit is
a) R b) Z/R c) R/Z d) RZ

34. RMS value of Irms=

a) $\frac{V_0}{\sqrt{2}}$ b) $\frac{I_0}{\sqrt{2}}$ c) $\frac{3I_0}{\sqrt{2}}$ d) $\frac{3V_0}{\sqrt{2}}$

35. Impedance of LCR circuit is

a) $Z = \sqrt{R^2 + L^2\omega^2}$ b) $Z = \sqrt{R^2 + \frac{1}{C^2\omega^2}}$ c) $Z = \sqrt{L^2\omega^2}$ d) $z = \sqrt{R^2 + X_L^2}$

36. Frequency of AC supply in India

a) 40 Hz b) 60 Hz c) 58 Hz d) 50 Hz

37 Voltage turn ratio is

a) $\frac{E_s}{E_p} = \frac{N_p}{N_s}$. b) $\frac{E_s}{E_p} = \frac{N_s}{N_p}$ c) $\frac{E_s}{E_p} = \frac{I_s}{I_p}$ d) None

38. Principle of transformer is

a) Mutual induction b) Self induction c) Eddy current d) Both a and b

39. Power in AC circuit is

a) Vrms Irms cos ϕ b) Vrms Irms sinϕ c) Vrms Irms d) None

40. LC Oscillations are

a) Undamped b) Damped c) Both undamped and damped d) None

ANSWER KEYS
MCQ QUESTION PAPER SET

SUBJECT: PHYSICS **CLASS: B.Sc. FIRST YEAR**
SEM -II **PAPER-IV**
MAX.MARKS:40 **TIME DURATION:1 HR.**
TITLE: ELECTRICITY AND MAGNETISM

Q.NO.	ANS.
1	**A**
2	**B**
3	**B**
4	**D**
5	**A**
6	**C**
7	**A**
8	**B**
9	**C**
10	**D**

Q.NO.	ANS.
11	**A**
12	**D**
13	**A**
14	**B**
15	**B**
16	**B**
17	**B**
18	**A**
19	**B**
20	**A**

Q.NO.	**ANS.**
21	**A**
22	**B**
23	**C**
24	**D**
25	**A**
26	**C**
27	**D**
28	**C**
29	**C**
30	**A**

Q.NO.	**ANS.**
31	**A**
32	**A**
33	**C**
34	**B**
35	**C**
36	**D**
37	**B**
38	**D**
39	**A**
40	**C**