K17U 1046

Reg. No. : .....

Name : .....

II Semester B.Sc. Degree (C.B.C.S.S. – Reg./Supple./Imp.) Examination, May 2017

COMPLEMENTARY COURSE IN PHYSICS

2C02 PHY : Electricity, Magnetism and Thermal Physics

(2014 Admn. Onwards)

Time : 3 Hours

Max. Marks : 32

Instruction : *Write answers in* ***English*** *only.*

SECTION – A

Answer **all** – Very short answer type. **Each** question carries **one** mark.

1. The time constant of C-R circuit is _____
2. For a cyclic process, the change in internal energy of the system is _____
3. The SI unit of magnetic flux is _____
4. The mathematical expression for first law of thermodynamics is _____
5. During isochoric process work done = _____

(1×5=5)

SECTION – B

Answer **any four** – Short answer type. **Each** question carries **two** marks.

6. Define Isochoric and Isobaric process.
7. State Biot – Savart Law.
8. Distinguish between reversible and irreversible process. Give one example for each.
9. A capacitor of capacitance 0.1 μ F is first charged and then discharged through a resistance of 10 mega ohm. Find the time, the potential will take to fall to half its original value.
10. Define temperature co-efficient of resistance. Write down its expression.
11. State second law of thermodynamics.

(2×4=8)

P.T.O.

SECTION – C

Answer **any three** – Short essay/Problem type. **Each** question carries **three** marks.

12. Find the efficiency of the Carnot's engine working between 127°c and 27°c.

13. Define current and voltage sensitivities of moving coil galvanometer.

14. What is the work done during adiabatic process ?

15. Derive the expression for the force on a current-carrying conductor in a magnetic field.

16. An inductance of 500 mH and a resistance of 5 ohms are connected in series with an e.m.f. of 10 volts. Find the final current. If now the cell is removed and the two terminals are connected together, find the current after (i) 0.05 s (ii) 0.2 s.

(3×3=9)

SECTION – D

Answer **any two** – Long essay type. **Each** question carries **five** marks.

17. Explain with necessary theory how a Carey Foster bridge may be used to compare two nearly equal resistances.

18. Give the statement of Carnot's theorem and prove them.

19. Derive an expression for magnetic induction at a point due to a straight conductor carrying current.

20. Discuss the growth and decay of current in L-R circuit.

(5×2=10)
