Reg. No. : ....

Name : ....

II Semester B.Sc. Degree (CBCSS-Supplementary/Improvement)
Examination, April 2020
(2014-2018 Admissions)
COMPLEMENTARY COURSE IN PHYSICS
2C02 PHY : Electricity, Magnetism and Thermal Physics

Max. Marks : 32

Time : 3 Hours

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

SECTION – A

Very short answer type – **Each** carries **1** mark – Answer **all 5** questions.

1. The physical quantity that determines whether a system is in thermal equilibrium with another system is _____

2. The increase of resistance per unit original resistance per degree rise of temperature is called _____

3. The concept of entropy was introduced by _____

4. A charge q moves with a velocity v through a region where both electric field E and magnetic field B are present, then the resultant force F on the moving charge is _____

5. The unit of $\sqrt{LC}$ IS _____

(5×1=5)

SECTION – B

Short answer type – **Each** carries **2** marks – Answer **4** questions our of 6.

6. State Biot – Savart law in vector form.

7. Distinguish between B.G and dead – beat Galvanometers.

8. What is the time constant for a CR circuit ?

9. State the zeroth law of thermodynamics.

10. Define entropy. Explain the physical significance of entropy.

11. What is a thermodynamic process ? Give examples.

(4×2=8)

SECTION – C

Short essay/problem type – **Each** carries **3** marks – Answer **3** questions out of **5**.

12. Briefly explain the theory of a potentiometer.

13. Calculate the value of the torque on a current loop placed in a uniform magnetic field.

14. Derive an expression for the growth of current in a circuit containing a resistance and inductance.

15. Derive an expression for work done during an isothermal process.

16. What is a refrigerator ? Explain the principle of a refrigerator.

(3×3=9)

SECTION – D

Long essay type – **Each** carries **5** marks – Answer **2** questions out of **4**.

17. Describe the working of a Carnot heat engine. Derive an expression for its efficiency.

18. Explain the theory of a Carey Foster bridge. Define the temperature coefficient of resistance.

19. Give the construction of a moving coil ballistic Galvanometer. Derive an expression between the quantity of charge flowing through it and the throw obtained. Show how to correct the observed throw for damping.

20. A charged capacitor of capacitance C discharges through a circuit consisting of a coil of inductance L and a resistor R. Find the charge on the capacitor in t second after it starts discharging. Deduce the conditions under which the discharge is oscillatory. Find the period and frequency of the oscillatory discharge when R is very small.

(2×5=10)

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