K19U 0275

Reg. No. : .....

Name : .....

**II Semester B.Sc. Degree (CBCSS – Reg./Supple./Improv.) Examination, April 2019**
**(2014 Admission Onwards)**
**COMPLEMENTARY COURSE IN PHYSICS**
**2C02 PHY : Electricity, Magnetism and Thermal Physics**

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. _____ is the potential difference that should be applied to the galvanometer to produce a deflection of 1 mm on a scale at a distance of 1 meter.
2. The time constant of C-R circuit is
3. The mathematical expression for first law of thermodynamics is
4. As length of the wire increases its resistivity
5. During isothermal process _____ remains constant.

SECTION – B

Answer **any four**. Short Answer Type. **Each** question carries **two** marks.

6. A capacitor of capacitance 0.1 μF 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.

P.T.O.

7. Define temperature co-efficient of resistance. Write down its expression.

8. What do you mean by thermal equilibrium and state zeroth law of thermodynamics.

9. State Biot-Savart Law.

10. State and explain first law of thermodynamics.

11. Explain how sharpness of resonance curve of a LCR depends on 'Q' factor.

## 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 steam point and ice point.

13. Deduce Gauss's proof of inverse square law.

14. How will you use a potentiometer to calibrate a high range voltmeter ?

15. One mole of a gas at 27° C expands adiabatically until its volume is doubled. Calculate the work done. ($\gamma = 1.4$)

16. Compare Ballistic galvanometer and dead beat galvanometer.

## SECTION – D

Answer **any two**. Long Essay Type. **Each** question carries **five** marks.

17. Derive the expression for magnetic induction at a point on the axis of a circular coil carrying current.

18. Discuss growth and decay of charge in C-R circuit.

19. Describe in detail an ideal heat engine. Derive an expression for the efficiency of the engine.

20. Derive expression for work done during isothermal and adiabatic process.

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