B.Sc. DEGREE EXAMINATION,NOVEMBER 2018
I Year I Semester
Core Major - Paper II
THERMAL PHYSICS

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. What are the different types of thermometers?
2. Mention the advantage and disadvantage of platinum resistance thermometer?
3. State Dulong and Petit's law.
4. Define specific heat capacity of liquid.
5. What are the uses of liquid air?
6. What is adiabatic demagnetization?
7. What is meant by conduction? Give one example for bad conductor.
8. Define co-efficient of thermal conductivity.
9. What is meant by blackbody radiation?
10. State Kirchoff's law of radiation.
11. Why gas has two specific heat capacities?
12. Write any two practical applications of low temperature physics.

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. Explain the construction and working of Thermistor.
14. Derive the relation between the specific heat capacity of a gas at constant pressure and at constant volume.
15. What is Joule-Thomson effect? How is it experimentally established? How will you interpret the effect?
16. Discuss Rectilinear flow of heat along a bar.

17. What is Planck's law of radiation? Derive the Planck's formula for energy distribution in black body spectrum.

18. Explain refrigeration cycle. How it is used to obtain sufficiently low temperature in Electrolux refrigerator.

19. The resistance of a platinum wire at 0°C,100°C and 444.6°C is found to be 5.5,7.5 and 14.5 ohms respectively. The resistance of a wire at a temperature t° C is given by the equation $R_t = R_o(1+\alpha t+\beta t^2)$ Find the values of α and β.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Describe callendar and Griffith's bridge for measuring the resistance of a platinum resistance thermometer at various temperatures.

21. Describe the Regnault's method to find the specific heat of a gas at constant pressure.

22. With neat diagram describe how air can be liquefied by Linde's method?

23. Describe Lee's disc method to determine the coefficient of thermal conductivity of a bad conductor.

24. State and explain Stefan's law of heat radiation. Describe an experiment to verify Stefan's law of heat radiation.

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