

Printing Page(s) : 1

Paper Code :DSC-203

Roll No. 

--	--	--	--	--	--	--	--	--

**B.Sc. (PCM)-11**  
**2<sup>nd</sup> Year Examination, Calendar Batch 2016**  
**Physics-III (Heat and Thermodynamics)**

Time : 3 Hours ]

[ Max. Marks : 100

*Note. Attempt any **five** questions. Each questions carry equal marks.*

**Q.1** Explain the method of liquefying the helium gas?

**Q.2** Prove the thermodynamic relation

$$\left(\frac{\delta S}{\delta V}\right)_T = \left(\frac{\delta S}{\delta V}\right)_V$$

and hence prove the Clausius-Clapeyron equation

$$\frac{\delta p}{\delta T} = \frac{L}{T(V_2 - V_1)}$$

**Q.3** What is a critical constant? Get the value of these in terms of Vander Wall's constants a and b

**Q.4** Explain four thermodynamical potentials U, F, H and G. Deduce Maxwell's thermodynamical relations from them.

**Q.5** Find an expression for Joule Thomson cooling produced in a Vander Waal's gas.

**Q.6** What are the transport phenomenon in gases? Explain viscosity of gases on the basis of kinetic theory of gases. Derive an expression for the coefficient of viscosity.

**Q.7** Describe the working of the Carnot's reversible heat engine and find an expression for its efficiency?

**Q.8** What is an absolute scale of temperature? Show that this scale agrees with the ideal gas scale.

