



MAR IVANIOS COLLEGE (AUTONOMOUS)
THIRUVANANTHAPURAM

Reg. No. :.....

Name :.....

Second Semester B.Sc. Degree Examination, June 2015

First Degree Programme under CBCSS

Complementary Course: Physics – II (for Chemistry)

AUPY231.2b: Thermal Physics

Time: 3 Hours

Max. Marks: 80

SECTION – A

Answer ALL questions in a word or one or two sentences.

1. Which one is a thermodynamic co – ordinate
i). Mass ii). Volume iii). Distance iv). Velocity
2. Sea breezes are formed due to
i). Conduction ii). Convection iii). Radiation iv). Diffusivity
3. The dimensional formula of thermal conductivity
i). $MLT^{-3}\theta^{-1}$ ii). $ML^2T^{-3}\theta^{-1}$ iii). $ML^2T^{-2}\theta^{-1}$ iv). $MLT^{-2}\theta^{-1}$
4. Rayleigh – Jeans law deals with the distribution of
i). Entropy ii). Power iii). Latent heat iv). Energy
5. Ratio of thermal conductivity to thermal capacity per unit volume is _____.
6. Equation for entropy change during irreversible process is _____.
7. In diesel engine, heat is absorbed by the working substance at constant _____.
8. Temperature in which liquid helium – II changes to liquid helium – I is _____.
9. Plank's law reduces to Wein's law under shorter wavelengths.(True / False)

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10. For a constant temperature, energy emission from a black body is uniformly distributed at different wavelengths.(True / False)

(10 x 1 = 10 Marks)

SECTION – B

Answer any EIGHT questions, not exceeding a paragraph.

11. Define Graham's law of diffusion.
12. Differentiate between emissive and absorptive power of radiation.
13. State Weidmann and Franz law.
14. Why isothermals are represented by the horizontal lines in a T – S diagram ?
15. What is meant by super fluid ?
16. Adiabatic expansion produce cooling. Why ?
17. State and explain Second law of thermodynamics.
18. Give examples of radial flow of heat.
19. State the principle of increase in entropy.
20. What is an indicator diagram ? Why is it called so ?
21. Cooking vessels made up of stainless steel have copper bottom, Why ?
22. Write the principle of degradation of energy.

(8 x 2 = 16 Marks)

SECTION – C

Short essay type / Problems : Answer any SIX questions.

23. Differentiate between thermal conductivity and thermometric conductivity.
24. What will be the efficiency of a carnot engine working between ice point and steam point ?
25. Derive an expression for thermal conductivity of a poor conductor by Lees disc method ?
26. A gas is adiabatically compressed so that its pressure increases from 1 atmosphere to 150 atmosphere. Given γ of air = 1.4. If the initial temperature of air is 300 K, Calculate
i). The rise of temperature and
ii). The work done.

