

PHYSICS

BOOKS - R G PUBLICATION

THERMAL PROPERTIES OF MATTER

Exercise

1. What is the unit of co-efficient of linear expansion.



2. A metal and is heated till its length becomes twice of its original length. If coefficient of linear exansion of the material of the rod is α , then what is the change in temperature?



3. State and explain Pascal's law of transmission of liquid pressure. Explain how this principle is applied in hydraulic lift.

4. obatain the adiabiatic equation PV^{γ} =constatnt from the first law of thermodynamics .



5. Show that $C_P-C_V=R$



6. Define coefficient of real expansion and coefficient of apparent expansion of liquid. Establish the relation between them.



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7. Define the three process of transmission of heat. State the factors on which the amount of heat flowing through a conductor in steady state depends. Hence, define coefficient of thermal conductivity.



8. Define co-efficient of linear, superficial and volume expansions.



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9. Write the relation between α , β and γ .



10. Define metling point. What is the effect of pressure on melting point.



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11. What is latent heat of fusion?



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12. What is meant by the co -efficient of thermal conductivity of a material?state its

unit and dimension. **Watch Video Solution** 13. What is black body and write Stefan's law. **Watch Video Solution 14.** What is meant by thermal capacity? **Watch Video Solution**

15. State Wien's law on radiation.

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16. What is the difference between heat and temperature?



17. What is apparent expansion of water?



18. What is Newton's law of cooling? How it can be derived from Stefan's Boltzman law?



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19. Prove that in case of expansion of solid

$$\beta=2\alpha$$
.



20. What is anomalous expansion of water? How is it useful in preserving acquatic life?



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21. The length of a cube is $10^{\circ}C$ is 10 cm. If temperature is increased to $30^{\circ}C$ what is the change in volume. $(\alpha=7.2\times10^{-5}l^0C)$.



22. The volume of a sphere at $30^{\circ}C$ is 1000cm^3 and $weight7.8kg.\ W\hat{i}sthedensityat$ 100°QC .



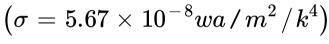
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23. The densities of two substance are 2:3 and their specific heats are 0.12 and 0.09 respectively.compare their capacities per unit volume.



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24. Calculate the amount of radiation of a black body at 400K temperature.





25. How do you explain with the help of graph, the increase in the value of molar conductivity with dilution in case of strong and weak electrolyte?



26. Write the relation between α , β and γ .



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27. With the help of diagram explain the expansion of liquid.



28. The specific gravity of two liquid is 0.8 and 0.5. Thermal capacity of one liquid with 3 litter is equal to the thermal capacity of other liquid with 2 litter. Compare the specific heat.



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29. Explain the themal conductivity and what is the unit of thermal conductivity.



30. Write down the Stefan's law and Stefan Boltzaman law.



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31. The radius of a sphere at $0^{\circ}C$ is 100 cm. when temperature increases the radius becomes 101 cm. Calculate the volume expnassion of the sphere.



32. The temperature of equal masses of three liquids A,B and C are 12°C,19°C and 28°C respectively. The temperature ,when A and B are mixed is 16°C and when B and C are mixed ,it is 23°C . What will be temperature when A and C are mixed.



33. What is black body and write Stefan's law.



34. What is the C.G.S and S.I unit fo heat and what is the relation between them.

