PHYSICS

BOOKS - CHETANA PHYSICS (MARATHI ENGLISH)

THERMAL PROPERTIES OF MATTER

Exercise

1. Which is the fundamental quantity related to heat?

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2. Explain why solids have definite shape and volume?

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3. Explain, liquids have a definite volume whereas gases do not have shape or volume.

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4. Which physical quantity determines whether system isin thermal equilibrium or not?

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5. Define temperature.

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6. Explain thermal equilibrium with suitable example.

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7. What is the difference between temperature and heat?

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8. What is thermometry?

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9. What is Thermistor?

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10. What is Thermocouple?

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11. What is thermocouple used for?

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12. What are the important characteristics of a thermometer?

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13. For calibrating a thermometer, which points are taken as fixed points?

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14. On heating, what is colour variation in zinc oxide.

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15. Explain adiabatic wall and diathermic wall.

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16. Are freezing point and melting point same with respect to change of state? Comment

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17. Define melting point of ice and boiling point of water?

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18. State Zeroth law of thermodynamics.

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19. How a thermometer is calibrated?

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20. What is thermometry? Explain different types of thermometers.

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21. What is ice point and steam point?

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22. Explain theCelsiusscale and Fahrenheitscale of temperature. Derive the relation between them.

OR

What are the different scales of thermometer? What is the relation between them?

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23. Show the relation between Kelvin, Celsius and Fahrenheit temperature scales.

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24. Average room temperature on a normal day is 27° C.What isthe room temperature in ^ ○ F?

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25. Normal human body temperature in fehrenheit is 98.4 $\hat{}$ $\circ F$. What is the body temperature in $\hat{}$ $\circ C$?

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26. The length of a mercury column in a mercury-in-glass thermometer is 25 mm at the ice point and 180 mm at the steam point. What is the temperature when the length is 60 mm?

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27. A resistance thermometer has resistance 95.2O$mega$ at the ice point and 138.6Ω at the steam point. What resistance would be obtained if the actual temperature is 27 ˆ ∘ C?

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28. The volume of a gas varied linearly with absolute temperature if its pressure is held

constant. Suppose the gas does not liquify even at very low temperatures, at what temperature the volume of the gas will be ideally zero?

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29. In a random temperature scale X, water boils at 200 $\hat{}$ $\circ X$ and freezes at 20 $\circ X$. Find the boiling point of a liquid in this scale if it boils at 62 $\hat{}$ $\circ C$.

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30. Comparison of Kelvin, Celcius and Farenheit Scale diagram.

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31. Calculate the temperature which has the same value on Fahrenheit scale and Kelvin scale

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32. Define: triple point of a substance.

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33. State Boyle's law and give its equation.

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34. State Charle's Law and give its equation.

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35. State Gay Lussac's law and give its equation.

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36. Write a short note on absolute scale of temperature.

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37. Define triple point of water.Give itssignificance.

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38. Derive Ideal Gas Equation.

OR

Define Ideal Gas Equation.

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39. Write a short note on absolute zero temperature?

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40. Express T = 24.57 K in Celsius and fahrenheit.

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41. The pressure reading in a thermometer at steam point is 1.367×10^3Pa. What is pressure reading at triple point knowing the linear relationship between temperature and pressure?

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42. A gas at 900°C is cooled until both its pressure and volume are halved. Calculate its final temperature.

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43. Name the types of thermal expansion.

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44. Name the two substances which expand on freezing besides water.

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45. How is a steel wheel mounted on an axle to fit exactly.

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46. Why is a railway track not a continuous piece but is made up of segments separated by the gaps?

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47. What is thermal expansion?

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48. Derive the necessary expression for coefficient of linear expansion. Hence define it.

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49. Derive the necessary expression for coefficient of volume expansion. Hence define it.

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50. Why does a balloon burstssometimes when we are trying to fill air inside?

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51. Explain the anomalous behaviour of water

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52. Why do lakes freeze first at the surface.

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53. Why does a metal wire used for electrical transmission sag?

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54. Derive the relation between α, β, and γ for a solid.

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55. An aluminium rod and iron rod show 1.5 m difference in their lengths when heated at all temperature. What are their lengths at 0 ˆ ∘ C if coefficient of linear expansion for aluminium is $24.5 \times 10^{-6} /^{\circ} C$ and for iron is $11.9 \times 10^{-6} /^{\circ} C$

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56. Which substance has the highest heat capacity.

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57. State the relation between Principal and Molar specific heat capacities.

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58. Write heat equation and state its formula.

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59. Define and explain specific heat.

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60. Why do we consider two specific heats of a gas?

OR

Why specific heat at constant pressure is greater than specific heat at constant volume?

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61. Define Principal Specific heat capacities of gases

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62. Define Molar specific heat capacities of gases.

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63. Explain heat capacity

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64. If the temperature of 4 kg mass of a material of specific heat capacity $300 J / kg$ ^ $\circ C$ rises from $20^{\circ} C$ to 30 ^ $\circ C$. Find the heat received.

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65. Find thermal capacity for a copper block of mass 0.2 kg, if specific heat capacity of copper is $290 J / kg^{\circ} C$

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66. Which will require more energy, heating a 2.0 kg block of lead by 30 K or heating a 4.0 kg block of copper by 5 K? $\left(S_{\leq} ad = 128 Jkg^{-1}K^{-1},\right.$ $\left.S_{c}opper = 387 Jkg^{-1}K^{-1}\right)$

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67. Specific latent heat of vaporization of water is $2.26 \times 10^6 J/kg$. Calculate the energy needed to change 5.0 g of water into steam at $100^\circ C$

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68. What is the specific heat of a metal if 50 cal of heat is needed to raise 6 kg of the metal from $20^\circ C$ to $62^\circ C$?

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69. (a) What is the Principle of calorimetry?

OR

What is the principle of "method of mixtures"?

OR

(b) On which law is the above principle based

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70. What is a calorimeter? What isits use?

OR

Explain the construction of a calorimeter.

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71. Explain the technique of "Method of mixtures", to determine specific heat of a substance.

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72. A calorimeter of mass 50 gm and specific heat capacity 0.42 J g^{-1} ^ $\circ C^{-1}$ contains some water at 20° C.

A metal piece of mass 20 gm at 100°C is dropped into the calorimeter. After stirring, the final temperature of the mixture is found to be $22^{\circ}C$.Find the mass of water used.

(specific heat of metal piece= $0.3Jg^{-1}\hat{}\circ C^{-1}$ specific heat of water = $4.2Jg^{-1}\hat{}\circ C^{-1}$)

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73. 40 gm of water at $70^{\circ}C$ is poured into a calorimeter of mass 160 gm, which is at $20^{\circ}C$.

If the final temperature of the contents is $40^{\circ} C$, what is the specific heat of the calorimeter? Specific heat of water = 4200 J /kg/C

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74. What is meant by 'Change of State'?

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75. Describe the process of change of state for water (from its solid state to vapour state) by means of a temperature - time graph.

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76. What is normal boiling point?

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77. What happens after point D in temperature - time graph? Can steam be hotter than $100^{\circ} C$?

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78. Why does steam at $100^{\circ} C$ cause more harm to the skin than water at $100^{\circ} C$?

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79. What is sublimation?

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80. What is a 'phase diagram'? What is its use?

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81. What is meant by phase of a substance?

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82. Explain a phase diagram.

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83. Draw temperature v/s heat graph for water at one standard atmospheric pressure

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84. What is "critical temperature"?

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85. What is meant by Latent heat ?

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86. Define : Latent heat of fusion $\left(L_f\right)$

Latent heat of vapourisation $\left(L_y\right)$

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87. When 0.1 kg of ice at 0 ˆ ∘ C is mixed with 0.32 kg of water at $35^{\circ}C$ in a container. The resulting temperature of the mixture is $7.8^{\circ}C$. Calculate the heat of fusion of ice $\left(S_{w}ater = 4186Jkg^{-1}K^{-1}\right)$

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88. Why is latent heat of vaporisation much larger than latent heat of fusion?

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89. An electric kettle takes 20 min. to heat a certain quantity of water from $0^{\circ} C$ to boiling point. It requires 90 minutes to turn all the water at $100^{\circ} C$ into steam. Find the latest heat of vaporisation.

(specific heat of water= 1 $cal / gm /^{\circ} C$)

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90. What are the three modes of heat transfer? Describe each in brief.

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91. What is thermal conductivity?

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92. What is meant by "steady state"?

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93. Define temperature gradient.

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94. Derive an expression for coefficient of thermal conductivity of a material.

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95. Define coefficient of thermal conductivity. State its MKS unit

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96. What ismeant by "thermal resistance"? Explain. State its SI unit and dimensions

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97. Describe three applications of thermal conductivity

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98. Give reason, why

(i)Cooking is difficult at high altitude.

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99. Give reason, why

(ii)Cooking is faster in a pressure cooker.

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100. Find the temperature difference between two sides of a steel plate 4 cm thick, when heat is transmitted through the plate at the rate of 400 kcal per minute per square metre at steady rate. Thermal conductivity of steel is 0.026 $kcal/m.s.k.$

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101. What is the difference between boiling and evaporation?

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102. Explain the process of heat transfer by convection.

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103. Explain the following application of convection.

(1) Heating and cooling of rooms.

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104. Explain the following application of convection.

(2) Cooling of transformers.

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105. State some applications of convection.

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106. What is meant by " free convection" and " forced convection".

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107. What is "radiation"? Explain "heat transfer by radiation".

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108. What is "Newton's law of cooling"? Explain.

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109. A metal sphere cools from $80^\circ C$ to $60^\circ C$ in 6 minutes. How much time will it take to cool from $60^\circ C$ to $40^\circ C$ if the room temperature is $30^\circ C$?

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110. If 50 gm of water at $0^\circ C$ is added to 250 gm of water at $90^\circ C$. Find the final

temperature

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111. 30 gm of ice at $0^\circ C$ is placed in a calorimeter of mass 20 gm also at $0^\circ C$. 100 gm of water at $90^\circ C$ is poured into the calorimeter. Find the final temperature. (specific heat of calorimeter = $0.4 cal/gm^\circ C$, Specific heat of water = $0.42 cal/gm^\circ C$ Latent heat of fusion of ice = 80calg)

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112. How many grams of ice at $0^{\circ}C$ should be added to 200 gm. of coffee at $90^{\circ}C$ to cool it to $60^{\circ}C$? (Assume that coffee-cup is not heated) specific heat of water = 1 c a l / g m ∘ C , Specific heat of coffee = 1.4 c a l / g m ∘ C

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113. The door of a refrigerator is 150 cm. high, 80 cm wide and 6 cm thick. If the coefficient of thermal conductivity is $5 \times 10^{-4}\ cal/cm.$ s.

$\hat{}$ $\circ C$ and the inner and outer surfaces are at $0^{\circ} C$ and $30^{\circ} C$ respectively. Calculate heat loss through the door in 1 minute.

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114. When holes are dug into the Earth, it is found that for a depth of every 30 m, the temperature rises by $1^{\circ} C$.

If the coefficient of conductivity of Earth's crust is 0.8 $wa / m^{\circ} k$, calculate the amount of

heat flowing through an area of 1 sq. metre on surface of earth, per minute

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115. Calculate the thermal resistance of 1 square metre of window glass pane that is 0.5 cm thick $\left(k = 0.6\frac{W}{m^{\circ}C}\right)$

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116. A body cools at the rate of $4^{\circ}C$ per minute when its temperature is $70^{\circ}C$.

What will be its rate of cooling when its temperature is $50^{\circ}C$? (Assume temperature of surrounding to be $30^{\circ}C$)

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117. A steel tyre is 100 cm in diameter at $25^{\circ}C$.

To what temperature must it be heated so

that it will just slip on a cartwheel 100.3 cm in diameter? (alpha_(steel)=1.2 xx 10^-5//^@C`)

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118. The length of an iron rod at $100^\circ C$ is 300.36 cm and at $150^\circ C$ it is 300.54 cm. find the coefficient of linear expansion of its material and the length of rod at $0^\circ C$.

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119. By how much will a steel bar one metre long expand when heated from $25^{\circ}C$ to $55^{\circ}C$? The coefficient of volume expansion of steel is $3 \times 10^{-5} /^{\circ} C$.

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120. At $20^{\circ}C$, the gap between the rails each 50 m in length is observed to be 1.65 cm. If the lines are made of steel $\left(\alpha = 11 \times 10^{-6} /^{\circ} C\right)$, at what temperature will the lines just touch?

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121. Railway lines are laid with gaps to allow for expansion. If each line is 10 m long at $20^\circ C$, what should be the length of the gap to be kept between two rails to allow for expansion if the maximum temperature that can be reached is $50^\circ C$?

$\left(\alpha_{steel} = 1.2 \times 10^{-6} / ^\circ C\right)$

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122. A steel tyre of 1.2 m inner diameter at $20^{\circ} C$ is to be fitted on a cartwheel of 120.33 cm diameter of the tyre. Calculate the temperature to which the steel tyre is to be raised so that it will just slip on the wheel. $\left(\alpha_{Steel} = 11 \times 10^{-6} /^{\circ} C\right)$

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123. The volume of a metal block increases by 0.15% when its temperature isincreased by

$200^\circ C$. Find the coefficient of its linear expansion.

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124. If the temperature in a room is $20^\circ C$, what s its temperature in degree Fahrenheit?

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125. How much heat is required to raise temperature of 500 gm of kerosene from

$10^\circ C$ to $40^\circ C$ if the specific heat of kerosene is 0.51 $kal/kg^\circ C$?

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126. The difference between the lengths of steel rod and a brass rod is 0.6 at all temperatures. What are their lengths at $0^\circ C$?

$(\alpha_S teel = 12 \times 10^{-6}/^\circ C,$

$(\alpha_{brass} = 18 \times 10^{-6}/^\circ C)$

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127. Choose the correct option.

Range of temperature in a clinical thermometer, which measures the temperature of human body is

A. $70^\circ C$ to $100^\circ C$

B. $34^\circ C$ to $42^\circ C$

C. $0^\circ F$ to $100^\circ F$

D. $34^\circ F$ to $80^\circ F$

Answer:

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128. A glass bottle completely filled with water is kept in the freezer. Why does it crack?

A. Bottle gets contracted

B. Bottle is expanded

C. Water expands on freezing

D. Water contracts on freezing

A. A. Bottle gets contracted

B. B. Bottle is expanded

C. C. Water expands on freezing

D. D. Water contracts on freezing

Answer:

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129. If two temperatures differ by $25^\circ C$ on Celsius scale, the difference in temperature on Fahrenheit scale is

A. 65°

B. 45°

C. 38°

D. 25°

Answer:

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130. If α, beta, and gamma` are coefficients of linear, area l and volume expansion of a solid then

A. $\alpha : \beta : \gamma$1: 3 : 2`

B. $\alpha : \beta : \gamma 3 : 1 : 2$`

C. $\alpha : \beta : \gamma$ 1: 3 : 1`

D. $\alpha : \beta : \gamma$ 1 : 2 : 3`

Answer:

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131. Consider the following statements-

(I) The coefficient of linear expansion has dimension K^{-1}

(I) The coefficient of Volume expansion has

dimension K^{-1}

A. I and II are both correct

B. I is correct II is wrong

C. II is correct but I is wrong

D. I and II are both wrong

A. A. I and II are both correct

B. B. I is correct II is wrong

C. C. II is correct but I is wrong

D. D. I and II are both wrong

Answer:

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132. Consider the following statements-

(I) The coefficient of linear expansion has dimension K^{-1}

(I) The coefficient of Volume expansion has dimension K^{-1}

A. I and II are both correct

B. I is correct II is wrong

C. II is correct but I is wrong

D. I and II are both wrong

A. I and II are both correct

B. I is correct II is wrong

C. II is correct but I is wrong

D.

Answer:

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133. Water falls from a height of 200 m. What is the difference in temperature between the water at the top and bottom of a water fall given that specific heat of water is 4200 J

kg^{-1} ^ $\circ C^{-1}$?

A. $0.96^{\circ} C$

B. $1.02^{\circ} C$

C. 0.46^{C}

D. $1.16^{\circ} C$

A. A. $0.96^{\circ} C$

B. B. $1.02^{\circ} C$

C. C. 0.46^{C}

D. D. $1.16^{\circ} C$

Answer:

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134. Thermal radiations are

A. Mechanical waves

B. Electrical waves

C. Electromechanical wave

D. Electromagnetic wave

Answer:

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135. By increasing temperature of liquid it's

A. Volume and density both decreases

B. Volume and density both increases

C. Volume increases and density decreases

D. Volume decreases and density increases

Answer:

Watch Video Solution

136. When water is heated from $0^{\circ}C$ to $10^{\circ}C$, it's volume

A. Decreases continuously

B. First decreases then increases

C. First increases then decreases

D. Increases continuously

Answer:

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137. Two rods of same material, equal in length but one has cross-sectional area double of the other. If they are heated through same temperature then which rod expands more?

A. Thick

B. Thin

C. Both expand equally

D. None of these

A. A. Thick

B. B. Thin

C. C. Both expand equally

D. D. None of these

Answer:

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138. The relation between α and β is

A. $\alpha = 1/2\beta$

B. $\beta = 1/2\alpha$

C. $\beta = \alpha$

D. $2\alpha = 3\beta$

Answer:

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139. Two holes are made in copper plate. The plate is heated. The distance between the holes

A. Increases

B. Decreases

C. Remains same

D. None of these

Answer:

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140. In cold countries water pipes sometimes burst, because

A. Pipe contracts

B. Water expands on freezing

C. Pressure is greater outside

D. Water freezes, pressure increases

Answer:

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141. Eskimos build double walled houses of the blocks of ice because

A. Heat can't flow outside from inside

B. Ice is available in plenty

C. To make the house appear spacious

D. None of the above

Answer:

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142. The sum of all energies of all molecules in a body is called

A. Kinetic energy

B. potential energy

C. thermal energy

D. vibrational energy

A. A. Kinetic energy

B. B. potential energy

C. C. thermal energy

D. D. vibrational energy

Answer:

Watch Video Solution

143. Cubical expansion is undergone by

A. Solids alone

B. Solids and liquids

C. Solids, liquids and gases

D. Only liquids and gases

Answer:

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144. There is a hole in a metal plate. Upon heating the plate, the diameter of the hole

A. Will increase

B. Will decrease

C. Will not change

D. Increase or decrease depending upon the coefficient of surface expansion of the plate

Answer:

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145. Coefficient of areal expansion for a solid is

A. 3 times the coefficient of itslinear expansion

B. $3/2$ times the coefficient of its volume expansion

C. $\frac{2}{3}$ times the coefficient of its volume expansion

D. More than its coefficient of apparent expansion

Answer:

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146. In a lake, when it cools to the point where it is about to freeze, at $4^{\circ}C$ water settles to bottom because it is

A. less dense

B. more dense

C. very cold

D. very hot

Answer:

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147. The volume of metal block changes by 0.18% when it is heated through $20^{\circ} C$ then its coefficient of cubical expansion will be

A. $9 \times 10^{-5} /^{\circ} C$

B. $3 \times 10^{-5} /^{\circ} C$

C. $6 \times 10^{-5} /^{\circ} C$

D. $4 \times 10^{-5} /^{\circ} C$

Answer:

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148. Two metal rods has lengths in the ratio $3:2$ and coefficient of linear expansion are in the ratio $2:3$. If they are heated from $35^\circ C$ to $95^\circ C$, then ratio of their linear expansion is

A. $1:2$

B. $2:1$

C. $1:1$

D. $1:3$

Answer:

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149. Iron sheet 50 cm X 20 cm is heated through $100^\circ C$. If $\propto = 12 \times 10^{-6}/^\circ C$ then chnage in area is

A. $2.4cm^2$

B. $3.4cm^2$

C. $4.4cm^2$

D. $5.4cm^2$

Answer:

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150. Railway tracks are laid with gaps for expansion. The gap between the steel rails 20 m long is 1.2 cm at $10^\circ C$. The temperature at which the steel rails just touch each other is $(\propto steel = 12 \times 10^{-6}/^\circ C)$

A. $50^\circ C$

B. $40^\circ C$

C. $60^\circ C$

D. $30^\circ C$

Answer:

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151. An iron ball is heated. Then percentage increase will be largest in

A. diameter

B. surface area

C. volume

D. density

Answer:

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152. A copper wire of length 1 increases in length by 0.2% on heating from $20^\circ C$ to $40^\circ C$. Then percentage change in area of copper plate of dimension 31×21 on heating from $20^\circ C$ to $40^\circ C$ is

A. 0.1%

B. 0.2%

C. 0.4%

D. 0.6%

Answer:

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153. Celsiusscale is calibrated according to.....

A. Thermometer range of mercury

B. Melting point of mercury

C. Melting point of ice and boiling point of water

D. Triple point of water

Answer:

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154. A constant temperature volume of given mass of gas is inversely proportional to its pressure is

A. Charles law

B. Boyle's law

C. Gay-Lussac's law

D. None

Answer:

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155. Specific heat of water is

A. 2.4 J $kg^{-1}c^{-1}$

B. 4.2 J $kg^{-1}c^{-1}$

C. 3.4 J $kg^{-1}c^{-1}$

D. 4.2 J $gm^{-1}c^{-1}$

Answer:

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156. For measurement of heat,.....is used.

A. Thermometer

B. Calorimeter

C. Multimeter

D. Pressure gauge

Answer:

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157. Quantity of heat required to change state of unit masssubstance without change in temperature is.....

A. Specific heat

B. Latent heat

C. Thermal expansion

D. None

Answer:

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158. $32^\circ F$ is equal to

A. 212 K

B. $212^\circ C$

C. $273.15^{\circ} C$

D. 273.15 K

Answer:

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159. The temperature and pressure at the triple point of water are

A. 273.15 K, 4.58 mm of mercury

B. 273.16 K, 4.58 mm of mercury

C. 273.15 K, 4.58 cm of mercury

D. 273.16 K, 4.58 cm of mercury

Answer:

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160. The melting point of pure ice is

A. 273.15 K

B. 373.15 K

C. 10 K

D. 0 K

Answer:

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161. The boiling point of pure water is

A. 273.15 K

B. $273.15^{\circ} C$

C. $100^{\circ} C$

D. 100 K

Answer:

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162. Specific heat capacity is expressed as

A. $J/kg^\circ C$

B. J/kg

C. Kg/J

D. $Kg/J^\circ C$

Answer:

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163. Latent Heat of fusion of ice is

A. 80 Cal / g

B. 90Cal / g

C. 100Cal / g

D. 110Cal / g

Answer:

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164. The temperature gradient of a rod of length 1 m is $60^\circ C/m$. If the temperature of the hot end is $30^\circ C$ the temperature at the other end is

A. $-60^\circ C$

B. 60°

C. 90°

D. $-30^\circ C$

Answer:

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165. The thermal conductivity of a metal plate is 80 w/mk. If the thickness of the plate is 0.5 cm and heat is conducted at the rate of $2.5 \times 10^6 W/M^2$. The temperature difference across the two faces of the plate is about

A. $156^\circ C$

B. $60^\circ C$

C. $30^\circ C$

D. $10^\circ C$

Answer:

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166. A wall of a room has dimensions of $6m \times 4m$. It is 60 cm thick. Its thermal conductivity is is 2. If the temperature inside and outside is $20^{\circ}C$ and $-5^{\circ}C$ respectively the amount of heat conducted every hour is about

A. 2000 J

B. 1700 kcal

C. 2000 cal

D. 1500 cal

Answer:

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167. A body cools from $62^{\circ}C$ to $50^{\circ}C$ in 10 minutes. If the surrounding temperature is $26^{\circ}C$ the temperature at the end of next 10 minutes is

A. $38^\circ C$

B. $45^\circ C$

C. $42^\circ C$

D. $40^\circ c$

A. A. $38^\circ C$

B. B. $45^\circ C$

C. C. $42^\circ C$

D. D. $40^\circ c$

Answer:

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168. A body cools from $51^\circ C$ to $50.9^\circ C$ in 10 sec. If surrounding temperature is $31^\circ C$. The time taken to cool from $41^\circ C$ to $40.9^\circ C$ will be

A. 15 sec

B. 5 sec

C. 20 sec

D. 10 sec

Answer:

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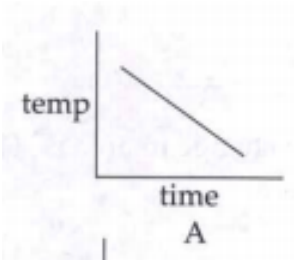
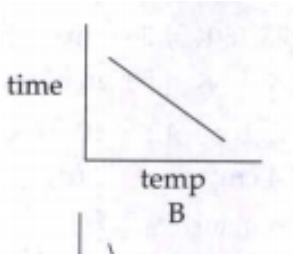
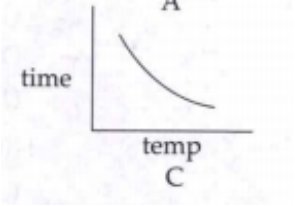
169. The cooling curve is represented by graph.....

A



B





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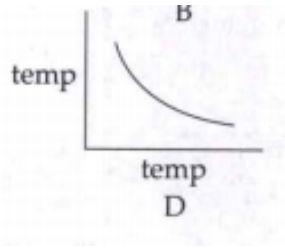
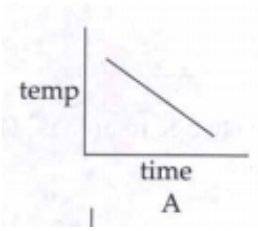


D

A. A



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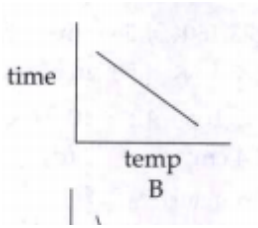
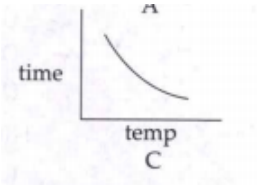
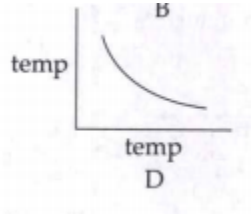


C. C



D. D



Answer:

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170. Gravitation plays a role in.....

A. conduction B. convection C. radiation D. evaporation

A. A. conduction

B. B. convection

C. C. radiation

D. D. evaporation

Answer:

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171. Three different liduid A , B, C of equal masses have temperatures of $12^\circ C$, $19^\circ C$ and $28^\circ C$. The temperature When A and B are mixed is $16^\circ C$ and When B and C are mixed is $23^\circ C$. What will be the temperature when A and C are mixed?

A. $19^\circ C$

B. $20^\circ C$

C. $21^\circ C$

D. $22^\circ C$

A. $19^\circ C$

B. $20^{\circ} C$

C. $21^{\circ} C$

D. $22^{\circ} C$

Answer:

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172. The MKS unit of thermal resistance is

A. $\frac{\hat{} \circ K}{Js}$

B. $\frac{J}{\hat{} \circ K.s}$

C. $\frac{\hat{} \circ K.s}{J}$

D. $\frac{\hat{} \circ K}{J}$

Answer:

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173. A 10° temperature difference is maintained across the two faces of a slab. If 120 joule of heat is conducted in 1 minute. The thermal resistance of the material in MKS unit is.....

A. 2.5

B. 05

C. 10

D. 20

A. 2.5

B. 5

C. 10

D. 20

Answer:

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174. The dimension of thermal resistance are.....

A. $M^1L^2T^{-3}K^1$

B. $M^{-1}L^{-2}T^3K^1$

C. $M^{-1}L^2T^1K^3$

D. $M^{-2}L^{-1}T^3K^{-1}$

Answer:

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175. The relation between α and β is

A. $\alpha = \frac{1}{2}\beta$

B. $\beta = \frac{1}{2}\alpha$

C. $brta = \alpha$

D. $2\alpha = 3\beta$

Answer:

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176. The temperature and pressure at the triple point of water are

A. 273.15 K, 4.58 mm of mercury

B. 273.16 K, 4.58 mm of mercury

C. 273.15 K, 4.58 cm of mercury

D. 273.16 K, 4.58 cm of mercury

Answer:

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177. Iron sheet 50 cm X 20 cm is heated through $100^\circ C$. If $\propto = 12 \times 10^{-6}/^\circ C$ then chnage in area is

A. $2.4cm^2$

B. $3.4cm^2$

C. $4.4cm^2$

D. $5.4cm^2$

Answer:

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178. What are the important characteristics of a thermometer?

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179. Define thermal capacity?

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180. State Newton's law of cooling?

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181. Define (i) Sublimation

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182. Define(ii) Triple point

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183. Give any four applications of thermal conductivity in everyday life.

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184. Why do we consider two specific heats heat for a gas?

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185. In a random temperature scale, water boils at $200^\circ X$ and freezes at $20^\circ X$. Find the boiling point of liquid of a liquid in this scale at $62^\circ C$.

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186. A sheet of brass 50 cm long and 8cm broad at $0^\circ C$. If the surface area at $100^\circ C$ is $401.57 cm^2$, find the coefficient of linear expansion of brass

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187. Distinguish between:

What is the difference between heat and temperature?

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188. The difference in temperature between two sides of a glass plate 0.3 mm thick is $25^{\circ} C$. If the area of one side surface is $10 m^2$, calculate the heat conducted per second through the plate. The thermal conductivity of glass is $0.84 J / s$ m K.

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189. Define molar specific heats of a gas? State their relation with principal specific heats.

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190. A metal sphere cools from $80^{\circ}C$ to $60^{\circ}C$ in 6 minutes. How much time will it take to cool from $60^{\circ}C$ to $40^{\circ}C$ if the room temperature is $30^{\circ}C$?

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