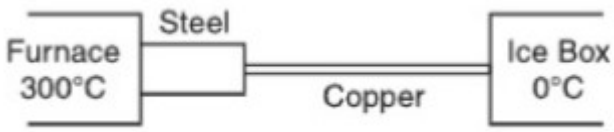
1.	Give two examples of natural convection.
2.	Which metal is the best conductor of heat?
3.	What is Temperature Gradient?
4.	A gas is free to expand what will be its specific heat?
5.	A cloudy night is hotter than a clear sky night, why?
6.	At what temperature does a body stop radiating?
7.	Name the suitable thermometers to measure the following temperatures a) -100^0C b) 80^0C c) 780^0C d) 2000^0C
8.	A body at temperature 94^0C cools to 86^0C in 2 min. What time will it take to cool from 82^0C to 78^0C. The temperature of surrounding is 20^0C.
9.	A iron ring of diameter 5.231 m is to be fixed on a wooden rim of diameter 5.243 m both initially at 27^0C. To what temperature should the iron ring be heated so as to fit the rim? (Coefficient of linear expansion of iron is $1.2\times 10^{-5}\ k^{-1}$) **(218^0C)**
10.	A 100g of ice at 0^0C is mixed with 100g of water at 80^0C. The resulting temperature is 6^0C. Calculate heat of fusion of ice. **(68 cal/g)**
11.	A brass rod of length 50cm and diameter 3mm is joined to a steel rod of the same length and diameter. What is the change in length of the combined rod at 250^0C, if the original lengths are at 40^0C? Coefficient of linear expansion of brass and steel are $2.1 \times 10^{-5}\ ^0C^{-1}$ and $1.2 \times 10^{-5}\ ^0C^{-1}$ respectively. . **(0.346cm)**
12.	At what temperature the resistance of thermometer will be 12% more of its resistance at 0^0C (given temperature coefficient of resistance is $2.5\times 10^{-3}C^{-1}$? **(48^0C)**
13.	A body initially at 80^0C cools to 64^0C in 5 minutes and to 52^0C in 10 minutes. What is the temperature of the surroundings? **(16^0C)**
14.	Two rods of different metals of coefficient of linear expansion α_1 and α_2 and initial length L_1 and L_2 respectively are heated to the same temperature, Find relation α_1, α_2, L_1 and L_2 such that difference between their lengths remains Constant.
15.	A copper block of mass 2.5kg is heated in a furnace to a temperature of 500^0C and then placed on a large ice block. What is the maximum amount of ice that can melt? Specific heat of copper is $0.39\ Jg^{-1}\ ^0C^{-1}$. Heat of fusion of water is $335\ Jg^{-1}$. **(1.5 kg)**
16.	The coefficient of volume expansion of glycerin is $49 \times 10^{-5}\ ^0C^{-1}$. What is the fractional change in density for a 30^0C rise in temperature? **(1.47×10^{-2})**
17.	A hole is drilled in a copper sheet. The diameter of the hole is 4.24cm at 27^0C. What is the change in the diameter of the hole when the sheet is heated to 227^0C? Coefficient of linear expansion of copper is $1.7\times10^{-5}\ ^0C^{-1}$. **(0.0144cm)**
18.	A large steel wheel is to be fitted on to a shaft of the same material. At 27^0C, the outer diameter of the shaft is 8.70cm and the diameter of the central hole in the wheel is 8.69cm. The shaft is cooled using dry ice. At what temperature of the shaft does the wheel slip on the shaft? Assume coefficient of linear expansion of the steel to be constant over the required temperature range is $1.2 \times 10^{-5}\ K^{-1}$. **($-68.95^0C$)**

19.	Given length of steel rod 15cm; of copper 10cm. Their thermal conductivities are 50.2 $Wm^{-1}K^{-1}$ and 385 $Wm^{-1}K^{-1}$ respectively. Area of cross section of steel is double of area of Copper rod?  **(44.43^{0}C)**
20.	The coefficient of volume expansion of glycerin is 49 × 10^{-5} K^{-1}. What is the fractional change in its density for a 30^{0}C rise in temperature? **(1.47 × 10^{-2})**
21.	A body re-emits all the radiation it receives. Find surface temperature of the body. Energy received per unit area per unit time is 2.835 Watt/m^2 and ϭ = 5.67 × 10^{-8} Wm^{-2} K^{-4}. **(85 K)**
22.	Two stars radiate maximum energy at wavelengths 3.6 × 10^{-7}m and 4.8 × 10^{-7}m respectively. What is the ratio of their temperature? **(4/3)**
23.	An indirectly heated filament is radiating maximum energy of wavelength 2.16 × 10^{-5}cm. Finds the net amount of heat energy lost per sec per unit area, if temperature of surrounding air is 13^{0}C. Given b= 0.288cm K, ϭ = 5.77 × 10^{-5} erg s^{-1} cm^{-2} K^{-4}. **(18.24 × 10^8 $Js^{-1}m^{-2}$)**
24.	Two bodies A and B at temperature 327^{0}C and 127^{0}C respectively are placed in an evacuated enclosure maintained at temperature of 27^{0}C. Compare their rates of cooling. **(6.94)**
25.	The spectral energy distribution of the sun has a maximum at 4753 angstrom. If temperature of sun in 6050 K, what is the temperature of a star for which this maximum is at 9506 angstrom. **(3025 K)**
26.	The ratio of radiant energies per unit surface area by two bodies is 16:1. The temperature of hotter body is 1000 K, calculate the temperature of the other body. **(500 K)**
27.	A brass wire 1.8m long at 27^{0}C is held taut with little tension between two rigid supports. If the wire is cooled to a temperature of -39^{0}C, what is the tension developed in the wire, if the diameter is 2.0 mm? Coefficient of linear expansion of brass = 2.0 × 10^{-5} $^0C^{-1}$, and Young's modulus of brass = 0.91 × 10^{11} N/m^2. **(3.77 × 10^2 N)**
28.	When 0.2kg of a body at 100^{0}C is dropped into 0.5kg of water at 10^{0}C, the resulting temperature is 16^{0}C. Find the specific heat of the body. Specific heat of water is 4.2 × 10^3J/kg ^{0}C.**(0.75 × 10^3 J/kg ^{0}C)**
29.	When 0.15kg of ice at 0^{0}C is mixed with 0.30 kg of water at 50^{0}C in a container, the resulting temperature is 6.7^{0}C. Calculate the heat of fusion of ice.(S_W= 4186 J kg^{-1} K^{-1}) **(3.34 × 10^5 J kg^{-1})**
30.	A 10kW drilling machine is used to drill a bore in a small aluminum block of mass 8.0 kg. How much is the rise in temperature of the block in 2.5 minutes assuming 50% of power is used up in heating the machine itself or lost to the surrounding? Specific heat of aluminum = 0.91 Jg^{-1} $^0C^{-1}$. **(103^{0}C)**