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Assignment 04

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UNIT 4 Heat

Q1 On the Celsius scale the absolute zero of temperature is at

- (a) 0°C (b) -32°C
 (c) 100°C (d) -273.15°C

Q2 The temperature of a substance increases by 27°C . On the Kelvin scale this increase is equal to

- (a) 300K (b) 246K
 (c) 271K (d) 7K

Q3 The absolute zero is the temperature at which

- (a) Water freeze (b) All substances exist as solid
 (c) Molecular motion ceases (d) None of these

Q4 On which of the following scales of Temperature, the temperature is never negative

- (a) Celsius (b) Fahrenheit
 (c) Reaumur (d) Kelvin

Q5 The temperature on Celsius scale is 25°C . What is the corresponding temperature on the Fahrenheit scale?

- (a) 40°F (b) 77°F
 (c) 50°F (d) 45°F

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Q6 One quality of a thermometer is that its heat capacity should be small. If P is a mercury thermometer, Q is a resistance thermometer and R is thermocouple type then

- (a) P is best, R is worst (b) R is best, P is worst
 (c) R is best, Q is worst (d) P is best, Q is worst

Q7 The temperature of a body on Kelvin scale is found to be x Kelvin. When it is measured by Fahrenheit, it is found to be $x^{\circ}\text{F}$. Then the value of x is

- (a) 40 (b) 313

- Q5 The temperature on Celsius scale is 25°C . What is the corresponding temperature on the Fahrenheit scale?
- (a) 40°F (b) 77°F
(c) 60°F (d) 45°F

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- Q7 The temperature of a body on Kelvin scale is found to be x Kelvin. When it is measured by Fahrenheit, it is found to be $x^{\circ}\text{F}$. Then the value of x is
- (a) 40 (b) 313
(c) 574.25 (d) 301.25

- Q8 A Centigrade and Fahrenheit thermometer are dipped in ~~water~~ boiling water. The water temperature is lowered until the Fahrenheit thermometer registers 140°F . What is the fall in temp as registered by Centigrade thermometer?
- (a) 30°C (b) 40°C
(c) 60°C (d) 80°C

- Q9 On Centigrade scale, the temperature of a body increases by 30°C . The increase in temperature on Fahrenheit scale is

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- (a) 50° (b) 40°
(c) 30° (d) 54°
- Q10 The correct value of 0°C on Kelvin scale will be

(c) 60°C (d) 80°C

29 On Centigrade scale, the temperature of a body increases by 30 degree. The increase in temperature on Fahrenheit scale is

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(a) 50°

(b) 40°

3 80°

(d) 54°

Q10 The correct value of 0°C on Kelvin scale will be

(a) 273.15 K

(b) 273.00 K

(c) 273.05 K

(d) 273.63 K

Q11 In which case, the thermal conductivity increases from left to right

(a) Al, Cu, Ag

(b) Ag, Cu, Al

(c) Cu, Ag, Al

(d) Al, Ag, Cu

Q12 Which of the following cylindrical rods will conduct most heat, when their ends are maintained at the same steady temperature

(a) length 1m, radius 1cm

(b) length 2m, radius 1cm

(c) length 2m, radius 2cm

(d) length 1m, radius 2cm

Q13 The heat is flowing through two cylindrical rods of same material. The diameter of rods are in the ratio 1:2 and their lengths are in the ratio 2:1. If the temperature difference between their ends is the same, the ratio of rate of flow of

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heat through them is

(a) 1:1

(b) 2:1

(c) 1:4

(d) 1:8

Q14 Under steady state if the

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heat through them is

(a) 1:1 (b) 2:1

(c) 1:4 (d) 1:8

Q14 Under steady state, the temperature of a body

(a) Increases with time (b) decreases with time

4 (c) Does not change with time and is same at all the points of the body

(d) Does not change with time but is different at different points of the body

Q15 The Coefficient of Thermal Conductivity depends upon →

(a) Temperature difference of two surfaces

(b) Area of the plate

(c) Thickness of the plate

(d) Material of the plate

Q16 When two ends of a rod wrapped with Cotton are maintained at different temperatures and after some time every point of the rod attains a constant temp, then

(a) Conduction of heat at different points of the rod stops because the temperature is not increasing

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(b) Rod is bad conductor of heat

(c) Heat is being radiated from each point of the rod

(d) Each point of the rod is giving heat to

of the rod attains a constant temp, then

Q17. Conduction of heat at different points of the rod stops because the temperature is not increasing

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(b) Rod is bad conductor of heat

(c) Heat is being radiated from each point of the rod

(d) Each point of the rod is giving heat to its neighbour at the same ~~same~~ rate at which it is receiving heat

Q17. The length of two rods made up of the same metal and having the same area of cross-section are 0.6m and 0.8m respectively. The temperature between the ends of first rod is 90°C and 60°C and that of the other rod is 150°C and 110°C . For which rod, the rate of conduction will be
 5 later \rightarrow

(a) First (b) Second

(c) Same for both (d) None

Q18. The ratio of thermal conductivity of the two rods of different material is $5:4$. The two rods of same area of cross-section and same thermal resistance will have the length in the ratio -

(a) $4:5$

(b) $9:1$

(c) $1:9$

(d) $5:4$

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Q19. The thermal conductivity of material in cgs system is 0.4. In steady state the rate of heat is 1 cal/s-cm^2 , then thermal gradient will be -

(a) 10°C/cm

(b) 12°C/cm

(c) 25°C/cm

(d) 20°C/cm

- (a) density of material (b) Specific heat
 (c) Thermal Conductivity (d) All of the above

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Q22 The thickness of a metallic plate is 0.4 cm. The temperature between its two surfaces is 20°C . The quantity of heat flowing per second is 50 Calorie from 5cm^2 area. In Cgs system, the coefficient of thermal conductivity will be

- (a) 0.4 (b) 0.6
 (c) 0.2 (d) 0.5

Q23 The dimensions of thermal resistance are

- (a) $\text{M}^{-1}\text{L}^{-2}\text{T}^{-3}\text{K}$ (b) $\text{ML}^2\text{T}^{-2}\text{K}^{-1}$
 (c) $\text{ML}^2\text{T}^{-3}\text{K}$ (d) $\text{ML}^2\text{T}^{-2}\text{K}^{-2}$

Q24 Snow is more heat insulating than Ice, because

- (a) Air is filled in pores of snow
 (b) Ice is more bad conductor than snow

(c) Air is filled in pores of Ice

(d) Density of Ice is more

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Q25 Ice formed over lakes has

- (a) Very high thermal conductivity and helps
 in further Ice formation

d) Density of Ice is more

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Q25 Ice formed over lakes has

- (a) Very high thermal conductivity and helps in further Ice formation
- (b) Very low Conductivity and ~~it~~ retards further formation of ICE
- (c) It permite Quick Convection and retards further formation of Ice
- (d) It is very Good radiator

Q26 The temperature gradient in a rod of 0.5m long is 80°C per meter. If the temperature of hotter end of the rod is 30°C , then temperature of cooler end is

- (a) 40°C
- (b) -10°C
- (c) 10°C
- (d) 0°C

Q27 In Which process, the rate of transfer of heat is maximum.

- (a) Conduction
- (b) Convection
- (c) Radiation
- (d) All of the above

(a) Conduction

(c) Radiation

(d) All of the above

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Q28 Good absorbers of heat are

(a) Poor emitters

(b) Non-emitters

(c) Good emitters

(d) Highly polished

Q29 For a perfectly black body, its absorptive power is \rightarrow

(a) 1

(b) 0.5

(c) 0

(d) Infinity

Q30 Relation between emissivity e and absorptive power a is [for black body] -

(a) $e = a$

(b) $e = \frac{1}{a}$

(c) $e = a^2$

(d) $a = e^2$

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Answer Key

(1)	(d)	(16)	(d)
(2)	(c)	(17)	(c)
(3)	(c)	(18)	(d)
(4)	(d)	(19)	(c)
(5)	(b)	(20)	(b)
(6)	(c)	(21)	(d)
(7)	(c)	(22)	(c)
(8)	(c)	(23)	(a)
(9)	(a)	(24)	(c)
(10)	(a)	(25)	(b)
(11)	(a)	(26)	(b)
(12)	(a)	(27)	(c)
(13)	(d)	(28)	(c)
(14)	(d)	(29)	(a)
(15)	(d)	(30)	(a)