# MODERN SCIENCE ACADEMY
## CHATHA BAKHTAWAR, ISLAMABAD

## *9. "Transfer of Heat"*

| Sr. | Statements | A | B | C | D |
|---|---|---|---|---|---|
| 1 | In solids, heat is transferred by: | radiation | conduction | convection | absorption |
| 2 | What happens to the thermal conductivity of a wall if its thickness is doubled? | becomes double | remains the same | becomes half | becomes one fourth |
| 3 | Metals are good conductor of heat due to the: | free electrons | big size of their molecules | small size of their molecules | rapid vibrations of their atoms |
| 4 | In gases, heat is mainly transferred by: | molecular collision | conduction | convection | radiation |
| 5 | Convection of heat is the process of heat transfer due to the: | random motion of molecules | downward movement of molecules | upward movement of molecules | free movement of molecules |
| 6 | False ceiling is done to: | lower the height of ceiling | keep the roof clean | cool the room | insulate the ceiling |
| 7 | Rooms are heated using gas heaters by: | Conduction only | Convection and radiation | Radiation only | Convection only |
| 8 | Land breeze blows from: | sea to land during night | sea to land during the day | land to sea during night | land to sea during the day |
| 9 | Which of the following is a good radiator of heat? | a shining silvered surface | a dull black surface | a white surface | green coloured surface |
| 10 | Which of the following is the best heat conductor? | aluminum | tin | iron | copper |
| 11 | Identical cubes of the following materials are kept in a room at the same temperature. Which will feel coldest by touching them? | wood | glass | iron | styrofoam |
| 12 | The transfer of heat by convection is smallest in: | solids | liquids | gases | none |
| 13 | One way that heat is transferred from place to place is inside the human body is by the flow of blood. Which one of the following heat transfer processes best describes this action of blood? | convection | conduction | radiation | none |
| 14 | The best absorber of radiation is a body whose surface is: | white | grey | dull black | highly polished |
| 15 | The mode of transfer of heat which does not require material medium is called: | convection | conduction | radiation | none |
| 16 | The temperature at which a body is not radiating any heat is: | 0 °C | 0 °F | 0 K | all of these |
| 17 | The electrons that are free to move through the metal is called: | loose electrons | free electrons | conduction electrons | holes |
| 18 | A group of people enjoying bonfire is an example of heating by: | conduction | convection | radiation | convection and radiation |
| 19 | Temperature of a metal spoon rises placed in hot water. This is due to: | conduction | convection | radiation | all of these |
| 20 | Unit of thermal conductivity is: | $J\ kg^{-1}\ K^{-1}$ | $J\ s^{-1}\ m^{-1}\ K^{-1}$ | $W\ m^{-1}\ K^{-1}$ | $J\ s^{-1}\ m\ K^{-1}$ |
| 21 | Which of the following is the best insulator? | wood | plastic | rubber | air |
| 22 | Dull black colour on a surface is the best absorber, which of the following is the best radiator? | dull black surface | shining silvered surface | red coloured surface | white surface |
| 23 | Which of the following is a good reflector? | dull black surface | shining silvered surface | red coloured surface | white surface |

| | | | | | |
|---|---|---|---|---|---|
| **24** | In which of these methods heat is transferred due to actual movement of its particles? | conduction | convection | radiation | convection and radiation |
| **25** | The transfer of heat that takes place because of density difference in fluids is: | conduction | convection | radiation | insulation |
| **26** | Thermal conductivity of ceiling of a room is K. If its thickness is doubled, then value of its thermal conductivity becomes: | K/2 | 2 K | 4 K | K |
| **27** | Rate of flow of heat is: | $\frac{Q}{t^2}$ | $\frac{Q}{t}$ | $\frac{Q^2}{t}$ | $Q \times t$ |
| **28** | The unit of rate of conduction of thermal energy is: | $J\ s^{-1}$ | J | K | $J\ K^{-1}$ |
| **29** | The transfer of heat would _____ if cross sectional area is greater. | increase | decrease | zero | none |
| **30** | Warm clothes for winter season are: | woolen | plastic | silky | cotton |
| **31** | For quick heat transfer sauce pan are made of: | wood | metal | fiber glass | plastic |
| **32** | Land and sea breezes take place due to: | convection current | conduction | radiation | absorption |
| **33** | Which surface is bad emitter? | white surface | black surface | colored surface | silver surface |
| **34** | Rate of flow of heat through conductor is inversely proportional to its: | area | length | temperature | time |
| **35** | Radiation is the mode of transfer of heat from one place to another in the form of waves called: | mechanical waves | transverse waves | compressional waves | electromagnetic waves |
| **36** | Global warming is due to: | oxygen | carbon monoxide | carbon dioxide | chlorine |

## ***"Important Short Questions"***

1) What is transfer of heat? Name various ways of heat transfer.
2) Define conduction.
3) Define rate of flow of heat. Name factors on which heats flow depends.
4) What is thermal conductivity of a substance?
5) A piece of copper and glass are heated to same temperature, why does the copper feel hotter than glass on touching them?
6) In a house, geysers or water boiler is fitted in ground floor and still we get warm water at top floor without using pump. How is it possible?
7) Where will you get more heat from the wood fire, 1 metre above the woods or 1 metre in front of woods?
8) Differentiate between conductors and insulators. (at least four)
9) Why metals are good conductors of heat?
10) What is convection of heat?
11) How does heat transfer occurs through the windows and vents of a room?
12) What is meant by convection current? Write any two uses of convection current.
13) How do land breeze and sea breeze blow?
14) Why do birds fluff out during winters?
15) How does the gliders can fly away very high without any engines?
16) Explain why:
    a) a metal feels colder to touch than wood kept in a cold place?
    b) land breeze blows from land towards sea?
    c) double walled glass vessel is used in thermos flask?
    d) deserts soon get hot during the day and soon get cold after sunset?
17) Why conduction of heat does not take place in gases?
18) What measures do you suggest to conserve energy in houses?
19) Why transfer of heat in fluids takes place by convection?
20) Why are freezer compartments at the top of refrigerators?

21) What does radiation mean?
22) How does heat reach us from the Sun?
23) How various surfaces can be compared by a Leslie cube?
24) Why bottom of cooking pot is made black?
25) A black car standing in the sun warms up more quickly than any other. Why?
26) Write two factors on which emitted radiations depend.
27) Why should we wear dark coloured clothes inn winters and white coloured clothes in summer?
28) Two shirts are warmer than single shirt of double thickness. Why?
29) What is a thermos flask?
30) Briefly explain convection in seawater to support marine life.
31) How double glazed windows help to keep room cool when it is hot outside?

## ***"Important Long Questions"***

A. Define the rate of flow of heat through a solid. On what factors it depends? Define thermal conductivity of the material and derive its formula.
B. Define radiation. Explain this method of transfer of heat. Give three practical uses of radiation. On what factors rate of transfer of heat energy depends?
C. What is greenhouse effect? How is it useful to grow different crops? What is the role of natural green house effect in global warming?