6 Combustion and Flame

Multiple Choice Questions

1. A substance which reacts with oxygen giving heat is called a combustible substance. Which, one of the following is a combustible substance?
   (a) iron nail
   (b) glass
   (c) stone piece
   (d) wood

2. Which one of the following has the highest calorific value?
   (a) kerosene
   (b) biogas
   (c) LPG
   (d) petrol

3. Magnesium ribbon on burning in air produces
   (a) magnesium oxide, water and light
   (b) magnesium oxide and heat
   (c) magnesium oxide, heat and light
   (d) magnesium oxide, water and heat

4. Which of the following is not a combustible substance?
   (a) camphor
   (b) glass
   (c) straw
   (d) alcohol

5. The substance that does not burn with flame is
   (a) LPG
   (b) camphor
   (c) dry grass
   (d) charcoal

6. On placing an inverted tumbler over a burning candle, the flame extinguishes after some time. This is because of non-availability of
   (a) oxygen
   (b) water vapours
   (c) carbon dioxide
   (d) wax

7. If a person's clothes catches fire, the best way to extinguish the fire is to:
   (a) throw water on the clothes.
   (b) use fire extinguisher.
   (c) cover the person with a woolen blanket.
   (d) cover the person with a polythene sheet.

8. The substance expected to have the highest ignition temperature out of the following is

(a) kerosene (c) coal
(b) petrol (d) alcohol

9. Choose the correct statement about inflammable substances from the following.

They have:
(a) low ignition temperature and cannot catch fire easily.
(b) high ignition temperature and can catch fire easily.
(c) low ignition temperature and can catch fire easily.
(d) high ignition temperature and cannot catch fire easily.

10. Choose the incorrect statement from the following.

Forest fires are usually due to:
(a) carelessness of humans (c) cutting of trees
(b) heat of sun (d) lightning strike

11. The calorific value of a fuel is expressed in a unit called
(a) kilojoule per litre (c) kilojoule per gram
(b) kilogram per mililitre (d) kilojoule per kilogram

12. In villages, people use wood as fuel because:

(a) it is considered to be an ideal fuel.
(b) of its easy availability and low cost.
(c) it is environment friendly.
(d) it catches fire easily.

13. Which among the following is considered as the cleanest fuel?

(a) cow dung cake (c) kerosene
(b) petrol (d) hydrogen gas

14. Choose the incorrect statement from the following.

A good fuel is one which:
(a) is readily available.
(b) produces a large amount of heat.
(c) leaves behind many undesirable substances.
(d) burns easily in air at a moderate rate.

15. Shyam was cooking potato curry on a *chulha*. To his surprise he observed that the copper vessel was getting blackened from outside. It may be due to:

(a) proper combustion of fuel.
(b) improper cooking of potato curry.
(c) improper combustion of the fuel.
(d) burning of copper vessel.

VERY SHORT ANSWER QUESTIONS

16. Fill in the blanks in the following sentences.

    (a) A _____ process in which a substance reacts with _____ to give off heat is called combustion.

    (b) When the clothes of a person catch _____, the person is covered with a _____ to extinguish fire.

    (c) The _____ temperature at which a substance catches fire is called its _____ temperature.

    (d) The substances which have very _____ ignition temperature and can easily catch fire with a flame are called _____ substances.

    (e) The substances which vapourise during _____, give flame.

17. Some words (underlined) in the following sentences are jumbled up. Write them in their correct form.

    (a) Seldie is a combustible substance.

    (b) Slags is a non-combustible material.

    (c) Chittsmack does not burn by itself.

    (d) Some substances on combustion produce thea and mafel.

    (e) The amount of heat energy produced on complete combustion of 1 kg of a fuel is called its ficalroic value.

18. Two glass jars A and B are filled with carbon dioxide and oxygen gases, respectively. In each jar a lighted candle is placed simultaneously. In which jar will the candle remain lighted for a longer time and why?

19. Anu wants to boil water quickly in a test tube. On observing the different zones of the flame, she is not able to decide which zone of the flame will be best for boiling water quickly. Help her in this activity.

20. Why is the use of diesel and petrol as fuels in automobiles being replaced by Compressed Natural Gas (CNG) in big cities?

SHORT ANSWER QUESTIONS

21. Boojho wants to separate the following materials as combustible and non-combustible. Can you help him?

Charcoal, chalk, stone, iron rod, copper coin, straw, cardboard, glass, paper, candle, wood.

22. Indicate whether the following statements are True or False. Also write the false statements in their correct form.
    (a) Air is necessary for combustion.
    (b) Magnesium is a non-combustible metal.
    (c) Carbon dioxide is an excellent fire extinguisher.
    (d) Calorific value of wood is higher than that of coal.

23. Match the items of **Column A** with the items of **Column B**.

Column A	**Column B**
(a) Oxides of sulphur and nitrogen	(i) fire extinguisher
(b) CNG	(ii) incomplete combustion of coal
(c) Oxygen	(iii) very low ignition temperature
(d) inflammable substance	(iv) acid rain
(e) carbon dioxide	(v) necessary for combustion
(f) carbon monoxide	(vi) fuel for automobiles.

24. Match the following for the flame of a candle.

Column A	**Column B (zone)**	**Column C (colour)**
(a) hottest part	(i) innermost zone of unburnt wax vapours	(x) blue
(b) moderately hot	(ii) middle zone of partial combustion	(y) black
(c) least hot	(iii) outer zone of complete combustion	(z) yellow

25. If you hold a piece of iron wire with a pair of tongs inside a candle flame or a Bunsen burner flame, what will you observe? Will it produce a flame?

26. Fill in the blanks using the words given in the box.

ignition, petrol, combustion, calorific value, combustible, inflammable

(a) A chemical process in which a substance reacts with oxygen to give off heat is called _____.

(b) Wood, paper, CNG are _____ substances.

(c) The lowest temperature at which a substance catches fire is called its _____ temperature.

(d) Ignition temperature of _____ is lower than that of wood.

(e) The substances which have very low _____ temperature and can easily catch fire with a flame are called _____ substances.

(f) The amount of heat energy produced on complete combustion of 1kg of a fuel is called its _____.

27. People usually keep *Angethi*/burning coal in their closed rooms during winter season. Why is it advised to keep the door open?

28. Write True/False against the following statements and also correct the false statement.

(a) A physical process in which a substance reacts with oxygen to give off heat is called combustion.

(b) Water is the best extinguisher for fires involving electrical equipment.

(c) Alcohol, CNG and LPG are inflammable substances.

(d) Increased concentration of nitrogen in air is believed to cause global warming.

(e) Greater the calorific value, better is the fuel.

(f) Middle zone is the hottest zone of a flame.

(g) The substances which vapourise during burning, give flame.

29. Cracker on ignition produces sound. Why?

30. What do you understand by fuel efficiency?

LONG ANSWER QUESTIONS

31. You are provided with three watch glasses containing milk, petrol and mustard oil, respectively. Suppose you bring a burning candle near these materials one by one, which material(s) will catch fire instantly and why?

32. Manu was heating oil to fry potato chips. The cooking oil all of a sudden caught fire; he poured water to extinguish the fire. Do you think this action was suitable. If yes, why? If not, why not? In such a condition what should Manu have done?

33. What are the three essential requirements to produce fire? How fire extinguisher is useful for controlling the fire.

34. Give two examples each for a solid, liquid and gaseous fuel alongwith some important uses.

35. The calorific values of petrol and CNG are 45000 kJ/kg and 50,000 kJ/kg, respectively. If you have vehicle which can run on petrol as well as CNG, which fuel will you prefer and why?

36. Although wood has a very high calorific value, we still discourage its use as a fuel. Explain.

37. Forest fire produces a lot of air pollution. Write in brief about the reasons of forest fires.

38. Complete the crossword Fig. 6.1 with the help of the clues :

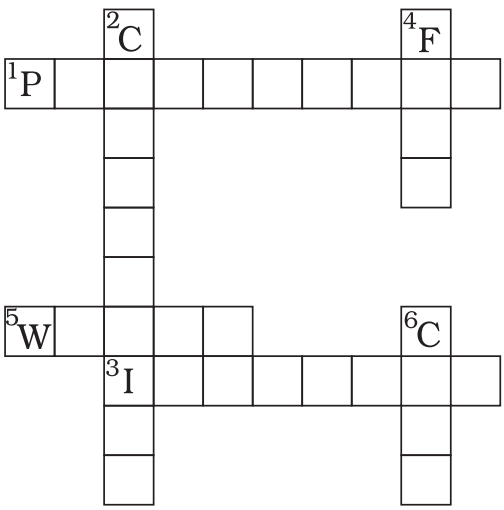

Fig. 6.1

Across

1. Non-metal which catches fire if exposed to air (10)
3. The lowest temperature at which a substance catches fire is called its _____ temperature. (8)
5. The most common fire extinguisher. (5)

Down

2. A chemical process in which a substance reacts with oxygen to give off heat. (10)
4. Petrol is used as a _____ in automobiles. (4)
6. It is as hard as stone and black in colour. (4)