

3.COAL AND PETROLEUM
SOLUTION
TEACHING TASK

JEE MAINS LEVEL QUESTIONS

1. In the following what is exhaustible resource

A) sun B) water C) air D) wood

Answer:D

Solution:: Exhaustible resources are those that can be depleted over time due to excessive use. Wood comes from trees, which take years to grow, making it exhaustible. Sun, water, and air are inexhaustible (renewable).

2. In the following what is inexhaustible resource

A) wood B) oil C) fuel D) water

Answer:D

Solution: Inexhaustible resources are naturally replenished and do not run out. Water (if managed sustainably) is considered inexhaustible, while wood, oil, and fuel are exhaustible.

3. What is non-conventional energy resource

A) solar energy B) fuel C) wood D) none

Answer:A

Solution: Non-conventional energy sources are renewable and eco-friendly, such as solar, wind, and tidal energy. Fuel and wood are conventional (exhaustible) energy sources.

4. What is the fuel used in train engines is

A) coal B) steam C) both A & B D) none

Answer:C

Solution:Traditional steam engines used coal to produce steam for locomotion. Modern trains use diesel/electricity, but historically, coal and steam were primary fuels.

5. In the following vessels which vessel is used for cooking of food materials

A) steel vessel B) copper vessel C) zinc vessel D) gold vessel

Answer:A

Solution:Steel is durable, non-reactive, and commonly used for cooking. Copper can react with food, zinc is toxic, and gold is expensive and impractical.

6. Raw material for wood

A) Earth B) Tress C) glass D) none

Answer:B

Solution:Wood is obtained from trees, making trees the raw material.

7. The containers used for storing pickles are

A) metal jar B) clay jars C) plastic jars D) both B & C

Answer:D

Solution: Pickles are acidic and react with metals, so they are stored in clay jars (traditional) or plastic jars (modern).

8. Why we did not store pickles in metal containers

- A) because metals are corrosive B) because metals are transparent.
C) because metals are malleable D) none of these

Answer: A

Solution: Pickles contain acids (like vinegar) that react with metals, leading to corrosion and contamination.

9. In our houses the water pipes are made with

- A) plastic B) iron C) both A & B D) none

Answer: C

Solution: Modern pipes are made of PVC (plastic), while older ones used iron/ galvanized iron.

10. Clay can be obtained by mixture of water with

- A) magnesite B) dolomite C) kaolinite D) Apsum salt

Answer: C

Solution: Clay minerals like kaolinite ($\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$) form when water weathers rocks.

11. Raw material for plastics

- A) petro chemicals B) hydrogen C) magnesium D) aluminium

Answer: A

Solution: Plastics are derived from petroleum (petrochemicals) through polymerization.

12. The metal present in clay

- A) Al B) Ca C) Mg D) Na

Answer: A

Solution: Clay contains aluminium silicates

13. Metal can be extracted in clay

- A) corresponding ore B) corresponding minerals C) from Earth D) from sky

Answer: A

Solution: Metals like aluminium are extracted from bauxite ore, not directly from clay.

14. In oil industry what is the word used for the measuring of petrol

- A) barrel B) litres C) kg's D) none

Answer: A

Solution: Crude oil is measured in barrels (1 barrel = 159 litres).

15. 1 barrel = litres.

- A) 169 B) 159 C) 149 D) 139

Answer: B

Solution: 1 barrel = 159 litres

16. The substance which gives energy on burning is called

- A) fuel B) compound C) ore D) flux

Answer:A

Solution: A fuel (e.g., coal, petrol) releases energy upon combustion.

JEE ADVANCED LEVEL QUESTIONS

Multi Correct Answer Type:

17. What are the types of coals from the following

A) peat B) lignite C) coal gas D) none

Answer:A,B

Solution: Coal is classified into four major types based on carbon content and formation stage:

Peat (Pre-coal, low carbon content)

Lignite (Brown coal, higher carbon than peat)

Bituminous (Soft coal, high carbon)

Anthracite (Hard coal, highest carbon content)

Coal gas is a byproduct of coal processing, not a type of coal.

18. In destructive distillation of coal we need

A) powdered coal B) bunsen burner C) water D) petrole

Answer:A,B

Solution: Requirements: Powdered coal (for efficient heating), Bunsen burner (heat source)

19. Composition of coal

A) carbon B) hydrogen C) nitrogen D) oxygen

Answer:A,B,C,D

Solution: Coal is primarily carbon-rich, but also contains other elements:

Carbon (major component, 60-90%)

Hydrogen (present in hydrocarbons)

Nitrogen (traces from organic matter)

Oxygen (from plant decomposition)

Matrix Matching Type:

Answer:B

20. Column - I Coloum- II

a) Glass C) sand

b) Plastics D) petro chemicals

c) metals A) ores

d) wood B) trees

- A) a-1, b-2, c-3, d-4 B) a-3, b-4, c-1, d-2
C) a-3, b-2, c-1, d-4 D) a-4, b-3, c-1, d-2

Assertion and Reason Type:

21. Assertion : Petroleum can be measured in barrel

Reason : One barrel is equal to 159 litres

Answer:A

Solution:Assertion (True):Petroleum (crude oil) is commonly measured in barrels worldwide.

This is a standard unit in the oil and gas industry.

Reason (True):1 barrel = 159 litres (approximately, exact value is 158.987 litres).

This conversion is internationally accepted.

LEARNERS TASK

JEE MAINS LEVEL QUESTIONS

22. LPG refers to

- A) liquified petroleum gas B) liquid petroleum gas C) low pressure gas D) none

Answer:A

Solution:LPG stands for Liquefied Petroleum Gas, a mixture of propane and butane stored under pressure.

23. Which is not a fuel

- A) petrol B) kerosene C) coal D) Earth

Answer:D

Solution: Earth is not a fuel, while petrol, kerosene, and coal are combustible fuels.

24. Coal contain which element

- A) carbon B) nitrogen C) flourine D) oxygen

Answer:A

Solution: Coal is primarily composed of carbon (60-90%), along with hydrogen, oxygen, nitrogen, and sulfur.

25. The element present in coal is belongs to which group

- A) IA B) IIA C) IV A D) VI A

Answer:C

Solution:Carbon (main component of coal) belongs to Group IV A (14) in the periodic table.

26. Bio-fuels are

- A) Non-toxic B) renewable C) both A & B D) none

Answer:C

Solutions: Biofuels (e.g., ethanol, biodiesel) are non-toxic and renewable energy

sources.

27. Which is used for the production of electricity

A) coal B) kerosene C) petrol D) none

Answer:A

Solution: Coal is widely used in thermal power plants to generate electricity.

28. Natural gas is stored under high pressure as

A) LPG B) CNG C) NG D) BPG

Answer:B

Solution:Natural gas is compressed and stored as CNG (Compressed Natural Gas) for use as fuel.

29. Which of the following is less polluting fuel.

A) coal B) coke C) natural gas D) petrol

Answer:C

Solution: Natural gas burns cleaner than coal, coke, or petrol, producing fewer pollutants.

30. Which of the following is used for the making of shoe polish

A) paraffin wax B) petrol C) diesel D) lubricant oil

Answer:A

Solution:Shoe polish often contains paraffin wax, derived from petroleum.

31. When coal on burning it releases which gases

A) CO B) CO₂ C) both A & B D) NO₂

Answer:C

Solution:Coal combustion primarily releases carbon monoxide (CO) and carbon dioxide (CO₂).

32. Which gas is used for global warming

A) CO B) CO₂ C) NO₂ D) SO₂

Answer:B

Solution:Carbon dioxide (CO₂) is a major greenhouse gas driving global warming.

33. What is Black gold

A) petroleum B) kerosene C) crude oil D) diesel

Answer:C

Solution: Crude oil is called "Black Gold" due to its high economic value.

34. Petroleum can be separated by which technique

A) distillation B) fractional distillation C) crystallisation D) sublimation

Answer:B

Solution: Petroleum is refined using fractional distillation to separate its components (e.g., petrol, diesel).

35. Which does not produced from petroleum mixture

A) petrol B) diesel C) fuel gas D) coal

Answer:D

Solution: Coal is a fossil fuel but is not derived from petroleum; it forms from plant matter.

36. Paraffin wax is used in

A) candle B) vaseline C) grease D) all

Answer:D

Solution: Paraffin wax is used in candles, Vaseline (petroleum jelly), and grease.

37. What is the pure form of carbon

A) coke B) coal C) coal tar D) all

Answer:A

Solution: Coke is a nearly pure carbon residue obtained from coal.

38. Which is used in the manufacture of steel industry.

A) coke B) coal C) coal tar D) all

Answer:A

Solution: Coke is used as a reducing agent in steel production.

39. What is used in the making at synthetic dyes

A) coke B) coal C) coal tar D) none

Answer:C

Solution: Coal tar is a source of aromatic compounds used in dyes.

40. Coal tar is mainly used in

A) paints B) synthetic fibres C) pesticides D) all

Answer:D

Solution: Coal tar derivatives are used in paints, synthetic fibres (e.g., nylon), and pesticides.

41. What is used in photographic metals

A) coal B) petrol C) coal tar D) none

Answer:C

Solution: Coal tar derivatives are used in light-sensitive chemicals for photography.

42. The coal obtained from the fire wood called as

A) Charcoal B) coal C) coke D) powder

Answer:A

Solution: Charcoal is produced by burning wood in limited oxygen.

43. What is the name of organisms from which petroleum is produced

A) plankton B) E. Coli C) penicillin D) none

Answer:A

Solution: Petroleum forms from ancient marine plankton buried and compressed over millions of years.

44. The process of conversion of dead vegetation into coal is called

A) corbation B) carbonisation C) sulphitation D) carbitation

Answer:B

Solution: Carbonisation is the slow conversion of plant matter into coal under heat and pressure.

45. Excessive use of fossil fuels causes

A) air pollution B) green house effect C) global warming D) All

Answer: D

Solution: Burning fossil fuels releases pollutants and CO_2 , causing all listed effects

46. What is the alternative for coal and petroleum resources

A) solar energy B) wind energy C) use of bicycle D) all

Answer: D

Solution: Renewable energy (solar, wind) and reduced consumption (bicycles) are sustainable alternatives.

47. When coal on burning mostly it releases which gases

A) CO B) CO_2 C) both A & B D) NO_2

Answer: C

Solution: Incomplete combustion produces CO, while complete combustion releases CO_2 .

JEE ADVANCED LEVEL QUESTIONS

Multi Correct Answer Type:

48. What are the sources of energy

A) air B) water C) soil D) sun

Answer: A, B, D

Solution: Air (wind energy)

Water (hydropower)

Sun (solar energy) are all energy sources.

Soil is not a direct energy source (though it contains minerals used in energy production).

49. What are the natural sources

A) air B) water C) soil D) petrol

Answer: A, B, C

Solution: Air, water, and soil are natural resources.

Petrol is a processed resource derived from crude oil (not naturally occurring in usable form).

50. What are inexhaustible resources

A) air B) water C) coal D) petroleum

Answer: A, B

Solution: Inexhaustible resources are naturally replenished and do not run out:

Air (atmosphere)

Water (if managed sustainably)

Coal & Petroleum are exhaustible (finite supply).

51. What are exhaustible resources

A) air B) water C) coal D) petroleum

Answer:C,D

Solution:Exhaustible resources can be depleted with overuse:

Coal (takes millions of years to form)

Petroleum (non-renewable fossil fuel)

Air & Water are inexhaustible if conserved properly.

Matching Type:

52 **Answer:a-3,5,b-1,c-4,d-2**

Solution:

a) Exhaustible resource 3) wood 5) diesel

b) Inexhaustible resource 1) Air

c) Plastics 4) buckets

d) Glass 2) rapid cooling

53. **Answer:a-2,b-3,c-1,d-4**

Solution:

a) wood 2) trees

b) clay 3) kalonite

c) glass 1) sodium silicates

d) metals 4) ores

Comprehension Type:

53. What are non exhaustible resources

A) wood B) sand C)Air D) petroleum

Answer:C

Solution:Non-exhaustible (inexhaustible) resources are naturally replenished and cannot be depleted.

Air is inexhaustible (though air quality can be affected).

Wood (A) is exhaustible (requires trees to grow).

Sand (B) is exhaustible in practical terms.

Petroleum (D) is exhaustible (fossil fuel).

54. What are renewable energies

A) solar power B) coal C) natural gas D) none

Answer:A

Solution:Renewable energies are sustainable and naturally replenished.

Solar power (A) is renewable (from sunlight).

Coal (B) and natural gas (C) are non-renewable fossil fuels.

55. What are the sources of bio-diesel

A) coal oil B) palmolive oil C) sunflower oil D) none

Answer:B,C

Solution:Biodiesel is derived from vegetable oils or animal fats.

Palm oil (B) and sunflower oil (C) are common feedstocks.

Coal oil (A) is a fossil fuel derivative, not used for biodiesel.

Assertion and Reason Type:

57. Assertion : CNG is the basic material for manufacture of chemicals and fertilizers.

Reason : CNG is stored at high pressure

Answer:D

Solution:Assertion (False): CNG (Compressed Natural Gas) is primarily used as a fuel, not as a raw material for chemicals/fertilizers. The basic material for these is usually natural gas (methane) in its unprocessed form or other petrochemical feedstocks.

Reason (True): CNG is indeed stored at high pressure (200-250 bar) for transportation and use.

58. Assertion : Bio-diesel is a fuel obtained from vegetable oils

Reason : petroleum was obtained from dead plants and animals.

Answer:B

Solution:Assertion (True): Bio-diesel is indeed produced from vegetable oils (like palm, soybean) or animal fats through transesterification.

Reason (True): Petroleum was formed from ancient marine plankton (plants and animals) over millions of years. However, this fact doesn't explain why biodiesel comes from vegetable oils - they're separate processes.

KEY

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