

Here are the **exam-style questions and answers** based on **Chapter 9: Energy and Power Resources**, following the given format:

PART I (30 Marks)

(Attempt all questions)

Choose the correct answer from the given options:

1. Which of the following is a renewable source of energy?

- a) Coal
- b) Petroleum
- c) Solar energy
- d) Natural gas

Answer: (c) Solar energy

2. The generation of electricity using the force of tides is known as:

- a) Hydropower
- b) Tidal power
- c) Wind power
- d) Geothermal power

Answer: (b) Tidal power

3. Which part of a windmill converts wind energy into electrical energy?

- a) Blades
- b) Turbine
- c) Tower
- d) Base

Answer: (b) Turbine

4. What is India's rank in the number of dams worldwide?

- a) 1st
- b) 3rd
- c) 5th
- d) 7th

Answer: (b) 3rd

5. Which hydroelectric project is located over the **Bhagirathi River**?

- a) Koyna Hydroelectric Project

- b) Srisaillam Hydroelectric Project
- c) Tehri Hydroelectric Complex
- d) Jhakra Power House

Answer: (c) Tehri Hydroelectric Complex

6. Which of the following is a **non-renewable** source of energy?

- a) Hydropower
- b) Wind energy
- c) Petroleum
- d) Solar energy

Answer: (c) Petroleum

7. Which country is the **largest producer of wind energy**?

- a) India
- b) China
- c) Germany
- d) Spain

Answer: (b) China

8. The **best quality coal**, containing the highest percentage of carbon, is:

- a) Lignite
- b) Bituminous
- c) Peat
- d) Anthracite

Answer: (d) Anthracite

9. Which of the following is a method of conserving energy resources?

- a) Overuse of fossil fuels
- b) Using LED lights instead of incandescent bulbs
- c) Deforestation
- d) Running electrical appliances unnecessarily

Answer: (b) Using LED lights instead of incandescent bulbs

10. The **Sardar Sarovar Dam** is built on which river?

- a) Sutlej
- b) Narmada
- c) Krishna
- d) Ganga

Answer: (b) Narmada

PART II (50 Marks)

(Attempt any five questions)

1. Differentiate between renewable and non-renewable sources of energy.

Feature	Renewable Energy Sources	Non-Renewable Energy Sources
Availability	Unlimited, can be replenished	Limited, can be exhausted
Examples	Solar, wind, hydro, geothermal	Coal, petroleum, natural gas
Environmental Impact	Eco-friendly, no pollution	Causes pollution, global warming
Dependency	Free natural sources	Dependent on fossil fuel extraction

2. Describe the different types of coal.

Answer: Coal is classified based on its **carbon content**:

- **Anthracite** (86-97% carbon): Best quality, high heat output, used in metallurgy.
- **Bituminous** (45-86% carbon): Used for electricity generation and steel industries.
- **Lignite** (25-35% carbon): Poor quality, low heating value, used for electricity production.
- **Peat** (Less than 25% carbon): Underdeveloped form, high moisture, produces less heat and more smoke.

3. Explain how hydropower is generated.

Answer:

- Hydropower is produced using the **force of falling or flowing water**.
- Water from a **dam or reservoir** is released through a **narrow passage**.
- It spins **turbines** connected to a **generator**, converting mechanical energy into electrical energy.
- It is a **renewable, non-polluting** source of energy.
- Example: **Bhakra Nangal Dam, Sardar Sarovar Dam** in India.

4. List and explain different methods to conserve energy resources.

Answer:

- **Avoid Wastage:** Turn off lights, fans, and devices when not in use.
- **Use Energy-Efficient Appliances:** Replace old bulbs with LED lights.
- **Promote Renewable Energy:** Use solar panels, wind power, and biofuels.
- **Recycle and Reuse:** Recycling reduces the need for new resource extraction.
- **Public Transport:** Use buses and trains to reduce fuel consumption.

5. Write a note on solar power.

Answer:

- Solar power is obtained from the **sun's radiation** and converted into electricity using **solar panels**.
- Solar panels contain **semi-conducting materials** that absorb sunlight and convert it into electricity.
- It is used for:
 - **Electricity generation** (solar grids, homes)
 - **Heating water**
 - **Street lighting, traffic signals, and desalination**
- India has **abundant sunlight**, making solar energy a **sustainable option**.

6. Name and describe major hydroelectric projects in India.

Answer:

Name of Project	River	State	Special Feature
Koyna Hydroelectric Project	Krishna	Maharashtra	Largest completed hydroelectric plant in India
Srisaillam Hydroelectric Project	Krishna	Andhra Pradesh, Telangana	3rd largest dam in India

Name of Project	River	State	Special Feature
Nathpa Jhakri Project	Sutlej	Himachal Pradesh	Generates 1,500 MW electricity
Tehri Hydroelectric Project	Bhagirathi	Uttarakhand	Highest dam in India
Sardar Sarovar Dam	Narmada	Gujarat	Part of the Narmada Valley Project

Mapping Questions:

Shade and mark the following on the world map:

1. A major coal-producing country – China
2. A major petroleum-exporting country – Saudi Arabia
3. A country with the largest wind energy production – USA
4. The location of Bhakra Nangal Dam in India – Himachal Pradesh
5. An area in India with high potential for solar energy – Rajasthan