Rocks

Exercises

I. Short Answer Questions

Question 1.
State two points of distinction between rocks and minerals.
Answer:
Rocks :

1. Rocks contain minerals.
2. Rocks are the aggregates of minerals and other rock material.

Minerals :

1. Minerals do not contain rocks.
2. Mineral are the compounds of pure elements with a definite chemical Composition.

Question 2.
Name any three elements of the earth's crust.
Answer:
These are silicon, aluminium, iron, magnesium, calcium, potassium, sodium and nickel.

Question 3.
Name three types of rocks.
Answer:
Three types of rocks are sedimentary, igneous and metamorphic rocks.

Question 4.
Why are the igneous rocks also called the primary rocks?
Answer:
The igneous rocks were the first to be formed. They form the basis of formation of other types of rocks. Thus, they are called primary rocks.

Question 5.
Give one difference between Extrusive igneous and Intrusive igneous rocks.
Answer:

- Extrusive igneous rocks are formed by the cooling of molten magma on the earth's surface.

- Intrusive igneous rocks are formed when the magma solidifies within the earth's crust forming coarse texture.

Question 6.
Name any two chief characteristics of Igneous Rocks.
Answer:
Igneous rocks are formed by cooling of magma and these are crystalline rocks and full of mineral compounds.

Question 7.
What is the main characteristics of Basic Igneous Rocks?
Answer:
Basic igneous rocks have higher percentage of oxides of denser elements and dark in colour, e.g. Basalt, dolerite etc.

Question 8.
Name two important landforms made by Igneous Rocks.
Answer:
Conical mountains and extensive lava plateaus.

Question 9.
What are Sills ?
Answer:
The magma takes place in between the layers of rocks and hardens after cooling, which is called Sill.

Question 10.
Which rocks are associated with ores of metals ?
Answer:
Igneous rocks are associated with ores of metals due to their origin by cooling magma resulting in crystalline rocks rich in mineral content.

Question 11.
Which rocks are associated with fossil fuels ?
Answer:
Sedimentary rocks are associated with fossil fuels due to fossils trapped in between layers of these rocks.

Question 12.
Mention any two chief characteristics of Sedimentary Rocks.
Answer:

- Sedimentary rocks are formed from material derived from other rocks including plant and animal remains. These rocks thus contain fossils.

- Sedimentary rocks are generally not crystalline. They are soft and layered as they are formed by deposition of sediments.

Question 13.
Give two examples of Sedimentary Rocks.
Answer:

1. Sandstone
2. Limestone

Question 14.
Name the rocks which are most widespread on the earth.
Answer:
Sedimentary rocks are most widespread on the earth.

Question 15.
Name the three stages of lithification of Sedimentary rocks.
Answer:
Lithification is the process of turning loose rock material into hard rock through evaporation, compaction and cementation.

Question 16.
Name the types Sedimentary rocks based on agents of formation.
Answer:
There are five main types of rocks on the basis of agents of formation:

1. Riverine Rocks These are formed by the sediments deposited by running water or river.
2. Lacustrine Rocks These are formed by the deposition of silt etc on the bed of lakes.
3. Glacial Rocks These are formed by the debris carried on and deposited by glaciers.
4. Aeolean Rocks These are formed by the deposition sand accumulation by the wind.
5. Marine Rocks These are formed by the deposition of sediments at the ocean floor. These types are Calcarious and Carbonaceous sedimentary Rocks.

Question 17.
Which agents are responsible for deposition of sediments?
Answer:
There are three main agents of deposition i.e., water, wind and ice, which mainly act as agents of change on the surface of earth for deposition of sediments.

Question 18.
What are known as metamorphic rocks ? Give two examples.
Answer:
Metamorphic rocks are formed by complete change of texture of rocks through volcanism and diastrophism, e.g., limestone is converted to marble and shale is transformed to slate.

Question 19.
What is Mechanical Metamorphism ?
Answer:
This is a mechanical Transformation in which texture of rocks is changed by crushing and rubbing processes associated with heat and compression created by mechanical action.

Question 20.
What is meant by Rock Cycle ?
Answer:
The earth is said to be 4700 million years old and the rocks came into existence 3400 years ago. Since then these rocks have undergone various changes by which multiple transformation took place within the rocks. This continuous process of transformation of old rocks into new rocks is known as rock cycle for figure See Page no. of this book.

Question 21.
What processes are involved in the formation of Igneous Rocks ?
Answer:
Igneous rocks are associated with volcanic activity, cooling of magma and mechanical weathering etc.

II. Explain these terms associated with rocks.

Question 1.
Extrusive Igneous Rocks.
Answer:
These rocks are formed by consolidation of erupted magma on the surface of earth.

Question 2.
Laccoliths and Batholiths.
Answer:
Laccoliths is formed by the intrusion of magma in the erupting channel just below the crust. Batholiths are deep seated dome shaped formation of magma intrusion, generally forming the base of mountain ranges, e.g., Ranchi Batholiths.

Question 3.
Fossil fuels.
Answer:
These are the fuels accumulated between two impermeable layers of the sedimentary rocks, e.g. peat, coal and petroleum etc.

Question 4.
Lithification of Rocks.
Answer:
It is the process of turning the loose material into hard rock, which helps in the formation of the sedimentary rocks found in different layers one upon another.

Question 5.
Metamorphism.
Answer:
It is the process of transformation of sedimentary and igneous rocks into metamorphic rocks through extreme temperature and compression by volcanism and diatrophism by physical and Chemical changes.

III. Distinguish between each of the following

P Q. Lava and Magma.
Answer:
Lava : Lava is the black molten material erupted in a volcano.
Magma : Magma is the compound of lava, stones, ash, debris etc. erupting out in a volcano.

Question 1.
Plutonic and Volcanic rocks.
Answer:
Plutonic rocks :

1. These are intrusive igneous rocks.
2. These cool down very slowly due to heat in the interior

Volcanic rocks :

1. These are extrusive igneous rocks.
2. These cool down abruptly due to less temperature on the surface region.

Question 2.
Thermal and Dynamic Metamorphism.
Answer:
Thermal Metamorphism :

1. It takes place due to extreme temperature which transforms the shape and texture of rocks.
2. The heat may be due to hot magma or friction of rocks.

Dynamic Metamorphism :

1. It takes place due to excessive compression created by tectonic forces within the earth.
2. It takes place through physical or chemical changes by deep pressure.

Question 3.
Sills and Dykes.
Answer:
Sills : The collection of magma between layers of rocks is called sill.
Dykes : The fillings of magma in the cracks or fissures of rocks are called dykes.

Question 4.
Calcarious and Carbonacious rocks.
Answer:
Calcarious rocks : The sedimentary rocks formed by the deposition of shells, skeletons of sea organism as corals, clams and oysters etc. are called calcarious rocks due to excess of calcium.
Carbonacious rocks : The sedimentary rocks formed by the deposition of large scale vegetation and animals etc. are called carbonacious rocks due to the excess of carbon.

Question 5.
Acid Igneous Rocks and Basic Igneous Rocks.
Answer:
Acid Igneous rocks : These are lighter rocks with silica content 65 to 85 percent with density less than 2 g/Cm^3, e.g. Granite.
Basic igneous rocks : These are denser rocks with silica content 40 to 60 percent with average density between 2.8 g/Cm^3 and 3.0 g/Cm^3 e.g. Basalt.

IV. State the types of rocks for the formation of which the following processes are involved.

Question 1.
Solidification of magma on the surface of the earth.
Answer:
Extrusive igneous rocks

Question 2.
Formation of large crystals, coarse texture and slow cooling and compaction.
Answer:
Intrusive igneous rocks.

Question 3.
Accumulation takes place over long periods of time in seas, lakes and streams.
Answer:
Sedimentary rocks.

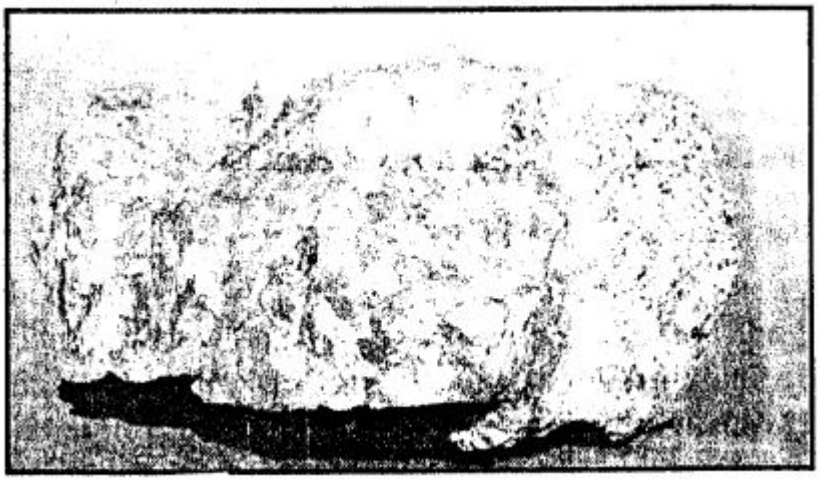
Question 4.
Decomposition of organic matter at different stages and over different periods of time.
Answer:
Carbonaceous Sedimentary rocks.

V. Long Answer Questions

Question 1.
Distinguish between rocks and minerals.
Answer:
The rocks contain minerals in the form of ores, but minerals do not contain rocks. Sedimentary rocks contain fossil fuels like coal and petroleum etc, igneous rocks are rich in minerals like copper, gold, iron etc, metamorphic rocks contain valuable building stones like marble and garnet, feldspar etc. Rocks have no definite chemical composition, while minerals have particular chemical composition.

Question 2.
Describe how are igneous rocks formed ? State their chief characteristics.
Answer:
Igneous rocks are formed by melting and cooling of magma originated from volcanic eruptions. These may be formed by diastrophism and volcanism. These rocks are strong, crystalline and dark in colour. These may be extrusive and intrusive on the

surface and beneath the crust respectively.



Permadite (an igneous rock)

Question 3.
How are igneous rocks classified on the basis of their chemical composition?
Answer:
On the basis of chemical composition igneous rocks may be classified into two groups i.e. Acid igneous rocks and Basic igneous rocks. Acid rocks have silica content 65-85 percent e.g. granite which is made up of large crystals of quartz, feldspar and mica. Basic rocks contain high percentage oxides of denser material, silica content is between 40-60 percent with a density of 2.8 g/cm^3 and 3.0 g/cm^3. Acid rocks are lighter than Basic rocks.

Question 4.
Classify the igneous rocks on the basis of their place of origin.
Answer:
On the basis of origin igneous rocks are divided into two groups i.e. Extrusive and Instrusive igneous rocks. Extrusive igneous rocks are found on the surface of the earth by cooling down of erupted magma. Intrusive igneous rocks are formed beneath the earth's crust after solidification of magma.

Question 5.
How are sedimentary rocks formed ?
Answer:
Continuous deposition of sediments of silt, soil, debris etc. by water, wind and ice along lower landforms and solidification into different layers result in the formation of light sedimentary rocks.

Question 6.
Explain the formation of sedimentary rocks on the basis of agents of formation.
Answer:
There are five main types of rocks on the basis of agents of formation:

1. Riverine Rocks These are formed by the sediments deposited by running water or river.
2. Lacustrine Rocks These are formed by the deposition of silt etc on the bed of lakes.
3. Glacial Rocks These are formed by the debris carried oh and deposited by glaciers.
4. Aeolean Rocks These are formed by the deposition sand accumulation by the wind.
5. Marine Rocks These are formed by the deposition of sediments at the ocean floor. These types are Calcarious and Carbonaceous sedimentary Rocks.

Question 7.
How are sedimentary rocks classified on the basis of their formation ?
Answer:
There are three types of this type of rocks :

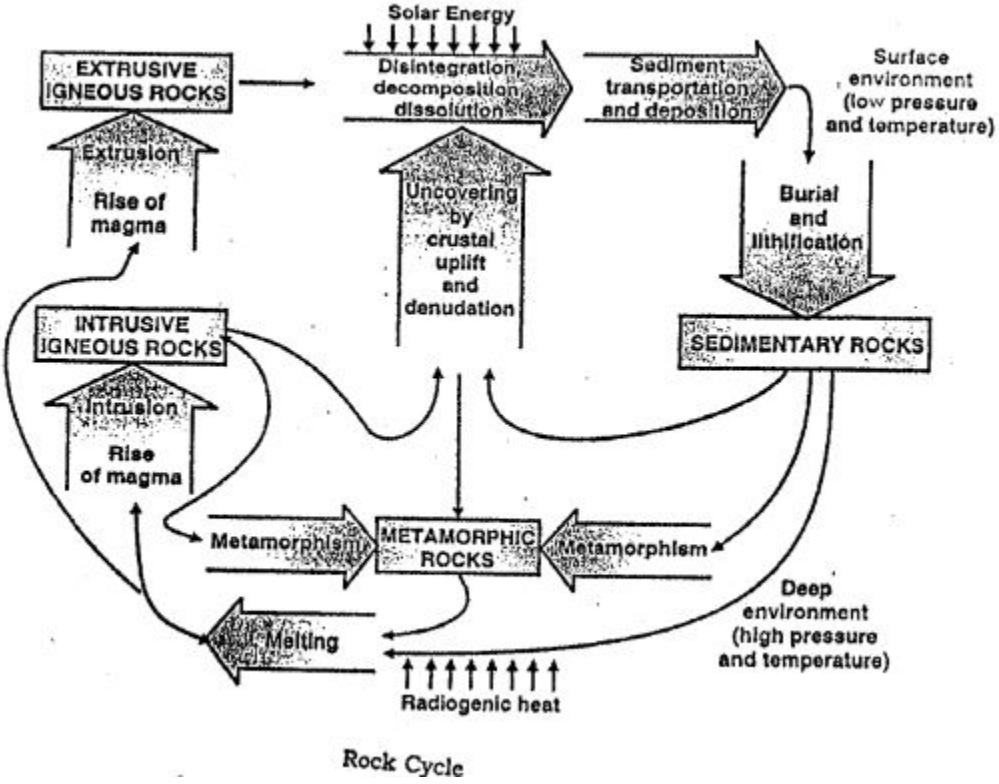
1. **Mechanically formed rocks :** Denudation of rocks by agents of change results in layers of sedimentary rocks by mechanism.
2. **Chemically formed rocks :** These are formed by evaporation of calcarious water and accumulated along lake and lagoon beds, e.g. gypsum and rock salt.
3. **Organically formed rocks :** These are formed by deposition of dead plants and animals e.g. limestone rock (or Calcareous rock) lignite, bituminous and anthracite coal are carbonaceous rocks formed by compression of vegetation under the layers of sedimentary rocks. In the same way petroleum in between the sedimentary rocks is the result of zurasic age dinosaurs e.g. shale rock, containing oil.

Question 8.
What is metamorphism ? What are its causes ?
Answer:
Metamorphism is a process of transformation of sedimentary and igneous rocks into the metamorphic rocks through physical and chemical reactions. Main causes are great temperature and pressure beneath the earth's crust, which changes the original texture and form of the rocks into dense, crystalline and fine grained rocks.

Question 9.
What are the chief characteristics of metamorphic rocks?
Answer:
Metamorphic rocks are composed of fine particles and dense, smooth material. These

are very precious rocks, particularly for building stones like marble, garnet, slate quartzite etc.

Question 10.
What is Rock Cycle. How does it keep the earth young?
Answer:
The earth is said to be 4700 million years old and the rocks came into existence 3400 years ago. Since then these rocks have undergone various changes by which multiple transformation took place within the rocks. This continuous process of transformation of old rocks into new rocks is known as rock cycle.



Rock Cycle

To keep the earth young, rock melts again resulting in formation of igneous rock. This disintegrated material again form sedimentary rock, it takes hundreds are thousands years.

Question 11.
Give a detailed account of lithiflcation of sedimentary rocks.
Answer:
Lithification means solidification. The loose material carried on by water, wind and ice is deposited slowly in different layers one upon another. Gradually the deposited sediments become solid and hard due to pressure and temperature. Evaporation results in the loss of water within the sediments and these are compacted and cemented. Compaction takes place by increasing weight and pressure of over lying sediments e.g. sand is converted to sandstone. Cementation takes place by bonding of compacted

sediments by natural elements like calcium compounds, silica and iron with a property to bind the loose materials to solid state.

Practice Questions (Solved)

Question 1.
(a) What is meant by a rock ?
Or
What is meant by a 'rock' ? Name the main types of rocks.

(b) Differentiate between Rock and Mineral
(c) How are sedimentary and igneous rocks formed ?
(d) In what type of rocks do you find fossils and why ?
(e) How are rocks important to us ?

Answer:
(a) Rock : A rock can be defined as "an aggregate of minerals that forms a more or less definite unit of the earth's crust". A rock does not possess a definite composition like that of a chemical compounds, but is usually a mixture of various minerals.
The bulk of rocks is made up of silica or quartz and feldspar. Feldspar are composed of silica, aluminium, potassium and sodium or calcium. Some rocks are composed of grains cemented together, while several other are crystalline, compact or even glass-like.
All material (whether hard like stone or sand) of which the crust of the earth is composed are called rocks e.g, stone, clay, lava, sand, chalk, salt, coal marble etc.. On the basis of their mode of formation, rocks are divided into three types :

- Igneous rocks
- Sedimentary rocks
- Metamorphic rocks.

(b)
Rock :

1. A rock is a natural solid organic or inorganic material forming the crust of the earth.
2. A rock is an aggregate of minerals.
3. The physical properties of rocks vary.

Mineral :

1. The mineral is an organic element or compound which occurs naturally.
2. A mineral has an atomic structure.
3. It has fixed definite physical properties.

(c) Formation of Sedimentary rocks : Sedimentary rocks are formed by the process of consolidation of sediments deposited commonly in water bodies like seas or lakes. The sediments are derived by the rivers, glaciers, winds and waves. The sediments consist of loose particles of gravel, sand, silt and clay in various proportions. These loose particles get consolidated or compacted into hard rocks by the presence of cementing substances like lime or the pressure of overlying deposits.
Formation of igneous rocks : The rocks which are formed by the process of solidification of molten rock material (magma), are called igneous rocks.
The processes involved in the formation of igneous rocks are cooling and solidification.
Two types of igneous rocks are

- Intrusive igneous rocks
- Extrusive igneous rocks.

Formation of extrusive rocks : These rocks are also known as volcanic rocks, because they are formed by the solidification of lava on the earth's surface. As on the outer surface of the earths' crust the rate of cooling and solidification is more rapid than in the interior, the different minerals composing the magma have less time to become crystalline. The crystals formed are small. Basalt is a good example of this type of rock. Extrusive rocks are much more fine-grained as compared to intrusive granite. The hot magma free of gases is converted into lava on reaching the surface. It takes the form of lava flows, lava sheet and lava plateau. The north-western part of Peninsular India, known as the Deccan Trap, covers a great area of basaltic regur soil formed by the weathering of these rocks. Basaltic lava rocks cover a wide area in Columbia, the Snake Plateau of U.S.A. The other name of extrusive rock is Volcanic
Rock The properties of extrusive rocks :

1. These rocks are formed by the solidification of lava on the earth's surface.
2. These rocks are very fine-grained.
3. They are usually dark coloured.

The other name given to intrusive rock is Plutonic rock.
Formation of intrusive rocks : When the molten material of the interior part of the earth's crust finds its way through clefts or spaces that it has made by pushing the surrounding rocks apart, and does not reach the surface. This is known as the Intrusive Rocks. Dolerite and granite are the best examples of intrusive rocks.
Properties of intrusive rocks :

1. They have large crystals.
2. They are very compact.
3. They are glassy in appearance.

(d) Fossils are found in sedimentary rocks. Organic remains of plants and animals or their skeletal impressions are called fossils. Fossils help us in fixing the relative ages of rocks.

(e) The dead sea abounds in chemically formed sedimentary rock because the evaporation of water from it is rapid.

Question 2.

(a) Name different types of sedimentary rocks.
(b) What physical agents are involved in the sedimentary rocks ?
(c) How are chemically-formed sedimentary rocks produced?
(d) How are chemically-formed sedimentary rocks formed? Give examples.
(e) Sedimentary rocks are also called stratified rocks. Why?
OR
Why sedimentary rocks are called stratified rocks ?

Answer:

(a) There are three types of sedimentary rocks on the basis of the nature of sediments, their origin, composition and mode of formation. These are mechanically-formed sedimentary rocks, organically formed sedimentary rocks and chemically- formed sedimentary rocks.
(b) Rain water, wind, ice or the running water are the agents involved in the formation of sedimentary rocks. These agents break and carry on loose material and deposit it in various low lying areas to convert into the solid sedimentary rocks.
(c) Chemically-formed sedimentary rocks are produced through evaporation of water from solutions containing minerals. In this ways a rock like ‘gypsum’ is produced. Other examples are nitrates and potash etc.
(d) Chemically formed sedimentary rocks are formed through chemical action of water. Some mineral like limestones and salts are dissolved into the water and after the evaporation of water form a particular type of rock which is formed by the chemical sedimentation of limestones into gypsum and salt into various types of nitrates.
(e) During the formation of sedimentary rocks, the sediments are deposited in waterbodies and get sorted out according to their size. The sediments accumulate in different layers or strata arranged one above the other. Each layer or stratum has particles of given size. In sedimentary rocks each layer or stratum has particles of a given size. Therefore, sedimentary rocks are also called stratified rocks.

Question 3.

(a) What is meant by the term ‘metamorphism’ ?
(b) Distinguish between Thermal metamorphism and Dynamic metamorphism.
(c) Distinguish between Regional and Contact metamorphism.
(d) What are metamorphic rocks ?
(e) Give some examples of metamorphic rocks formed from sedimentary and igneous rocks.

Answer:

(a) The term metamorphism means change of form. It may be physical or chemical or both.

(b) Thermal metamorphism : When the transformation of the original rock takes place principally because of the influence of high temperature, the rock is said to be caused through Thermal metamorphism. For example, graphite (from coal) and slate (from clay). The heat may result from the intrusion of hot magma or from the friction of moving rock layers. It may also occur due to chemical changes.

Dynamic metamorphism : When the transformation of the original rock takes place mainly because of the influence of pressure at a great depth within the earth's crust, it is known as Dynamic Metamorphism.

(c) Regional metamorphism When metamorphism of bed rocks takes place over a very large area, it is called Regional metamorphism. It is usually caused by the movement of the earth's crust. Contact metamorphism when it takes place over a small area, it is called Local Metamorphism or Contact Metamorphism. It commonly occurs when hot magma comes in contact with other rocks.

(d) Metamorphic rocks are those rocks which were formerly igneous or sedimentary rocks, but owing to extreme heat and pressure in the interior of the earth it has been changed or altered to such an extent that they are quite different from what they once were slate, which is in reality clay, and marble' which is in reality lime stone. Other examples of metamorphic rocks are quartzite from sand stone, graphite from coal, gneiss from granite and Mica from Schist.

(e)

(a) Sedimentary Rocks :

1. Limestone
2. Clay and Shale
3. Sandstone
4. Coal

Metamorphic Rocks :

1. Marble
2. Slate
3. Quartzite
4. Graphite

(b)

Igneous Rocks :

1. Granite
2. Basalt

Mctamorphic Rocks :

1. Gneiss
2. Schist

Question 4.
Classify the following rocks into sedimentary, igneous and metamorphic

(a) Shale	**(b) Gneiss**	**(c) Quartzite**
(d) Slate	**(e) Marble**	**(f) Coal**
(g) Clay	**(h) Schist**	**(i) Granite**
(j) Graphite	**(k) Dolomite**	**(l) Peat**
(m) Basalt	**(n) Rock salt**	**(o) Lime-stone**
(p) Gypsum	**(q) Loess**	

Answer:

(a) Shale — Sedimentary rock
(b) Gneiss — Metamorphic rock
(c) Quartzite — Metamorphic rock
(d) Slate — Metamorphic rock
(e) Marble — Metamorphic rock
(f) Coal — Sedimentary rock
(g) Clay — Sedimentary rock
(h) Schist — Metamorphic rock
(i) Granite — Igneous rock
(j) Graphite — Metamorphic rock
(k) Dolomite — Sedimentary rock
(l) Peat — Sedimentary rock
(m) Basalt — Igneous rock
(n) Rock salt — Sedimentary rock
(o) Lime-stone — Sedimentary rock
(p) Gypsum — Sedimentary rock
(q) Loess — Sedimentary rock

Question 5.
Give one word for the following

(a) The outer layer of the earth.
(b) The lower part of ocean floor, comprising mainly of silica.
(c) Rocks formed by the cooling and solidification of molten rock from beneath the earth crust.
(d) Stratified rock formed organically but from vegetative matter-swamps and forests.

(e) The upper part of lithosphere, which is rich in silica and aluminium.
(f) The core of the earth occupied by rock in iron and nickel.
(g) Igneous rocks, which contain a high percentage of silica.
(h) Igneous rocks, which contain a low percentage of silica.
(i) A sedimentary rock, which is composed of microscopically fine, soft and smooth particles.
(j) The best example of chemically-formed sedimentary rock, which has been formed by the evaporation of water from solution containing minerals.

Answer:

(a) Crust
(b) SIMA
(c) Igneous rocks
(d) Carbonaceous rocks
(e) SIAL
(f) Nife
(g) Acidic igneous rocks
(h) Basic igneous rocks
(i) Clay
(j) Gypsum

Q. 6. Fill in the blanks

1. The interior layer is the core, which is made up mainly of iron and nickel, and is called **Nife.**
2. **Organically formed sedimentary** rocks are formed by the deposition of shells and skeletons of organism.
3. **Breccia rock** is formed, when the angular and coarse grains of some durable minerals are cemented together.
4. **Aeolian** is the best example of the wind deposited stratified rock.
5. **Basic igneous** rock contain a low percentage of silica and a high percentage of basic oxides.
6. Extrusive rocks are also known as **volcanic** rocks.
7. **Basaltic lava** rocks cover wide area in Peninsular India and Columbia, the Snake Plateau of the U.S.A.

Question 7.
Give one example of an area of :

1. Igneous rocks
2. Metamorphic rocks,
3. Sedimentary rocks in India

Answer:

1. Deccan Plateau
2. Narmada Basin
3. Himalayan Region

Question 8.
What is the basis for the classification of rocks ?
Answer:
The basis for the classification of rocks are their mineral composition, colour and texture.

Question 9.
Why are Sedimentary rocks called the Secondary rocks?
Answer:
Sedimentary rocks are called Secondary rocks or derived – rocks because they are derived by the denudation of other rocks.

Question 10.
How are sedimentary rocks classified ?
Answer:
Sedimentary rocks are classified into the following types according to the nature of sediments, their origin, composition and the mode of formation.

1. **Inorganic rocks or Mechanically-formed Sedimentary Rocks :-** These type of rocks are formed by the deposition of land derived material. When the river began to flow, they eroded the rocks and washed away to the sea. Clay, shale, sandstone were formed in this way. These rocks are called inorganic rocks.
2. **Organically formed Sedimentary Rocks :-** These rocks are formed by the deposition of plants and sea organisms. Millions of years ago, there grew huge forest in marshy places. In course of ages they were buried underground and the internal heat changed them into coal. Moreover, there are millions and millions of sea-organisms whose skeleton are made of Calcium carbonate derived from sea water. After their death skeleton sink to the bottom of the seas and are formed into lime true and chalk and coal.
3. **Chemically-formed Sedimentary Rocks :-** There rocks are formed by the evaporation of water from solution containing mineral. Various kinds of salts precipitate from waters of shallow desert lakes, where evaporation of the water is rapid. Gypsum is the best example of this kind of rocks. Several nitrates and potash are also chemically formed sedimentary rocks.

Question 11.
State the properties of metamorphic rocks.
Answer:

Properties of metamorphic rocks :

1. These rocks are harder and more resistant than the original rocks.
2. These rocks have their minerals arranged in a series of bands.

Question 12.
Give one term for the following statements :

1. Formed when mud layers compacted under great pressure composing 80% of this rock.
2. It has a definite chemical composition with its own chemical and physical properties.
3. Igneous rocks of deep seated origin.
4. Sheet like body of igneous rock.
5. Rounded or sub-rounded fragments, usually water-born cobbles, pebble and gravel, cemented together by a matrix of calcium carbonate, silica, etc.
6. Formed by evaporation in saline lakes.
7. Fine grained metamorphic rock, generally produced by the low grade metamorphism of shale.
8. Type of metamorphism in which changes are caused due to high pressure.

Answer:

1. Shale
2. Mineral
3. Plutonic rocks
4. Sill
5. Conglomerate
6. Rock salt
7. Slate
8. Dynamic metamorphism.

Question 13.
Why are the Igneous Rocks called Primary Rocks ?
Answer:
It is believed that the earth was in a molten state in the beginning Igneous rocks were the first rocks to be formed due to cooling and solidification of molten matter. Hence these are called Primary Rocks.

Question 14.
Why fossils are preserved in Sedimentary and not in Igneous rocks ?
Answer:
Fossils are remains of vegetation and animals buried under the sediments. The sedimentary rocks are stratified rocks and are found in layers. These fossils are

preserved in between these layers. But in Igneous rocks, the fossils are destroyed due to high temperature of lava.

Question 15.
How is Plutonic rock formed ? Give an example of an Plutonic rock.
Answer:
Plutonic rocks are the igneous rocks which are formed as some depth in the earth's crust, when a molten material gets solidified under pressure. Granite is very good example of a Plutonic rock.

Question 16.
Give reasons for the following :

1. Extrusive rocks generally have small crystals.
2. Silicates are the most common rock forming minerals.
3. Rocks are of great economic significance.
4. Man's habitat is the biosphere and not the lithosphere in the true sense.

Answer:

1. Extrusive rocks generally have small crystals because in the formation of these rocks, the solidification of magma takes place at a slower rate.
2. Silicates are the most common rock forming minerals because they are most common minerals in the Earth's crust.
3. Rocks are of great economic significance Some of the main benefits of rocks are as follows :
    - After disintergration, they turn into valuable soils.
    - They are the store-houses of a large number of minerals.
    - They are the source of precious metals like gold, silver, platinum etc.
    - They are source of fuel-minerals.
    - They provide different types of stones.
4. The composite zone inhabited by most living creatures is called biosphere. It includes a part of the atmosphere, the hydrosphere and a part of the lithosphere. All three layers are essential for life to exist.
   As lithosphere is only a small part of the biosphere, therefore, man's habitat is the biosphere and not the lithosphere in the true sense.

Question 17.
Distinguish between Intrusive and Extrusive Rocks :
Answer:
Intrusive Rocks :

1. Intrustive rocks are formed beneath the surface of the Earth.
2. These rocks have large size crystals due to slow cooling.

3. These are also known as plutonic rocks.
4. Granite is an example of these rocks.

Extrusive Rocks :

1. Extrusive rocks are formed on the surface of the Earth.
2. Crystals are not formed due to rapid cooling of lava.
3. These are also known as volcanic rocks.
4. Basalt is an example of these rocks.