



QUESTION BANK

Name of the Department : Civil Engineering
Subject Code & Name : CE 8392 & Engineering Geology
Year & Semester : II & III

Unit-I PHYSICAL GEOLOGY

PART-A

1) Write notes on Lithosphere.

Litho is a Greek word, which means stone. Accordingly the lithosphere is the part of the earth, which is solid crust. The thickness of lithosphere is approximately 50 km. The crust thickness is not the same at all places. It is thicker in the continent and thinner on the ocean floors. Lithosphere is a source of various minerals. It contains variety of landforms such as mountains, plateaus, valleys, plains.

2) What is meant by NIFE?

The central part of the earth is called Core or barysphere. It has thickness of 2900 km. This layer is made of very hard mineral like Nickel (Ni) and iron (Fe) and so it is called NIFE (Ni + Fe). Here there is intense heat and pressure and this region is elastic and viscous in nature.

3) Distinguish between SIAL and SIMA.

The upper most layer is called the crust of the earth. It has a thickness of 50 km and thus the crust is made of two layers. Silica (Si) and Aluminium (Al) are the elements found in the first layer. Therefore this layer is called SIAL (Si + Al). This layer is also called 'Granitic layer'. Below the SIAL is a layer called SIMA which is composed of silica (Si) and Magnesium (Mg). This layer is also called Basaltic layer.

4) What are plates?

The surface of the earth is the crust of the earth. It is made of interlocking pieces called plates. The continents and oceans rest on these plates and are separated by wide cracks. The plates move constantly.



5) What is meant by atmosphere?

The outer gaseous part of the earth starting from the surface and extending as far as 700 km and even beyond is termed atmosphere. It makes only about one-million part of the total mass of the earth.

2

6) Define sea floor spreading.

Divergent boundaries occur at Oceanic ridges. In the process of plate separation, the magma rises up from the asthenosphere and fills the gap their created. In this way new crust is created along the trailing edges of the diverging plates. This phenomenon is called sea floor spreading.

7) What are the subdivisions in geology?

The subdivisions are:

- a) Physical geology
- b) Geomorphology
- c) Mineralogy
- d) Petrology
- e) Historical geology
- f) Economic geology
- g) Geohydrology
- h) Engineering geology
- i) Metrology

8) What is meant by engineering geology?

Engineering geology may be defined as that of applied sciences which deals with the application of geology for a safe, stable land economical design and construction of a civil engineering project.

9) Define seismology.

Seismology is a branch of geophysics that deals with the study of elastic waves within the body of the earth during an earthquake. ie. The study of earthquake is called seismology.

10) Give the two types of discontinuity.

There are two important discontinuities:

- ❖ Mohorovicic or Moh discontinuity
- ❖ Gutenberg or Oldharm discontinuity



11) Define denudation.

It is general term used when the surface of the earth is worn away by chemical as well as mechanical actions of physical agents and the lower layers are exposed. This happens when the rocks were exposed for a sufficient length of time to the attacks of physical agents.

3

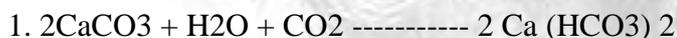
12) What is mean by continental crust?

The continental crust consists of two layers separated by a well-defined discontinuity known as conard discontinuity. The layers have been defined on the basis of seismic waves velocities and densities. In the upper layer the velocity of seismic waves corresponds to the velocity found by experimental to be characteristic of granite. Hence they are called as Granitic or sialic layer.

13) What is mean by physical weathering?

It is a physical breakdown of rock masses under the attack of certain atmospheric agents. A single rock block is broken gradually into smaller irregular fragments and then into particles of still smaller dimensions. Temperature variations are irresponsible to a great extent of physical weathering.

14) Give the example for chemical reaction in chemical weathering?



Calcium bicarbonate (Soluble)



Gypsum



Kaolin Quartz Potassium carbonate

15) Define deflation.

Deflation is the process of simply removing the loose sand and dust sized particles from an area, by fast moving winds. Wind deflation can successfully operate in comparatively dry regions with little pr no rainfall and where the mantle is unprotected due to absence of vegetation.

16) What are Barchans?

The barchans are crescent or half moon shaped dunes of variable size. Their 'horns' point in the downward direction. Their height may vary from 15-200 mts. And width from a few to 1000s meter. They have a gentle windward slope and steeper leeward slope.



17) Define the terms

i) Focus

ii) Epicenter

Focus:

The exact spot underneath the earth's surface, at which an earthquake originates, is known as its focus.

Epicenter:

The earthquake then moves in the form of wave which are spread in all directions. These waves first reach the point at the surface, which is immediately above the focus or origin of the earthquake. This point is called epicenter.

18) What are the causes of earthquake?

The earthquake may be caused due to various reasons:

- ❖ Earthquakes due to superficial movements.
- ❖ Earthquake due to volcanic eruptions.
- ❖ Earthquake due to folding or faulting

19) Define aquifer and the names the types of aquifers.

Groundwater occurs in permeable geologic formations is known as aquifers. i.e formations having structures that permit appreciable water to move through them under ordinary field conditions. Aquifers may be classes as unconfined and confined, depending upon the presence or absence of a water table.

20) What do you understand by spheroidal weathering?

When weathering occurs, part of the disintegrated rock material is carried away by running water or any other transporting agent. Some of them are left on the surface of the bedrock as residual boulders. These boulders are then rounded off to spheroidal cores by the simultaneous attack of eroding agents on all sides. It is often seen that these boulders have an onion like structure. This kind of weathering is called spheroidal weathering.

21) Write short notes on:

*) Porosity

*) Permability

Porosity:

The portion of a rock or soil not occupied by solid mineral matter may be occupied by



ground water. These spaces are known as voids, interstices, pores or pore space. The interstices can act as ground water conduits; they are characterized by their size, shape, irregularity, and distribution.

Permability:

The groundwater is stored in the pores of a rock and will hence be available in the groundrocks. The porosity of the rock, thus defining the maximum amount of water that can be stored in the rock. This is called permeability.

22) What is mean by water table?

The depth to upper surface of zone of saturation in free ground water is called water table. In other words, a static level of water in wells penetrating the zone of saturation is called water table.

23) What are the movements of the oceans?

There are three movements of oceans:

i) Waves

ii) Tides

iii) Currents.

- ❖ Waves are only the rise and fall of water caused by the action of the winds. There is no movement forward. These are at the surface and not at great depth.
- ❖ Currents are rivers in the sea. The water moves forward and falls at the depth as well. These are caused by the unequal temperature of equator and Polar Regions.
- ❖ Tides are the rise and fall of seawater occurring twice in a lunar day.

25) Distinguish between magnitude and intensity of the earthquake.

Intensity of an earthquake may be defined as the ratio of an earthquake based on actual effects produced by the quakes on the earth.

Magnitude (M) of a tectonic earthquake may be defined as the rating of an earthquake based on the total amount of energy released when the over strained rocks suddenly rebound causing the earthquake.



1. Write short notes on:

- i. Crust
- ii. Mantle
- iii. Core
- iv. Stratosphere
- v. Atmosphere

2. Explain briefly about Branches of geology?

3. Write a critical essay on weathering and its significance in engineering construction?

4. Give an account of geological work of wind explaining briefly some major geological features?

5. Write short notes on

- a) Hydraulic action
- b) Cavitation
- c) Abrasion
- d) Attrition
- e) Corrosion

6. Explain the causes, classification of earthquake?

7. Briefly explain the origin and occurrence of ground water?



Unit – II MINEROLOGY

PART-A

1) Define mineralogy.

It is defined as naturally occurring inorganic solid substance that is characterized with a definite chemical composition and very often with a definite atomic structure. It is a branch of geology, which deals with the various aspects related to minerals such as their individual properties their mode of formation and mode of occurrence.

2) How are minerals are identified and what are the symmetry elements of crystal?

Their colour, streak, hardness, cleavage, crystal form, specific gravity and lustre generally identify minerals. The symmetry elements are:

- i) Plane of symmetry
- ii) Axis of symmetry
- iii) Centre of Symmetry

3) What are the physical properties of minerals?

The physical properties are:

- i) Colour
- ii) Lustre
- iii) Streak
- iv) Hardness
- v) Cleavage
- vi) Fracture
- vii) Tenacity
- viii) Structure
- ix) Specific gravity
- x) Form

4) Define streak.

Streak is the colour of the finely powdered mineral as obtained by scratching or rubbing the mineral over a rough unglazed porcelain plate. The plate often named as streak plate. It is important and diagnostic property of many coloured minerals.



5) What is mean by fracture and types of fracture?

8

The appearance of the broken surface of a mineral in a direction other than that of cleavage is generally expressed by the term fracture. The types are:

- i) Even
- ii) Uneven
- iii) Conchoidal
- iv) Splintery
- v) Hackly
- vi) Earthy

6) Define the formula for calculated in specific gravity.

Specific gravity is calculated by the following relationship:

$$\text{Specific gravity} = \frac{\text{Weight of the mineral in air}}{\text{Loss of weight in liquid}} \times d$$

Where,

d= Density of the liquid used

7) Define Planes/axis/Centre of symmetry.

Plane of symmetry:

It divides a crystal into similar and similarly placed halves. This plane provides crystal so that one half is the mirror image of the other.

Axis of symmetry:

If is a crystal one being rotated, come to occupy the same position in space more than one in a complete turn, the axis about which rotation taken place is called an axis of symmetry.

Centre of symmetry:

A crystal has a centre of symmetry when like faces; edges are arranged in pairs in corresponding positions on opposite sides of a central point. The cube and bricks obviously have centre of symmetry.

8) What is mean by holohedral form?

The maximum symmetry elements of the system. The form is having all the faces, which have same position with regard to the crystallographic axis. The highest symmetry



elements of the system. The forms present in normal class of the system are holohedral form since it has the maximum symmetry elements than the other classes.

9) Define hexagonal system.

All those crystals, which can be referred to four crystallographic axes of which three axes are horizontal, equal interchangeable and intersecting each other at 120° between the positive ends. The fourth axes are vertical and at right angles to the three horizontal axes, are grouped under hexagonal system.

10) Give the physical properties and uses of mica?

The mica group only muscovite and biotite are of common occurrence as rock forming minerals.

S.no	properties	muscovite	biotite
1	Colour	Transparent, grey or light brown	Brown to black
2	Streak	Uncoloured	Same as colour
3	Cleavage	perfect	perfect
4	Lustre	Vitreous	Vitreous
5	Hardness	2-2.5	2-2.5
6	Specific gravity	2.8-3.1	2.6-3.1
7	System	Monoclinic	Monoclinic

11) What are the chemical compositions in feldspar group?

The feldspars are chiefly aluminosilicates of Na, K and Ca with following general formula:



In which X = Na, K, Ca and Ba and Z = Si and Al

Some examples of chemical composition of feldspar minerals are



12) Mention the various types of forms?

Any group of similar faces showing identical mathematical relations with crystallographic axes makes a form. Forms are further distinguished into the following types:

a) Holohedral form

b) Hemihedral form



- c) Hemimorphic form
- d) Enantiomorphic form
- e) Fundamental form
- f) Open and closed form

13) What are the five symmetry classes in Isometric system?

The types are:

a) Axes of symmetry: 13 in all

- 3 are axes of four-fold symmetry
- 4 are axes of three-fold symmetry
- 6 are axes two fold of symmetry

b) Planes of Symmetry: 9 in all

3 planes of symmetry are at right angles to each other and are termed the principal planes;

6 planes of symmetry are diagonal in position and bisect the angles between the principal planes.

c) It has centre of symmetry.

14) Define tetragonal system?

The tetragonal system includes all those crystals, which can be referred to three crystallographic axes so that two axes are equal, interchangeable and horizontal in positions. The third axis is either longer or shorter than the other two and is vertical in position and all three axes are mutually at right angles to each other.

15) Give the three types of pyramid.

Three types of pyramid:

- i) Pyramid of first order: eight faces; each face cuts the two horizontal axis at equal length besides intersecting the vertical axis.
- ii) Pyramid of second order: Eight faces; each face cuts only one of the two horizontal axes.
- iii) Pyramid of third order: It is also called ditetragonal pyramid is a closed form of 16 faces in which each face cuts all the three crystallographic axes.



16) Define dome and types of domes?

11

A dome is defined as a form whose faces essentially meet the vertical axis and are parallel to one of the two horizontal axes. Two types of domes:

i) Macrodome: An open form of two faces in which each face meets the vertical axis and the axis and is parallel to the macro axis.

ii) Brachydome: An open form of two faces each face is parallel to the brachy axis and meets the other two axes.

17) What are the forms allowed in monoclinic system?

The forms are:

i) Pinacoids

- a) a-pinacoid
- b) b-pinacoid
- c) c-pinacoid

ii) Domes

- a) Orthodome
- b) Clinodome

iii) Prisms

- a) Unit prism
- b) Orthoprism
- c) Clinoprism

iv) Pyramids

- a) Unit pyramid
- b) Orthopyramid
- c) Clino pyramid

18) Write short notes on:

i) Twin plane

ii) Twin axis

Twin plane:

It is common to both the halves of the crystal and across which one half may appear to be the reflection of the other. Any plane parallel to a crystal face may be a twin plane.

Twin axis:

It is a crystallographic direction along which a rotation of some degrees seems to have



Accredited by NAAC

produced the resultant twins. In other words if a backward rotation to the same extent is possible to be given the two parts should take the form of a single crystal.

12

19) What is the common twin law in Hexagonal system?

The laws are:

Brazilian Law: In this law the prism of IInd order is twin plane.

Dauphine law: In this law c-axis is the twinning axis. Twins are generally intergrown

Japanese law: It contact twins result on this law in which pyramid is a twinning plane.

20) Define peat.

It is essentially a partly changed vegetable matter in the first stage of transformation to coal. The vegetable structure is easily visible and the evidence of its being in the process of transformation is also clearly seen. Peat is generally composed of remains of moss like plants but occasionally may contain reeds and partially altered portions of trees of higher order.

21) What is meant by cannel coal?

It is a type of bituminous coal, which is exceptionally rich in spores, and resins of plants, which are believed to have been deposited by wind in subsequent condition. The cannel coal is sometimes further distinguished as bog head coal, if in its constitution the algal remains are dominating over the spores and resins.

22) What are the possibilities may suggest in Inorganic theories?

The possibilities are:

- i) Reaction of alkali metals
- ii) Reaction of iron carbide
- iii) Concentration
- iv) Decomposition

23) Give any one factor in controlling the accumulation?

Lithology: Certain types of rocks are better suited as reservoirs because of their inherent qualities of permeability and effective porosity. Rocks with effective porosity of greater than 15 percent and permeability greater than 1000 millidarcies are considered 'A' class reservoirs.



PART-B

- 1) Explain briefly about physical properties of minerals? (Nov 2005)
- 2) Write short notes on
 - i) Symmetry
 - ii) Crystallographic axis
- 3) Define the following terms
 - i) Parameter
 - ii) Indices
 - iii) Symbols
 - iv) Forms
- 4) Give a detailed account of the elements of the symmetry and minerals crystallizing in any two of the following systems.
 - i) Isometric system
 - ii) Hexagonal system
 - iii) Monoclinic system
- 5) What is mean by Twinning and types of twin and common twin laws?

Unit-III PETROLOGY

PART-A

1. Define Igneous Rocks?

All rocks that have formed from an original hot, molten material through the process of cooling and crystallization may be defined as Igneous Rocks.

2. Explain about Hypabyssal Rocks?

These Igneous Rocks are formed at Intermediate depths, generally up to 2 Km, below the surface of earth and exhibit mixed characteristics of volcanic and plutonic rocks. Porphyries of various compositions are example of Hypabyssal Rocks.

3. Define Texture of Igneous Rocks?

The term texture has been defined as the mutual relationship of different mineralogical constituents in a rock. It is determine by size, shape and arrangement of these constituents within the body of rock.

4. What are the factors Explaining Texture?

a) Degree of Crystallization

Holocrystalline, Holohyaline.

b) Granularity

Coarse grained, Medium grained, Fine grained.



c) Fabric

Panidiomorphi, Allotrimorphic, Hypidiomorphi.

5. Define Equigranular and Inequigranular Texture?

All those textures in which majority of constituent crystals of rock are broadly equal in size are described as equigranular textures. All those textures in which majority of constituent minerals show marked difference in their relative grain size are grouped as inequigranular textures.

6. Define Structure of Igneous Rocks?

Those feature of Igneous Rocks that are developed on a large scale in the body of an extraction or instruction giving rise conspicuous shapes or forms are included under the term structures. They may be so well developed as to be recognized easily on visual inspection or they become apparent only when this section of such rocks is examined under microscope. In latter case they are termed microstructure.

7. What are the numbers of factor depending on Igneous Rocks?

- The structural deposition of the host rock (also called country rock).
- The viscosity of the magma or lava.
- The composition of the magma or lava.
- The environment in which injection of magma or eruption of lava place.

8. Define Volcanic Necks?

In some cases, vents of quiet volcanoes have become sealed with the intrusion, such instruction are termed volcanic Necks or Volcanic Plugs. These masses may be circular, semicircular or irregular and show considerable variation in their diameter.

9. Define Sedimentary Rocks?

Sedimentary are also called secondary Rocks. This group includes a wide variety of rocks formed by accumulation, compaction and consolidation of sediments; particles are remaining of organisms in suitable environment under ordinary condition of temperature and pressure.

10. What are the Structures Sedimentary Rocks?

a) Mechanical Structures

Stratification, Lamination, Cross Bedding, Graded Bedding, Mud Cracks, Rain Prints, Ripple Marks.

b) Chemical Structure



Concretionary Structure, Oolitic and Pisolitic Structures, Nodular Structure, Geode Structure.

c) Organic Structures.

11. What is the Classification of Sedimentary Rocks?

a) Clastic Rocks

- Gravels Boulders, Cobbles, Pebbles.
- Sands Coarse Sands, Medium Sands, Fine Sands
- Silts
- Clays Rudites, Arenites, Lutites.

b) Non Clastic Rocks

- Chemically formed rocks Siliceous Deposits, Carbonate Deposits, Ferruginous Deposits, Phosphatic Deposits, Evaporities.
- Organic Deposits

c) Miscellaneous Deposits.

12. Explain metamorphic changes.

All the changes in the body of rocks that are due to variations in the factors of pressure, temperature and chemical environment are know the metamorphic changes and the process itself is termed metamorphism.

13. What are the kinds of Metamorphism?

Three major kinds of Metamorphism differentiated on the basis of dominant factors are thermal metamorphism, dynamic metamorphism and Dynamo thermal metamorphism

14. Define Metamorphism?

It is defined as a metamorphic process involving formation of new minerals by the mechanism of chemical replacement of the pre-existing minerals, chiefly under the influence of chemically active fluids.

15. What is the factor which depends on the effects of Metamorphism?

- a) The types of rocks involved in the process
- b) The kind of metamorphism that is predominant in the process.

16. Define Metamorphic Rocks

Metamorphic rocks are defined as those rocks in which have formed through the operation of various types of Metamorphism processes on the pre-existing rocks involving



either textural or structural changes or changes in mineralogical composition or reconstitution in the both the directions.

17. Define Stress minerals.

Those minerals which are produced in the metamorphic rocks chiefly under the influence of factor are known as stress minerals.

18. Define Slate?

Slate is an extremely fine grained metamorphic rocks characterized by a slate cleavage by virtue of which it can be split in to thin sheets parallel smooth surfaces, The slaty cleavage is due to parallel arrangement of platy and flaky operating during the process of metamorphism.

19. Define Schist?

Schist is megascopically crystalline metamorphic rocks characterized by typical schistose structure. The constituent platy and Flaky minerals are mostly arranged in irregular parallel layers or bands.

20. Define Granites?

Granite may be defined as plutonic light colored igneous rocks. These are among the most common igneous rocks. The word Granite is derived from Latin word granum meaning a grain and abriously refers to the equigranular texture of the rocks.

PART-B

1. What are sedimentary rocks? Explain the properties of any 4 sedimentary rocks.
2. What are metamorphic rocks? Explain the properties of any 4 metamorphic rocks.
3. What are igneous rocks? Explain the properties of any 4 igneous rocks.
4. Describe the engineering properties of rocks.
5. Describe the different types of rocks. Give the classification, texture and structure of igneous, sedimentary and metamorphic rocks.
6. List the various field and laboratory tests to determine the engineering properties of rocks.
7. Describe in detail about the mineral composition, structure, texture, origin, engineering properties and uses of basalt, dolerite, sandstone and slate.



1. Define Dip?

The inclination of the bedding planes, with the horizontal, is called dip and is always expressed in degrees.

2. Explain true dip?

It is the maximum inclination of bedding planes with the horizontal, or in other words it is the inclination of the direction of which water would flow, if poured on the upper surface of the bed.

3. Explain apparent dip?

The inclination of the bedding planes, with the horizontal, in any other direction, other than the direction of the true dip, is known as the apparent dip. The value of apparent dip is always less than the true dip.

4. Define strike?

It is the direction, measured on a horizontal surface, of a line formed by the intersection of dipping bed with the horizontal plane. It is always expressed in terms of main direction i.e., North, South, East or West.

5. What is meant by folds?

The earth's crust is tilted out of the horizontal and is bent into folds. Such a fold may range from a microscopic crinkle to great arches and troughs even up to 100 kms across. A set of such arches and troughs is called a fold.

6. What is meant by Anticline and Syncline?

When the beds are folded in an arch-like structure, it is called an anticline. When the beds are down folded in a trough-like structure, it is called a syncline. It may be noted that in an anticline the oldest rock is in the centre, whereas in a syncline the youngest rocks are in the centre.

7. Explain Causes of folding?

The interior of the earth is getting cooler and cooler day by day, which is sure to cause some shrinkage in the earth's crust. This shrinkage is responsible for the compressive and shearing stress to be developed within the earth's crust. Some time these stresses are small in



magnitudes but go on exerting pressure for a sufficient length of time and result in buckling or folding of the layers of the earth's crust.

8. What are types of folds?

- a) Symmetrical fold
- b) Asymmetrical fold
- c) Overturned fold
- d) Isoclinal fold
- e) Recumbent fold
- f) Plunging fold
- g) Open fold
- h) Closed fold
- i) Anticlinorium
- j) Synclinorium
- k) Dome
- l) Basin
- m) Nonocclinal fold.

9. Define Faults?

Faults are fractures, along which the movement of one block with respect to other, has taken place. This movement may vary from a few centimeters to many kilometres depending upon the magnitude of the stresses, and the resistance offered by the rocks.

10. Explain the Causes of Faulting?

The interior of the earth becoming cooler day by day, which is sure to cause some shrinkage in the earth's crust. This shrinkage is responsible for the stress to be developed within the earth's crust. These stresses, when greater in magnitudes exert so much pressure that the layers of the earth's crust are fold due to compressive stresses and after wards when the stresses are released, fractures are formed. If the stresses still continue, the blocks move up or down along the fault plane depending upon the direction of stresses and their intensity. Such a fracture, along which a movement has taken place, is called a fault.

11. What are the classifications of faults?

Faults are classified on the basis of their apparent displacement, ie, the direction of movement, of one block, with respect to the other along the fault plane.



12. What are the criteria for the recognition of a fault?

- 1) Discontinuity of strata
- 2) Repetition and omission of strata
- 3) Physiographic features
- 4) General.

19

13. What is mean by Joints?

When sufficient tensile stress is developed between two successive points, a crack is developed at right angle to the direction of the stress, such cracks are called joints.

14. What is mean by Master joints?

The joints always occur in sets and groups. A set of joints means, joint occurring in the same dip or strike. A group of joints means a few sets of joints having almost the same trend. If a few sets or groups of joints appear for a considerable length in a rock, such joints are called major joints or master joints.

15. Define out crop?

A little consideration will show that the out crop of a rock is affected by the angle of dip also. If a rock has a vertical dip then the outcrop will be less, than that when the same rock is dipping at some angles.

16. What are the different forms of out crops?

- a) Out lie
- b) In lie
- c) Unconformity
- d) Overlap
- e) Cross bedding.

17. Define overlap?

An overlap is particular type of an unconformity, in which the overlying strata extends so as to overlap the underlying strata.

18. Define cross bedding?

Sedimentary beds or layers are generally parallel to one another. But, sometimes, it has been observed that the beds lie slightly oblique to the major bedding planes.

19. What are the classifications of joints?

- a) Geometrical classification

Strike joints, Dip joints, Oblique joints



b) Genetic classification

Tension joints, shear joints

20. What are the methods of Geophysical Exploration?

Depending upon the type of energy field used, the following methods may be used. Seismic method, Electrical method, Gravitational method, Magnetic method, Radiometric method, Geothermal method.

PART-B

1. What is a fault? Discuss the various types of faults and write about the engineering applications.
2. What is a fold? Discuss the various types of faults and write about the engineering applications.
3. What is a joint? Discuss the various types of faults and write about the engineering applications.
4. Explain in detail the role of electrical methods of subsurface investigation in civil engineering practice.
5. Describe seismic refraction survey to be conducted for determining the depth of bed rock.
6. Discuss in detail electrical method of investigation for ground water exploration.
7. Classify folds and faults in rocks and explain how they influence the design of dams.
8. Classify and describe joint structures with neat sketches and also write their role in dam and tunnel construction.
9. Describe fault structures with neat sketches and also write their role in dam and tunnel construction.



PART-A

1. Define remote sensing.

Every object on earth emits its own internal energy according to its molecular and atomic structure, in addition to reflecting sun light during the day time. This radiations can be registered by sensors in several wavelengths, including those in the infrared and microwave regions of the spectrum. When such sensors are installed on aircrafts or on satellites they can record the earth's objects from for off distances. Such distant (Remote) acquisition of information about the objects on the earth's surface is known as remote sensing.

2. What is meant by aerial photography & Imageries.

The photographs of the earth taken from aircrafts are called the aerial photographs, while the pictures taken from the satellites are called the imageries.

3. Define aerial photographs.

Aerial photographs of the region are taken by cameras placed in the aircrafts. Aerial photos give three dimension of the photographed area. These photos contain a detailed record of the ground at the time exposure.

4. Define satellite imageries.

The satellite imageries can either be read manually like aerial photographs, or with the help of computers.

5. What is meant by geographic information system?

The modern computers can process maps and data with suitable computer programmer. The process of integrating and analyzing various types of data with the help of computer is known as geographic information system.

6. What are applications of remote sensing?

General geological mapping, mineral prospecting, petroleum exploration, ground water exploration, engineering .uses of site rocks, disaster studies, coastal geological studies.

7. What are geological considerations involved in the construction of buildings.

Basic requirements of a building foundation, building foundation on soils, building foundation carried to the deep hard rocks, building founded on surface bed rocks, types of settlement in buildings.



8. What are the characteristics of air photos?

Shape and size, flight and photo data, scale.

22

9. What are the kinds of air photos?

Vertical air photos, oblique air photos, anusaics, photostrips, stereoprain.

10. Define stereo meter

The instrument is used under a mirror stereoscope for measuring heights and areas of objects from air photos.

11. What is mean by measuring dots?

A stereo meter consists of two small Tran's parent glass or platic plates attached to a long metallic bar. A clear dot is etched on earth of the paltes called "measuring dots".

12. Define land slide.

A land slide is a slow or sudden down hill movement of slope forming rock and soil materials under the force of gravity.

13. Places in which land slide occur.

They occur in hill valley slopes, sea coasts, river banks and bends, on the slopes of volcanic cones and in earth quake prone areas. They also occur under water as on lake or sea floor.

14. What are the classifications of land slides?

Presence or absence of a definite slip plane, materials involved and their water content, kind and rate of movement.

15. What are the parts of a typical slides

Crown, scrap, head, slip plane, flanks, transverse ridges, fool, toe, length, width, height, depth.

16. What are the types of land slides?

(1) Slides:

Translational, Rotational

(2) Falls

(3) Flows

Slow, Soil creep, Rock creep

(4) Complex slides.



17. What are the characteristics of land slide?

- 1, Steep scraps in their upper parts and irregular ridges and furrows at lower parts.
- 2, Land slides vary in extent from several square meters to several kilometers. It is thickness may several meters.
- 3, Land slide velocities ranges from very small movement to more than 100 km/h.

18. What are the causes of land sides?

- a) Natural causes.
 - 1, Internal factors.
 - 2, External factors.
- b) Man induced causes.

19. What are the Geological considerations involved in Road cutting?

- a. Topography
- b. Lithological characters
- c. Structural features of the rocks
- d. Ground water conditions

20. What are the structural features of tunnel sites?

- a. Dip and strike
- b. Folds
- c. Faults
- d. Joints.

PART-B

1. Write in detail about landslides and their causative effects. Explain about the measures to prevent them.
2. What are the various geological factors to be considered for the construction of dams? Explain with examples.
3. Explain in detail the role of aerial photographs and satellite images in planning and execution of civil Engineering projects.
4. Write in detail about sea erosion and coastal protection structures.
5. Using case studies, describe the various aspects of coastal erosion and the various methods of Coastal protection.
6. What are the various geological factors to be considered for the construction of tunnels?



Explain in detail with examples.

7. What are the various geological factors to be considered for the construction of, road cuttings? Explain in detail with examples.

8. What are the various geological factors to be considered for the construction of buildings? Explain in detail with example.

