

Environmental Earth Studies II

23 October 2023

EVE206D

Semester Test IV

National Diploma: Environmental Sciences

Question 1

1.1 Describe what a geological map is.

(3)

Geological Map

Geology map. This is a topographic map that shows the distribution of various rock types in an area. The colored/shaded area shows the different rock types as they occur on or below the earth surface. Lines (Contacts) on the map show the boundaries between the different rock types.

2. Describe in detail what a planimetric map is.

(4)

Is a map that shows both the length width of the earth surface and is said to be two dimensional. An example of a planimetric map is a Road Map. Therefore a planimetric map typically shows roads, land boundaries natural features such as lakes and rivers. Planimetric maps are commonly used as the base maps for special purpose maps that show the distribution of something of social, economic or political interest

3. Discuss the two types of aerial photographs.

(2)

Two main types of aerial photographs:

High oblique where the camera is tilted sufficiently to include the horizon and Low oblique where the tilt is insufficient to include the horizon.

4. State the information found on the following maps:

1. Engineering Geology (2)

Engineering geology maps are maps that may show the distribution of which maybe important or dangerous for construction of roads, dams, buildings. It may also show factors like rock strength.

2. Hydrogeology (2)

Hydrogeology map shows the depth of the water known as the groundwater table. The quality of the water, the water yield of the boreholes.

Question 2

2.1 Define what a **MAP SCALE** is? (1)

The relationship between the length of a line on a map and the length of that same line on the surface of the earth.

2.2 Name the four types of scales and give an example of each. (4)

Verbal scale Example: 10cm on a map represents 20km in true life/on the earth surface

Fraction scale Example: 1/50 000

Ratio scale Example: 1: 20 000

Graphic Scale Example: (i) Open divided graphic scale

(ii) Closed graphic scale

- 2.3 With the aid of appropriate examples distinguish between small scale maps and large scale maps. (4)

Large scale Maps

-Large scale maps show a small area in greater detail

-They are guide maps or topographic maps

Details of cities, towns, villages are shown

Example: The scale may be 1cm=50m etc

Small scale Maps

Small scale maps show large area with less detail

They are wall maps or atlas

They show important features like mountains, plateaus, continents and countries.

Example: The scale may be 1c=100km

Question 3

1. State how the differences in elevation are shown on a topographic map (3)

Elevation differences are shown by means of contour lines, spot heights or trigonometric beacon.

2. State how the spacing in between contour lines are used to interpret the slope of a terrain. (4)

Slopes rise or descend at right angles to any contour line.

-Evenly spaced contour lines indicate uniform slope.

-Closely spaced contour lines indicate a steep slope.

-Widely spaced contours indicate gentle slope.

-Unevenly spaced contour lines indicate variable or irregular slope.

3. List the factors that guide the topographer when choosing the contour interval for a particular map should be. (3)

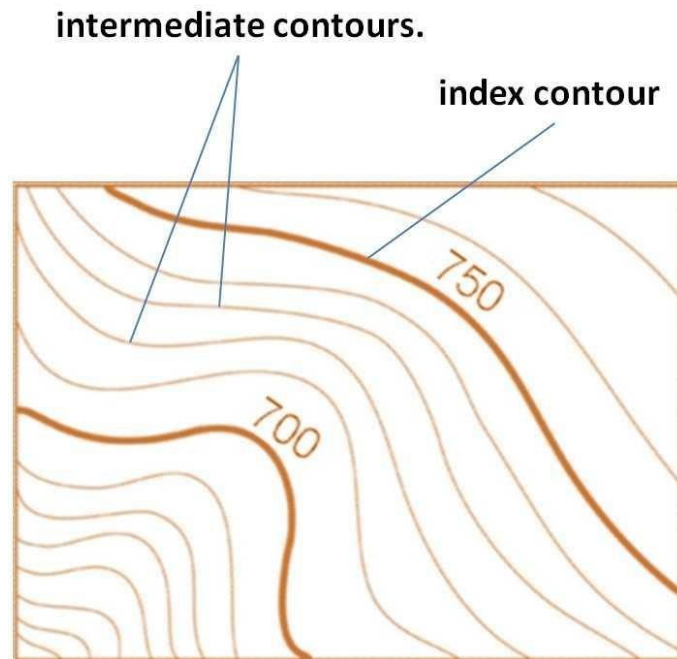
-The level of detail the topographer wishes to portray

-The scale of the map

-The range in elevation or relief of the area to be mapped

- 3.4 With the aid of a sketch explain what an Index Contour is? (3)

As a general rule every fifth contour starting from sea level is an index contour which is drawn as a heavy line and labeled with its elevation. Contours between index contours are usually not labeled.



Question 4

1. Differentiate between the following: Make use of sketches to supplement your answer:

1. Angular Unconformity and disconformity (4)

An unconformity between two successions of sedimentary rocks in which the older underlying succession dips at a much steeper angle than the younger overlying succession.

Disconformity

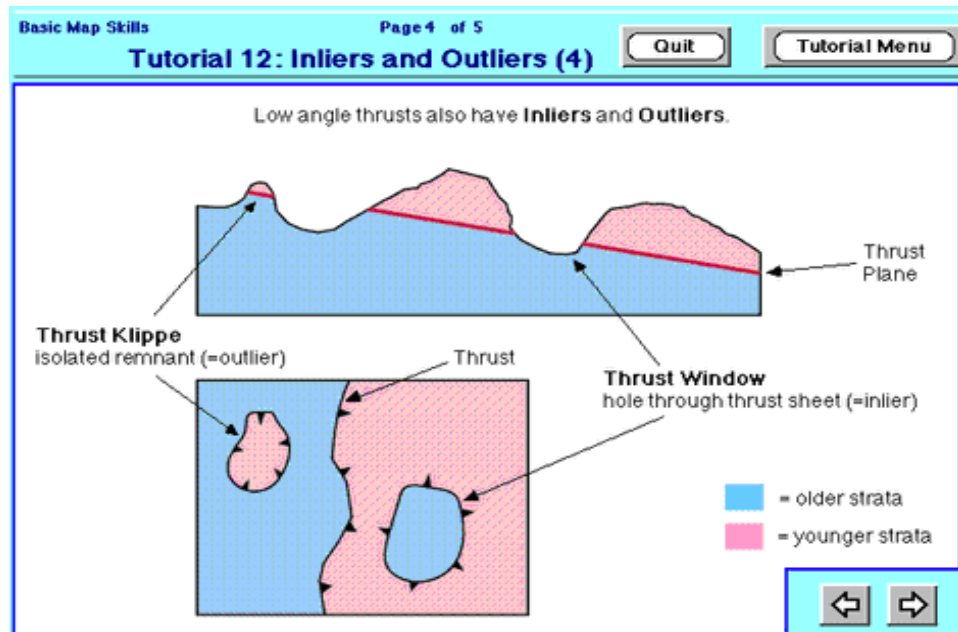
An unconformity in which the younger succession of beds above the plane of unconformity is essentially parallel to the older succession of beds below the plane of unconformity.

2. Inlier and outlier (3)

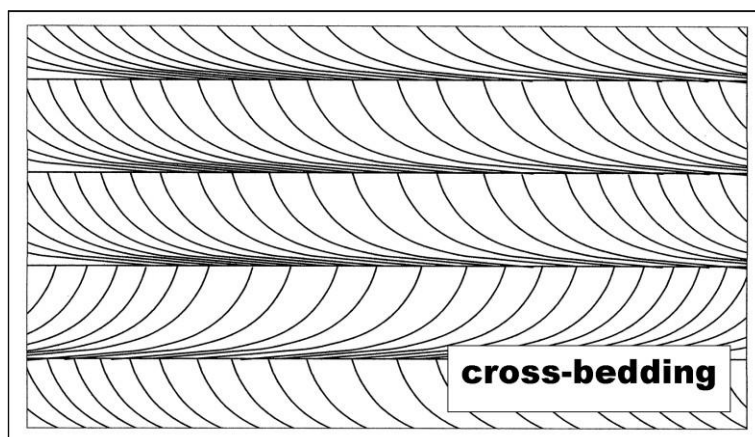
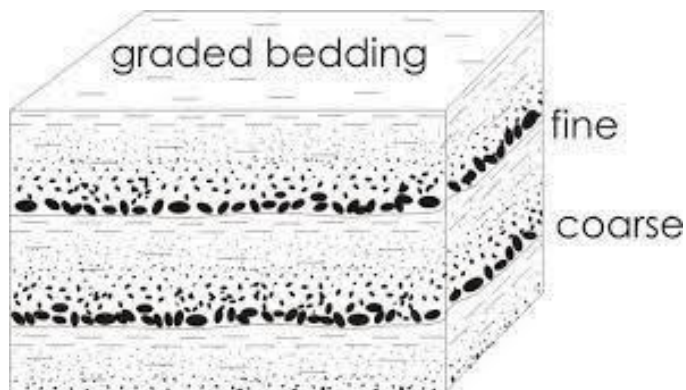
Outliers-Outcrops of younger beds completely surrounded by older rocks.

-Corresponding to hills separated by erosion from other outcrops of the same beds

Inliers-An area of older rocks surrounded by younger rocks.



4.1.3 Graded bedding and cross bedding. (2)



4.1.4 Strike of a plane and true dip of a plane

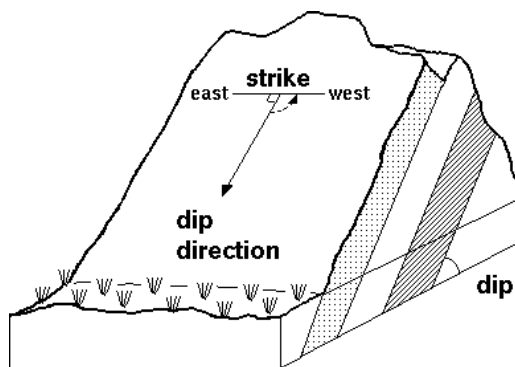
(3)

Strike of a plane

-The compass direction of the line of intersection between the inclined plane and a horizontal plane.

True dip of a plane

-Maximum angle of inclination made with reference to the horizontal on a plane measured perpendicular to the strike.



Total Marks: 45 Marks