

Democratic and Popular Republic of Algeria Ministry of Higher Education and Scientific Research
University of Oum El Bouaghi

Institute: Management of Urban Techniques

Module: Cartography . Date 11/05/2026 Duration: 1 Hour 30 Minutes

Level: First-Year Licence . Semester: 02.

Question 1 (6 Points)

a) Define cartography and explain its main objectives. (2 pts)

Cartography is the science, technology, and art of making maps. It is concerned with the representation and communication of spatial information about the Earth's surface.

Its main objectives are to transform complex geographic realities into visual representations that can be easily understood and interpreted. Maps help analyze spatial relationships, understand landscapes, and support the management of natural resources and decision-making.

b) Distinguish between natural cartography and human cartography, giving examples. (4 pts)

1 Natural cartography focuses on the representation of physical and environmental features of the Earth. It depicts natural landscapes accurately and scientifically.

Examples include:

- 0,5 • mountains, rivers, forests, oceans, climate patterns
- 0,5 • geological formations

1 Human cartography represents human activities and socio-economic phenomena. Examples include:

- 0,5 • cities, transportation networks, population distribution, economic activities, land-use patterns

Question 2 (4 Points)

a) Define latitude and longitude. (2 pts)

1 Latitude is the angular distance north or south of the Equator.

1 Longitude is the angular distance east or west of the Prime Meridian (Greenwich).

Together, latitude and longitude allow the precise localization of any point on Earth.

b) Explain the following Earth models (a diagram is recommended). (2 pts)

0,5 Sphere

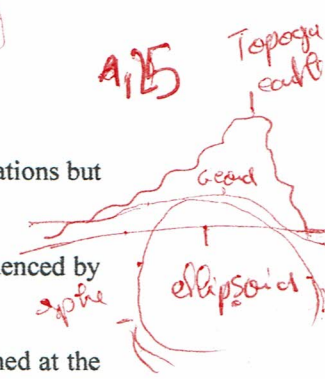
The Earth can be approximated as a sphere for small-scale maps. This model simplifies calculations but does not perfectly represent the real shape of the Earth.

0,5 Geoid

The geoid represents the Earth's real shape based on mean sea level. It is irregular and influenced by variations in gravitational forces.

0,5 Ellipsoid

The ellipsoid (or spheroid) is a more accurate representation of the Earth. It is slightly flattened at the poles and defined by a semi-major axis (a) and a semi-minor axis (b).



Question 3 (6 Points)

a) List the principal components of a map. (6 pts)

A complete map includes several essential elements:

- 1 • **Frame:** defines the boundaries of the map
- 1 • **Orientation:** usually represented by a north arrow
- 1 • **Grid:** network of lines used to locate positions and scale
- 1 • **Coordinates:** latitude and longitude or cartographic coordinates
- 1 • **Legend:** explains symbols and colors used on the map
- 1 • **Source and date:** indicate the origin and update time of the map

b) Differentiate between analytic and synthetic thematic with examples of each type. (4 pts)

1 A thematic map represents a specific theme such as population, climate, or economic activities.

Analytic maps represent a single variable. Examples:

- 1 • population density map, rainfall distribution map, temperature map

1 Synthetic maps combine multiple variables to show complex phenomena.

1 Examples: land-use planning map, environmental risk map, regional development map