

**ASSOCIATION OF CANADA LANDS SURVEYORS - BOARD OF EXAMINERS
WESTERN CANADIAN BOARD OF EXAMINERS FOR LAND SURVEYORS
ATLANTIC PROVINCES BOARD OF EXAMINERS FOR LAND SURVEYORS**

**SCHEDULE I / ITEM 6
CARTOGRAPHY and MAP PROJECTIONS**

February 2000
(1990 Regulations)
(Closed Book)

This examination consists of **11** questions on **2** pages

Time: 3 hours

Marks

1.	Define the following : a) loxodrome b) grid c) graticule d) astronomic azimuth e) conformality f) equivalence g) (T-t) correction h) line scale factor i) elevation scale factor j) developable surface	20
2.	Calculate the meridian convergence for a point with latitude $52^{\circ} 27' 32.53''$ N and longitude $107^{\circ} 28' 47''$ W on a UTM zone. Explain if this convergence would or would not change if there were a 3° Transverse Mercator zone in the area with the same central meridian as that used for the UTM?	5
3.	With regard to computer assisted cartography, define the following: a) digital terrain model b) drum scanner c) feature code d) node e) Thiessen polygon	10
4.	“For multi-colour work, the different printed colours have to have an angular separation, in order to avoid the moiré effect”. With the aid of diagrams, explain this statement	8

5.	Cartographic generalisation is an adjustment process in which we decide what will be shown on a map and also what will be excluded from the map. Discuss generalisation from the following points of view: a) selective omission b) displacement c) combination d) exaggeration e) simplification	10
6.	Discuss the advantages and disadvantages of traditional printing techniques with modern digital techniques. Pay particular attention to accuracy, ease and cost.	10
7.	Surveyors are usually more concerned with the use of conformal map projections than they are with equivalent or equal-area projections. Why is this? Federal mapping in Canada uses, for the most part, the map projections called Universal Transverse Mercator and Polar Stereographic. Are either of these projections conformal or equivalent, and if so, are there areas of these projections which may not have these characteristics?	4 3
8.	Discuss the suitability of an orthophoto base for a large scale cadastral mapping series	10
9.	Monmonier, in the required text "Computer assisted cartography - principles and prospects", states : " <i>Vector polygons lack the convenient topological referencing inherent to raster data</i> " Using this quotation as a basis for your answer, define vector, raster and topology, and explain the quotation.	10
10.	Cartographic generalisation is a process by which we decide what is shown on a map, and what is omitted. Show how the aspects of <i>selective omission</i> , <i>displacement</i> and <i>combination</i> are used in this process, and give examples of each for a) a 1/50000 map, and b) a provincial 1/2000 map showing property boundaries	6
11.	If a 3TM zone and a UTM zone have the same central meridian, and the coordinates have no false eastings and northings, what is the 3TM easting of a point with a UTM easting of 163216.00m?	4

Total Marks: 100