# BINDURA UNIVERSITY OF SCIENCE EDUCATION

## FACULTY OF SCIENCE ANG ENGINEERING

### GEOGRAPHY DEPARTMENT       ☰ ' MAR 2023

## BACHELOR OF SCIENCE HONOURS DEGREE IN DISASTER MANAGEMENT (HBScDG)

## DG 109: INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS

### EXAMINATION            TIME: 2¼ HOURS

**ANSWER THREE QUESTIONS. MARKS ALLOCATED FOR EACH QUESTION ARE INDICATED IN BRACKETS [ ].**
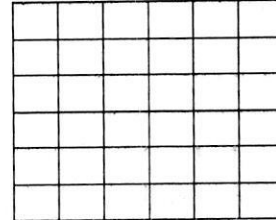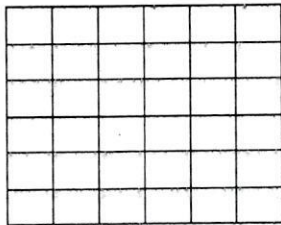
## SECTION A: COMPULSORY (*You can attach this page as part of your answer*)

1a) Define the following terms as used in Geographic information systems;
   i)      Scanning                                                    [2]
   ii)     Fieldwork                                                   [2]
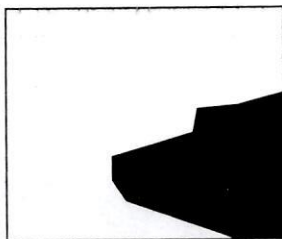   iii)    Overlay                                                     [2]

1b) Model the following development phenomena using raster data model;
   i)   Road network with two intersections  [3]        ii) Village with  four huts [4]
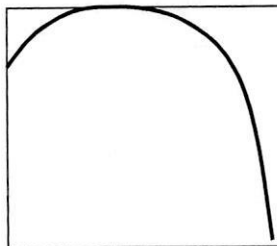


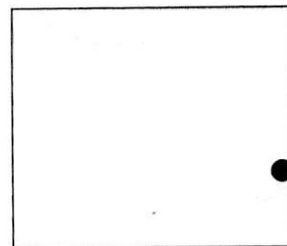1c) Illustrate the concept single buffer zone using the following vector models:
   i)      Water body    [2]                 ii)   Road  [2]                 iii) Borehole [2]
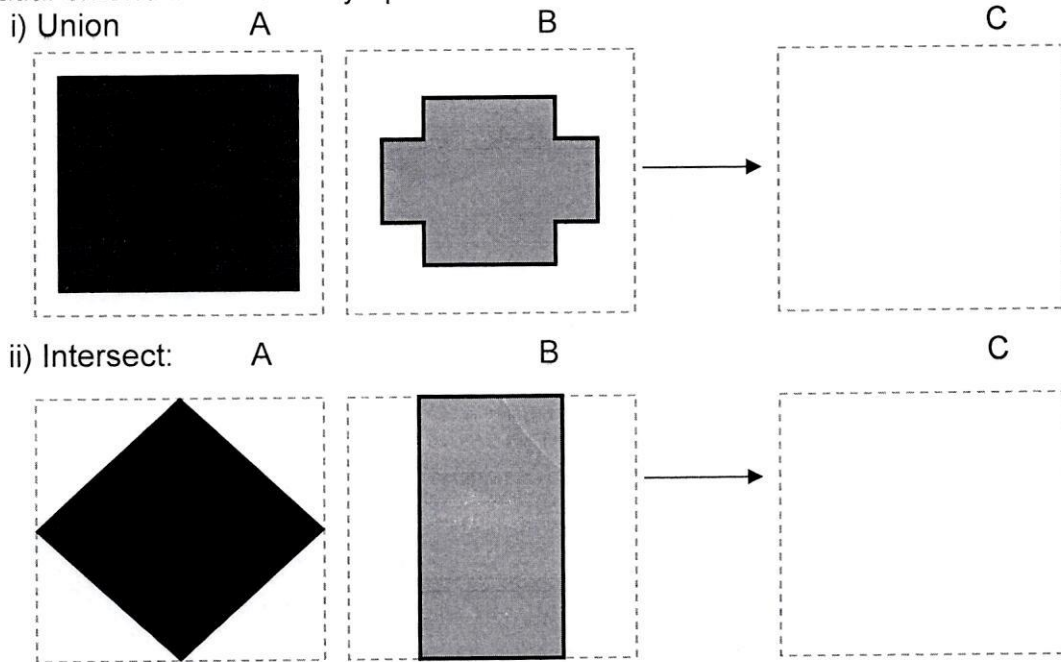


1d) Illustrate how the following overlay functions are completed in a GIS analysis exercise:
   i)   Union                                    [3]
   ii)  Intersect,                               [3]

The black feature is the data layer (A) and the gray layer (B) is the one used to perform the overlay defined and C is the output layer. The dotted line shows the spatial extend in the overlay operation.

i) Union      A           B           C

ii) Intersect:     A          B          C

## SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION

2     Describe the importance of internet as a data source for spatial analysis.

                                                                        [25]

3     With specific examples, describe the uses of a digital elevation model (DEM) in development planning.                       [25]

4     a) Explain the term spatial database                      [5]

       b) Highlight five benefits derived from application of spatial database in development initiative                               [10]

       c) Discuss the importance of your database for development of your choice

5     Examine the uses of a map as a development tool.             [25]

**END OF EXAMINATION**