ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Advanced Level

GEOGRAPHY 6037/3

PAPER 3 Practical Test

NOVEMBER 2022 SESSION 3 hours

2 × 1:50 000 survey maps are enclosed with this question paper, Insert I.

Additional materials:
Answer paper, Graph Paper,
Calculator, Mathematical Formulae Booklet.

TIME 3 hours

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces provided on the answer paper/answer booklet.

Answer **all** questions in Section A and **one** question in Section B and **one** question in Section C.

Write your answers on the separate answer paper provided.

If you use more than one sheet of paper, fasten the sheets together.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part question.

Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

This question paper consists of 8 printed pages.

SECTION A: STATISTICS

Answer **all** questions in this section.

1 **(a)** Distinguish between *ratio data* and *interval data*. [2]

(b) A random sample of pebbles was collected and measured. The raw data of pebbles in centimetres was recorded in **Table 1.2** below.

Table 1.2

12	5	10	10	10	5	5	1	12	6
8	10	6	12	12	6	2	7	7	3
8	8	2	5	7	7	14	5	3	3
9	8	5	7	2	7	5	5	10	6
7	9	7	9	12	6	11	4	6	14

(i) Using the formula $\sqrt{\text{Total values}}$ find the number of classes to group the data. [1]

(ii) Calculate the class width for the data. [1]

(iii) Using the data and classes formulate a frequency distribution table. [2]

(iv) Using your frequency table, calculate the mean of the grouped data and state the modal class. [4]

(v) Outline the advantages and disadvantages of mean as a measure of Central tendency. [4]

(c) The data below shows the minimum temperatures at ten weather stations in Zimbabwe on a winter day. The temperatures are:

5°C, 9°C, 3°C, 2°C, 7°C, 9°C, 8°C, 2°C, 2°C, 3°C.

Calculate the median and the interquartile range. [3]

(d) A trade union claims that the average hourly rate for domestic cleaners is \$2,85. A sample of 250 domestic cleaners has a sample mean salary of \$3,03.

Assuming that the population standard deviation of hourly rates paid to domestic cleaners is \$1, test the claim that domestic cleaners earn more than \$2,55 per hour at 5% level of significance. [8]

SECTION B: MAPPING

Answer **one** question in this section.

2 TOPOGRAPHICAL MAP

With reference to the map provided (1: 50 000, Birchenough Bridge),

(a) Draw two simplified sketch maps to show the landforms and drainage of the **two** areas as defined below.

Sketch map A	Vertical grid limit 433000 to 440000	Horizontal grid limit 7800000 to 7808000
Sketch map B	Vertical grid limit 440000 to 447000	Horizontal grid limit 7806000 to 7816000

[12]

(b) Suggest reasons for the differences in relief and drainage between the **two** areas in **(a)**. [9]

(c) Explain the characteristics of the Save river. [4]

3 GEOGRAPHICAL INFORMATION SYSTEM

(a) You are provided with a map of Mvuma, Zimbabwe. Scan and load into QGIS.

(i) Add any four ground control points.
Print screen and save as Mvuma, ground control points.
Georeference the map. [4]

(ii) Calculate area of the following:

- Savannah cultivation [2]

- Golf Course [2]

measure the length of the wide tarred road from grid point
2418007862000 to 2436007858000 [2]

measure the length of railway line from grid point
2395007862000 to 2422007858000 [2]

Write your answers on a separate answer sheet.

(iii) Digitise the following on the map.

- Savannah cultivation [2]
- The golf course [2]
- Aerodrome [2]
- Spot height .1367 in grid reference 2380007866000 [2]

Trigonometrical 1542/S (241000, 7865000) [1]

Print and Save – Print screen

Print all saved documents.
Printing time is outside examination time.

(b) Outline sources of digitising error. [4]

(a) (i) Distinguish the reflectance properties of vegetation from the properties of bare ground. [2]

(ii) Explain why water has higher reflectance properties than built surfaces. [2]

(b) **Table 4.1** below gives information about reflectance properties of different surfaces.

Table 4.1

Sand		Vegetation		Water	
Signature(mm)	Reflectance(%)	Signature(mm)	Reflectance(%)	Signature(mm)	Reflectance (%)
0.4	20	0.5	4	0.4	9
0.5	30	0.9	5	0.6	7
0.6	40	0.7	10	0.5	5
0.7	50	0.7	20	1	2
0.8	60	0.7	30	1.2	0
0.8	60	0.7	40	1.4	0
1	62	0.8	52		
1.2	62	1	48		
1.4	50	1.2	52		
1.6	60	1.4	15		
1.8	62	1.6	20		
2.0	40	1.7	18		
2.2	50	1.8	10		
2.4	40	2.2	10		
		2.2	14		
		2.4	10		

(i) Using information from **Table 4.1**, plot a line graph to represent the different reflectance properties of sand, vegetation and water. [12]

(ii) Identify the surface that has the highest reflectance. [1]

(iii) Explain why the surface identified in **(ii)** above has the highest reflectance. [2]

(c) (i) Define resampling as used in remote sensing. [1]

(ii) What are the advantages of resampling? [2]

(iii) State **one** disadvantage of resampling. [1]

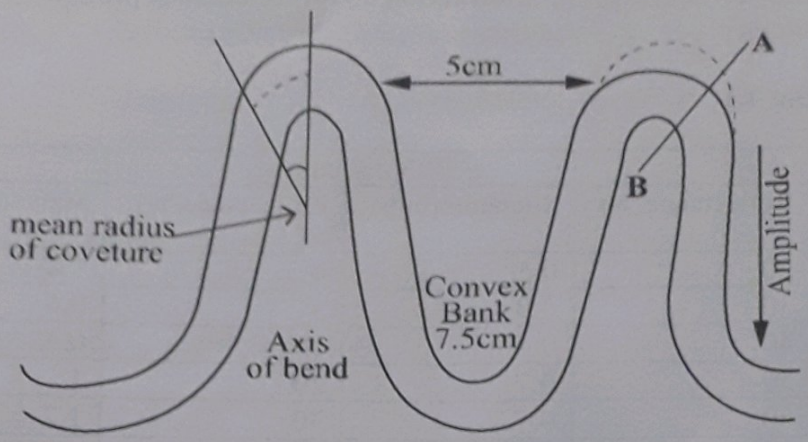
(iv) Name any **two** methods of resampling. [2]

SECTION C: RESEARCH TECHNIQUES

Answer **one** question from this section.

5 PHYSICAL COMPONENTS

Study the diagram below which shows features of a meander and answer the questions that follow.



(a) **(i)** Using sinuosity index calculate the sinuosity of the meander. [2]

(ii) Comment on the results. [1]

(iii) Draw a labelled cross section of the river along line A and B. [4]

(iv) Describe and explain the processes that take place along the channel at A and B. [4]

(b) Briefly describe how you would measure and record the following:

(i) suspended sediments of a river,

(ii) solution load of a river.

[8]

(c) Describe factors that can influence the type and amount of load carried by a river. [6]

6 HUMAN COMPONENTS

(a) You are required to carry out a survey to obtain information about the number of women and men employed in different sectors in city **Z**.

(i) Describe how you would select your sample. [4]

(ii) What are the steps you would follow to collect data? [3]

(iii) What are the advantages of the sampling method you would use over other methods? [4]

(b) Study **Table 6.1** which shows information obtained from research on employment in different cities in Country **Y**.

Table 6.1

City	Tertiary	Primary	Secondary
X	350 000	900 000	190 000
Y	490 000	794 000	140 000
W	600 000	464 000	800 000
M	890 000	250 000	90 000

(i) Draw proportional divided circles to present the information on employment in cities **X, Y, W** and **M**. [6]

(ii) Comment on the problems you encountered when drawing proportional divided circles. [3]

(c) Propose solutions to high rates of unemployment in Less Economically Developed Countries (LEDCs). [5]

7 MITIGATION AND ADAPTATION

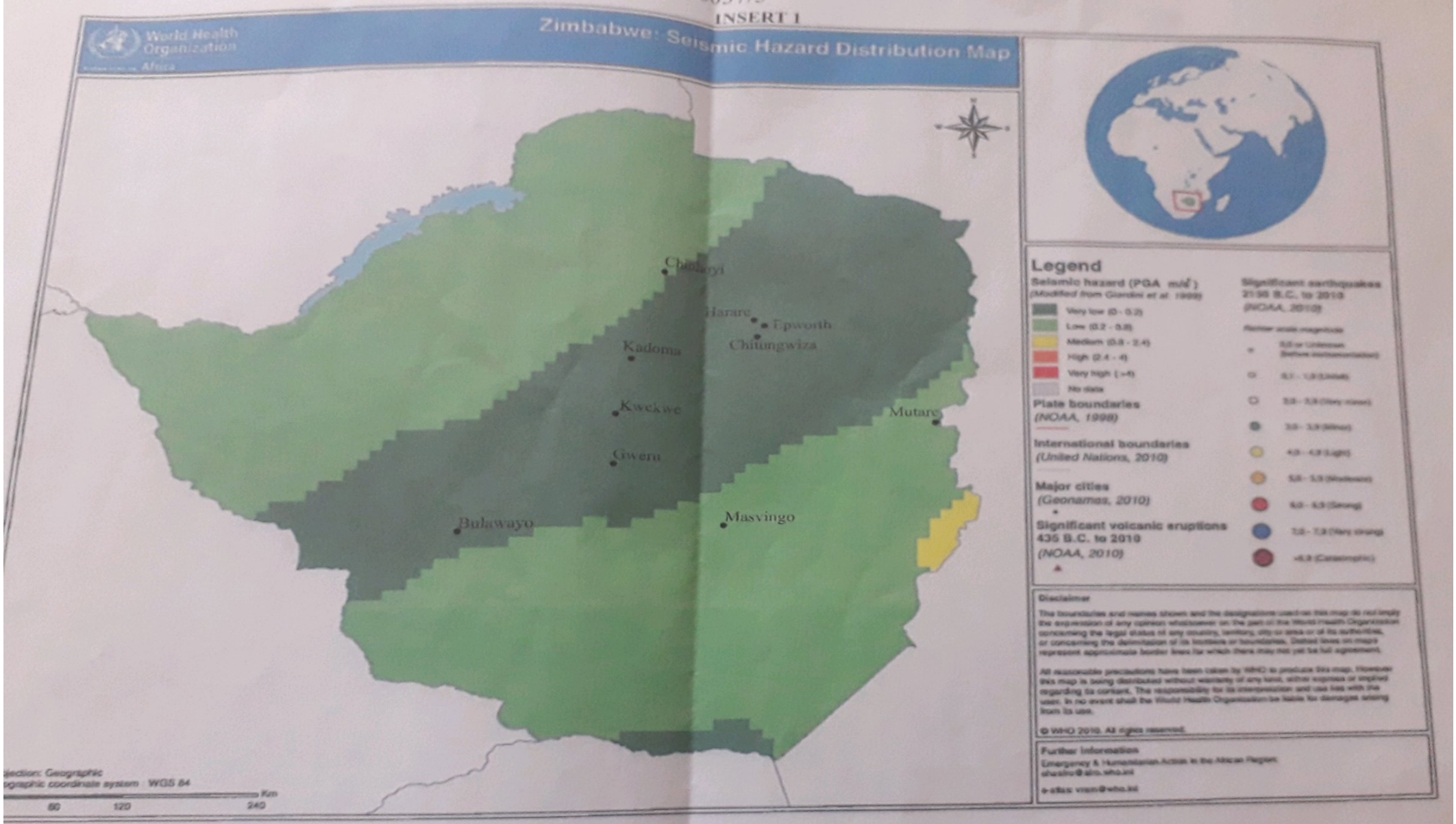
Study the diagram below which shows a model of an earthquake proof house.

(a) Describe and explain the techniques shown that can be used to make houses withstand earthquakes. [10]

(b) Evaluate other measures taken to reduce the effects of earthquakes in areas you have studied. [10]

(c) Study the map of Zimbabwe (Insert I) which shows distribution of earthquake prone areas.

Describe the distribution of earthquake prone areas shown. [5]



Zimbabwe`s earthquake prone areas

MVUMA
1930 B3
1:50 000 TOPOGRAPHIC SERIES

MVUMA
ZIMBABWE

MVUMA
1930 B3
SECOND EDITION

NUMBERED LINES INDICATE THE 1 000 METRE UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 36 MODIFIED CLARKE 1880 (S.A.) SPHEROID

Heights are in metres above Mean Sea Level

Scale 1: 50 000 or 2 cm represents 1 km

1000 Metres 0 1 2 Kilometres