EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

GEOGRAPHY **6890/02**

Paper 2 Geographical skills **October/November 2019**

2 hours

Confidential

MARK SCHEME

{6890/02}

MARKS: 90

This document consists of **19** printed pages

SECTION A

ANSWER **ALL** QUESTIONS IN THIS SECTION IN THE SPACES PROVIDED.

1. Study the map extract of Arouca, Trinidad, on the scale 1; 25 000. Fig.1 shows the position of some features in part of the map extract.

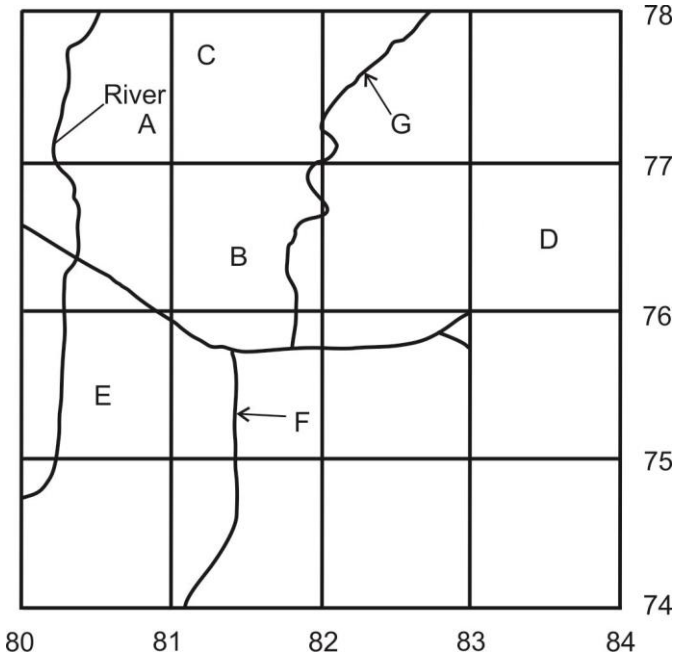


Fig. 1

(a) Using the map extract, identify the following shown on Fig.1:

(i) River A;

Miss Gutter river [1]

(ii) Drainage pattern at B;

Dendritic [1]

(iii) Type of vegetation at C;

Broken forest [1]

(iv) Crops grown at D and E;

D Other cultivation and plantation [1]

E Sugar cane [1]

(v) Types of roads F and G.

F first class road [1]

G Second class road [1]

(b) Name the type of building located at grid reference 834747.

Post office [1]

(c) Give the six figure grid reference of the school next to Kelly Village in the south west part of the map extract.

788709 [1]

(d) Measure the distance of the Golden Groove Road in metres from the road junction in Arouca (815757) to the junction with the Churchill Roosevelt Highway at (810738).

2200m [2100- 2300m] [1]

(e) State the grid bearing of the minor trigonometrical station at the junction of the Golden Groove Road, and the Churchill Roosevelt Highway(810738) from the main trigonometrical station at 786746.

107 [105-109] degrees [1]

(f) Using evidence from the map only, describe four advantages of the site of Piarco International airport in the southern part of the map.

- undulating / gentle slopes
- near the road/ first class road
- away from forest / plantations
- closer to main town of Arouca
- Availability of water supply [4]

(g) (i) Describe the street pattern of Arouca town.

Grid iron/ rectilinear/ intersect at right angles [1]

(ii) Give three reasons for the growth of Arouca town.

- Route focus
- undulating / gentle slopes
- development of commercial farms [3]

(h) Identify the crop that is mainly grown on the west of easting 80

- Sugar [1]

[Total: 20 marks]

2. Fig. 2 shows an instrument found in a weather station.

(a) (i) Name the instrument shown in Fig. 2.

Raingauge [1]

(ii) Name the element measured by the instrument in Fig. 2

Rainfall [1]

(ii) Label parts A and B shown in Fig 2.

A Jar

B Funnel

(b) The instrument shown in Fig.2 is situated on grass, 30 cm above the ground and dug into the ground. Explain why it is:

- **Situated on grass**:
  - to prevent splashing
- **Partly dug into the ground**
  - for stability
  - Avoid being knocked over
  - Minimise evaporation [3]

(c) Study Table 1 and calculate the total annual rainfall.

Table 1

	J	F	M	A	M	J	J	A	S	O	N	D
Temp Deg.cel	**23**	**24**	**26**	**28**	**29**	**28**	**26**	**26**	**26**	**27**	**26**	**25**
Rainfall (mm)	**25**	**0**	**25**	**0**	**20**	**300**	**350**	**200**	**150**	**30**	**10**	**0**

Add up all rainfall figures to 1110 mm (1 mark for correct total, 1mark for units) [2]

1

[Total: 8 marks]

3. (a) Study Fig. 3 which shows the monthly mean temperatures for a place in Southern Africa between January and December.

(i) State the lowest monthly mean temperature shown in Fig.3.

17^0 C

[1]

(ii) Using Fig. 3, describe the changes in average temperatures between January and December.

- January higher that 20°C and steadily decrease until July
- From July to December there is a steady increase to well above 20°C [2]

(b) Study Fig. 4, which shows changes in global average temperatures.

(i) Using Fig. 4 state the expected global average temperature in 2020.

14.4°C [1]

(ii) Describe the changes shown in the graph between 1950 and 2015.

- Fluctuating as it rises
- Gradual increase
- Lowest point is 1962
- 2015 is the highest average temperature.
- Low in 1953 [2]

(iii) Suggest the causes of the changes in global average temperatures shown in Fig. 4.

- Increase in carbon dioxide
- Deforestation
- Burning of fossil fuels [2]

[Total: 8 marks]

4. Study Fig. 5, which shows two types of farming systems; A and B; practiced in an LEDC.

(a) (i) Name the two types of arable farming systems shown in Fig.5.

A. commercial farming/ extensive/ intensive

B. subsistence farming [2]

(ii) Using Fig. 5 B, state one problem faced by farmers in this system of farming under the following headings;

- **Physical :** land is mountainous, river may flood, warm summers, cold winters, heavy rainfall during summer
- **Economic:** government encourages self- sufficiency, transport limited.
- **Human:** population density is high [3]

(iii) Using Fig 5 A, state any one negative impact of this system of farming to the environment

- Soil compaction
- Chemicals may kill other useful insects
- Destruction of vegetation
- Air pollution (from exhaust fumes)
- Water pollution from agro-chemicals

[2]

(b) Using Fig.5 A, describe two farming practices that may cause high output from this farm.

- machinery used, transport/ roads, store room, crops are sprayed against diseases
- availability of markets/ government guarantees prices of grain. [2]

[Total: 8 marks]

5. Study Fig. 6 which shows rural settlement patterns.

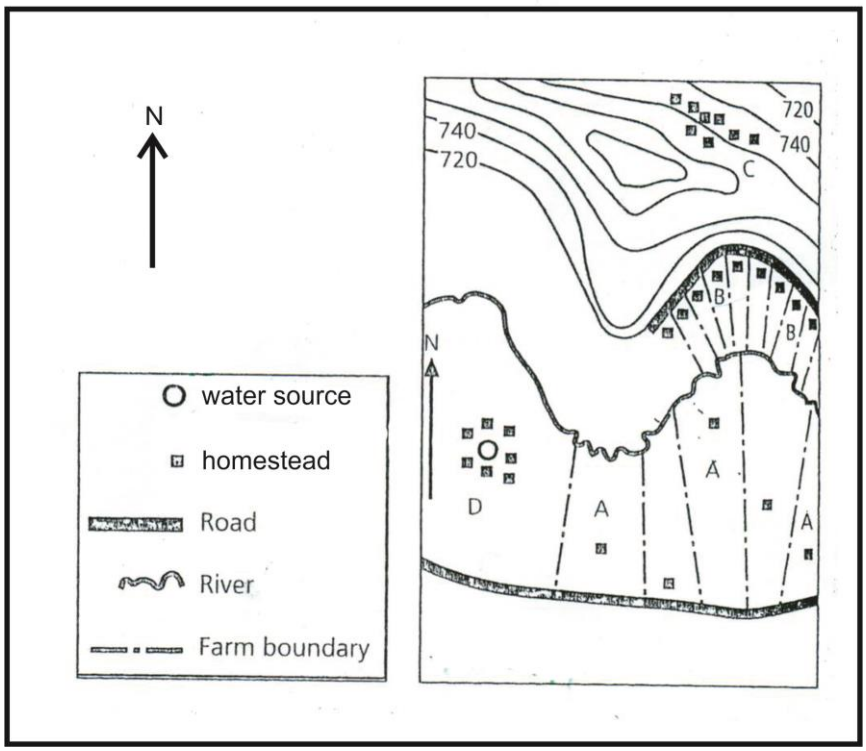


Fig.6

(a) (i) Name each of the settlement patterns A, B, and C shown in Fig. 6 A

A -Dispersed
B -Linear
C -Nucleated [3]

(ii) For each of the settlements, B and C, give one factor that may have influenced its pattern and shape.

B Near road
C Near water source [2]

(b) Study Photograph A which shows a zone found in towns. Describe the features of the landscape shown.

- Tall buildings
- Buildings of different heights
- Glass/ high surface area of [3]
- Flat tops

[Total: 8 marks]

6 (a) Study Fig. 7 which shows the population of four parts of the world in 2010 and projected 2060.

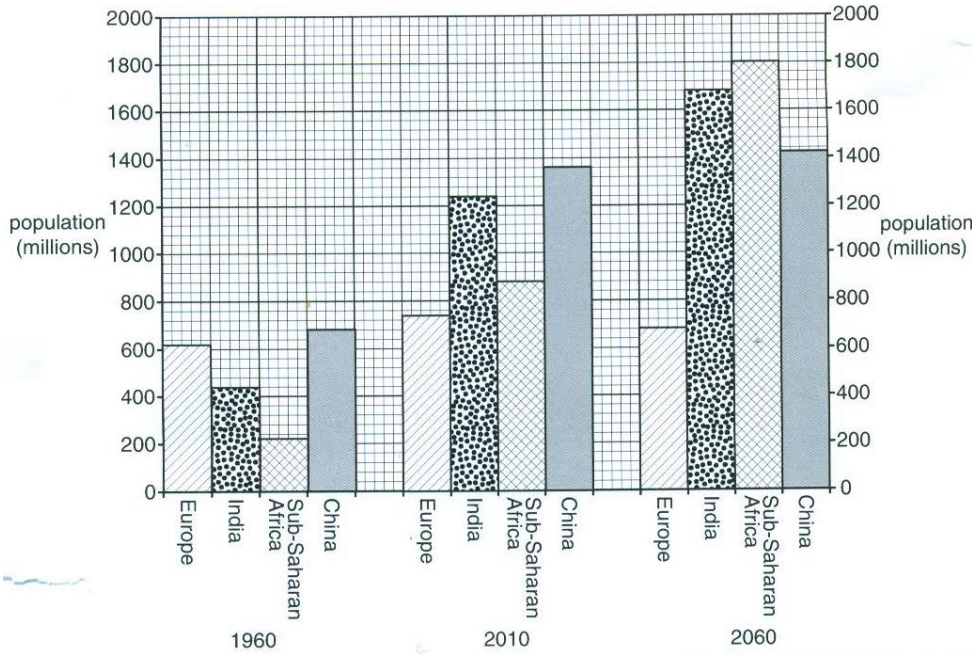


Fig.7

(i) What was the population of Sub - Saharan Africa in 2010?

840 millions [1]

(ii) Using Fig.7, identify the part of the world which is likely to:

- A **Have the highest increase in population in 2060-** Sub- Saharan Africa [1]
- **B Decrease its population in 2060 –** Europe [1]

(iv) Describe three problems cause by high population growth

- Rapid urbanisation
- High rate of unemployment
- Environmental degradation/ Pollution
- Shortage of resources(land, water)
- Shortage of food etc [3]

(b) Study Fig.8 which shows the birth and death rate of an LEDC between 1980 and 2010.

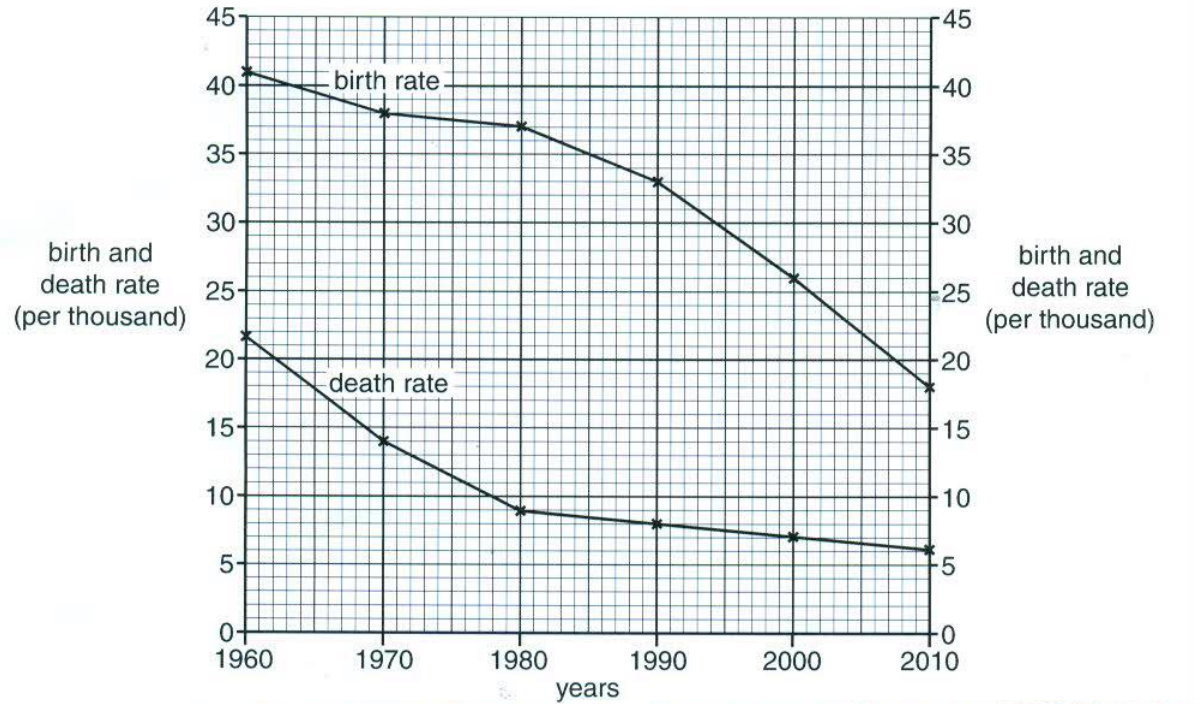


Fig.7

i) Calculate the natural population growth rate in this country in 1990. Show your calculations and answer in the box.

Natural growth rate = Birth rate- Death Rate

33- 08 = 25

Answer 25 .....

[2]

[Total: 8 marks]

SECTION B

Question 7

A group of students from a high school in the Shiselweni region carried out an investigation in two shopping complexes A and B. They agreed on two hypotheses:

Hypothesis 1: shopping complex A is busier and more convenient than shopping complex B

Hypothesis 2: shopping complex A has a larger sphere of influence than shopping complex B

(i) State the advantage of an out ofg town shopping complex

- Less tyraffic congestion
- Plenty of parking space [1]

(ii) The students decided to count every third person that comes to the shops. What type of sampling method did the students use?

- Systematic sampling [1]

(iii) List two advantages of the sampling method you have chosen in (a) ii) above.

- It is quicker /sometimes
- It is easier
- It eliminates human bias
- It ensures uniform coverage over the area of study
- It prevents clusters from being selected [2]

(iv) Before carrying out the investigation, they decided to do a preliminary visit. List three advantages of carrying out a preliminary visit.

- To ensure that the investigation will be successful / to familianse with the study area
- To minimize mistakes
- Check suitability of equipment to be used
- To check stability of equipment to be used. [3]

(b) The teacher decided to divide the students into two equal groups, each group to investigate a different shop. Table 2 shows the results from the two shopping complexes A and B. Table 3 shows the difference between high order and low order goods.

Table 2

Data Collected	Shopping complex A	Shopping complex B
Distance	**3 km from City Centre**	**10 km from City Centre**
Location	**Located at intersection of roads**	**Located on a busy road**
Staff employed	**200 employees**	**15 employees**
Type of goods sold	**Higher order & low order**	**Low order**
Measurements of the shops- area	**70 square meters**	**30 square meters**
Customer count between 1300 – 1400hrs	**200 people**	**70 people**

Table 3

	Low order	High order
Pricing	Cheap	Expensive, bought once in a while, rarely bought
Frequency of buying	Bought more often	**Bought once in a while**
Range travelled	**Less distance**	Long/more/faraway distant
Example	Salt, bread, milk, newspaper	**Furniture**

(i) Use the information from Table 2, and any other information you know to complete Table 3. [4]

Use the information from Table 2 to draw bar graphs on Fig. 9. to show the number of customers

Counted between 1300 – 1400 hrs for shop A and B.

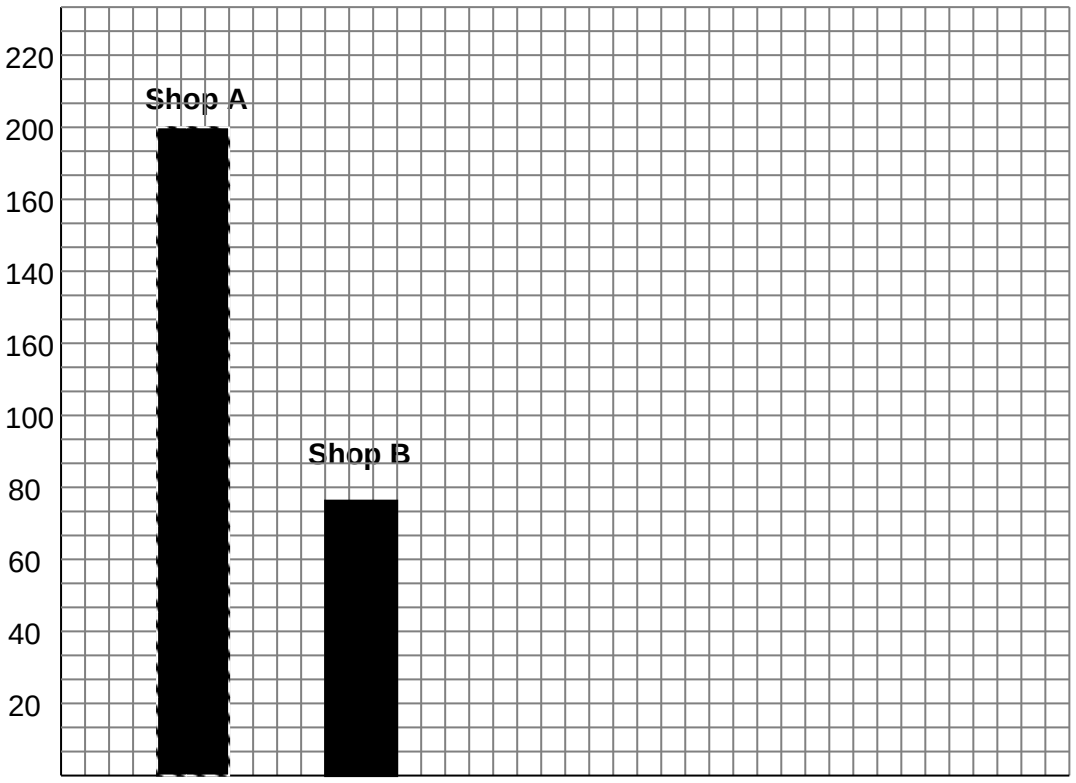


Fig. 9 [3]

(ii) Suggest one reason why the customer count was carried out between 1300-1400 hrs.

- This being the peak hour (lunch break) thus more customers

(c) (i) Write a conclusion to the investigation on Hypothesis 1: *Shopping complex A is busier and more convenient than shopping complex B*

Use data in Table 2 and Table 3 to support your conclusion.

- The hypothesis is correct / true /acceptable
- Staff employed to serve needs of customers 200 in A and 70 in B
- Shopping complex A is at an intersection
- Customer count between peak hour is 200 people in A and 70 people in B
- Shopping complex A at an intersection / more convenient than B. [3]

(ii) Suggest how the investigation could be improved.

- Investigation carried out in more / other shops
- Investigation can be carried out at different times of month / day

- Investigation can be carried out in other towns [2]

(d) The students further investigated Hypothesis 2: *Shopping complex A has a larger sphere of Influence than shopping complex B.*

(i) What is a sphere of influence?

- An area of interdependence between the shop and its surroundings [1]

Table 3 shows the results of the investigation on sphere of influence for shopping complex A and B for a variety of goods, their range and threshold population.

(ii) The students then represented the information in Table 3 in the form of an isoline map (insert) shows in Fig. 10(a) and Fig. 10(b)

Complete Fig. 10 (b) by drawing an isoline to show the sphere of influence for the jewellery shop. - - radius 2cm from shop A [1]

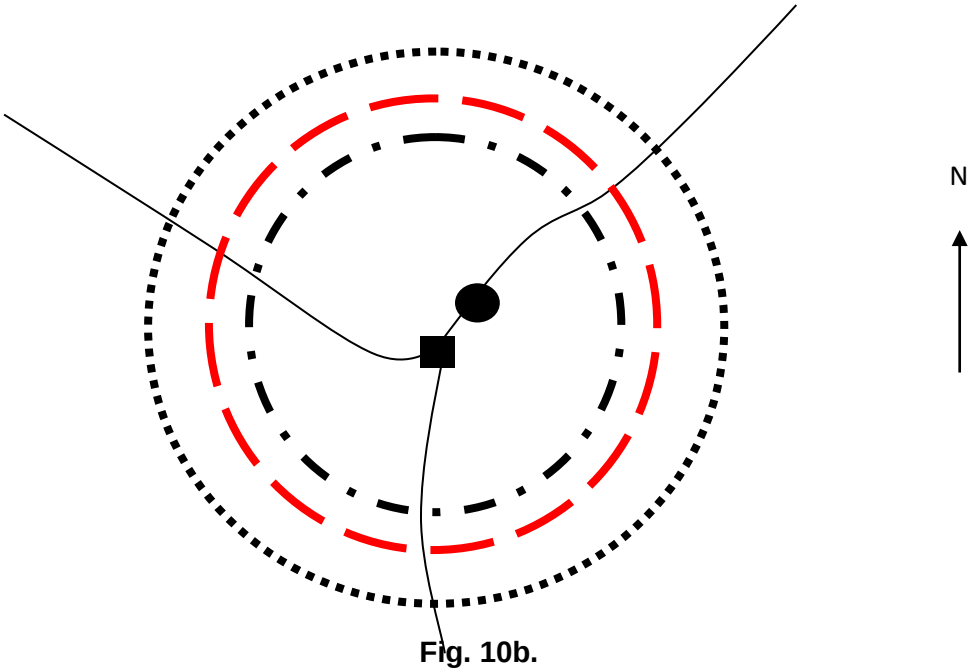


Fig. 10b.

Key

furniture

jewellery

chemist

City centre

Shopping complex A [3]

(iii) Using information from Table 1 and Table 2 compare the sphere of influence of shopping complex A and B for each of the services shown in both shops.

- Shopping complex **A** has a wider range than **B**
- Shopping complex **A** has a wider population than **B**
- Shopping complex **A** has comparison in addition to convenience shops than **B** [3]

(iv) With reference to Fig. 10 B (Insert) suggest how the location has affected the sphere of influence of shopping complex A.

- Closer to the city centre (accessible) [1]

(v) Write a conclusion to the investigation on Hypotheses 2, Shopping complex A has a larger sphere of influence than shopping complex B.

Use data form Table 3, Fig. 10(a) and Fig: 10(b)

- The hypothesis is correct
- Shopping complex **A** has a wider range 8 km than **B** 3 km
- Shopping complex **A** has a greater threshold population 12000 than **B** 3000 people
- Shopping complex **A** has comparison shops over and above convenience shops in **B** [3]

(vi) Suggest how this investigation could be improved for the results to be reliable.

- Investigation could be done on other shopping complexes close to the city centre and another further away.
- Investigation could be done on another city with the same pattern. [1]

[Total: 30 marks]

8 (a) A group of students investigated how the size and shape of pebbles / rocks change from upper course to the lower course of a river. They further investigated how the wetted perimeter changes from the upper course to the lower course of a river.

They agreed to test two hypotheses.

Hypotheses 1. *Rocks / pebbles are larger and angular in the upper course and become smaller and rounded in the lower course.*

Hypotheses 2. *The wetted perimeter decreases in width downstream.*

The students used a pebbleometer shown in Fig. 11

To measure the size of the pebbles / rocks; the students used a pebbleometer shown in Fig. 11. To measure the size of each pebble they used a scale of roundness shown in Fig. 12.

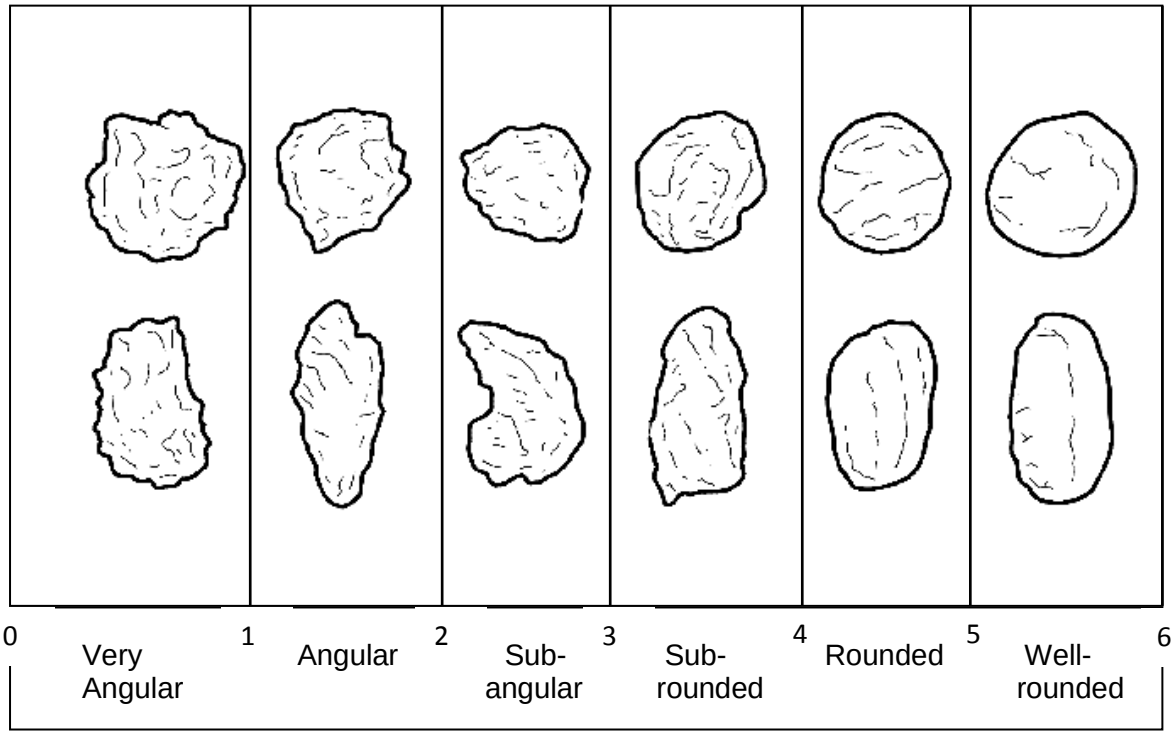


Fig. 12

(i) Define a pebble

- It is a small rounded rock in a river [1]

(ii) Suggest how the students used pebbleometer shown in Fig. 11

- Place ruler along the axis of the pebble
- Read of the units in mm or centimetres [3]

(b) The students identified 3 sites to be investigated U- upper course, M – Middle course and L – Lower course.

(i) Describe how the students selected their samples.

- Used random sampling
- Picking the pebbles randomly without any order followed on each site. [3]

The results of the investigation are shown in Table 4.

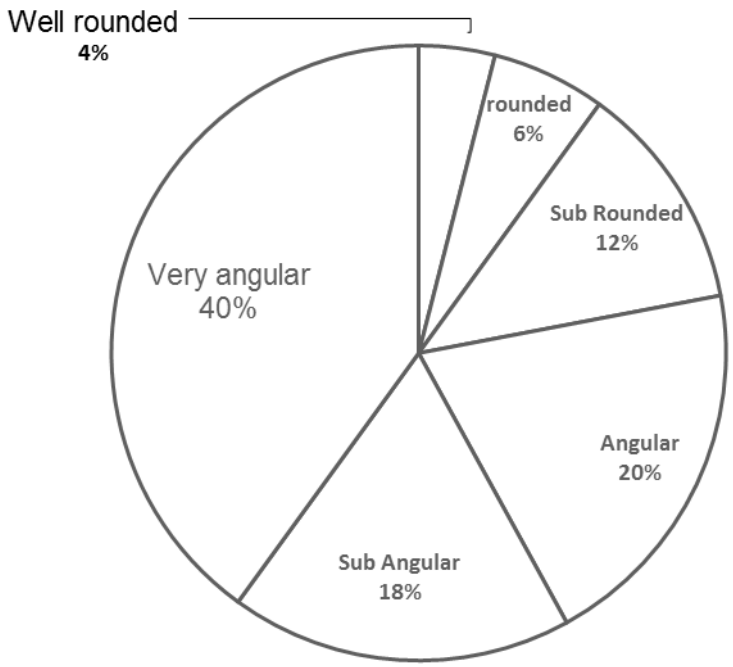
Table 4

SITE	Very Angular	Angular	Sub angular	Sub rounded	rounded	Well rounded
U	20	10	9	6	3	2
M	10	7	5	5	8	12
L	0	6	9	9	13	20

The results for site U and L were presented in a pie graph shown in Fig. 13

(ii) Use the information in Table 4 to complete the pie graph for site U in percentages.

SITE U



Calculations

Sub angular

9/50 * 100 = 18 %

and Angular

10/50*100 = 20%

The results for the size of pebbles / rocks are shown in Table 5. The students calculated the average length at each site.

Table 5

SITE	Average length /cm
U	50
M	28
L	3

(i) Using Figure 11, Table 4, and Table 5 write a conclusion to the investigation on Hypothesis 1 : *pebbles/rocks are larger and angular in the upper course and become smaller and rounded in the lower course.*

- Hypothesis is correct / true / accepted
- Larger and angular pebbles or rocks are more in site U (30) decrease in site M (17) least L(6)
- There are more smaller and rounded in site L than M and U
- Average length of pebbles decrease from site U(50) to L(03) [3]

(ii) Suggest how the investigation to the hypothesis can be improved.

- Increasing the number of sites / choosing more sites.
- Investigation may be carried out in different seasons
- Investigation performed on different rivers / streams
- Investigation carried out several times for reliability [1]

(c) The students further investigated

Hypothesis 2: *The wetted perimeter decreases downstream.*

(i) Define wetted perimeter.

- An area in a river channel that includes the bed and banks directly opposite constantly covered by water. [1]

(ii) Name any two pieces of equipment used to measure wetted perimeter of a stream.

- Chain
- Tape measure
- Meter ruler
- Ranging poles

(iii) Describe how the students measured the wetted perimeter.

- Place chain across river / sketch
- Let it lie on the river bed

- Mark bank to bank directly opposite by ranging pole
- Use tape measure to determine wet part of chain [3]

(d) Four sites were chosen to carry out the investigation S, T, U and V. The students also decided to measure the speed of flow of the river.

The results are shown in Table 6

Table 6

SITE	Distance from source /m	Wetted perimeter	speed m/s
S	200	5	60
T	400	10	40
U	600	20	23
V	800	30	15

The students represented their data from Table 6 in a graph. Fig. 13

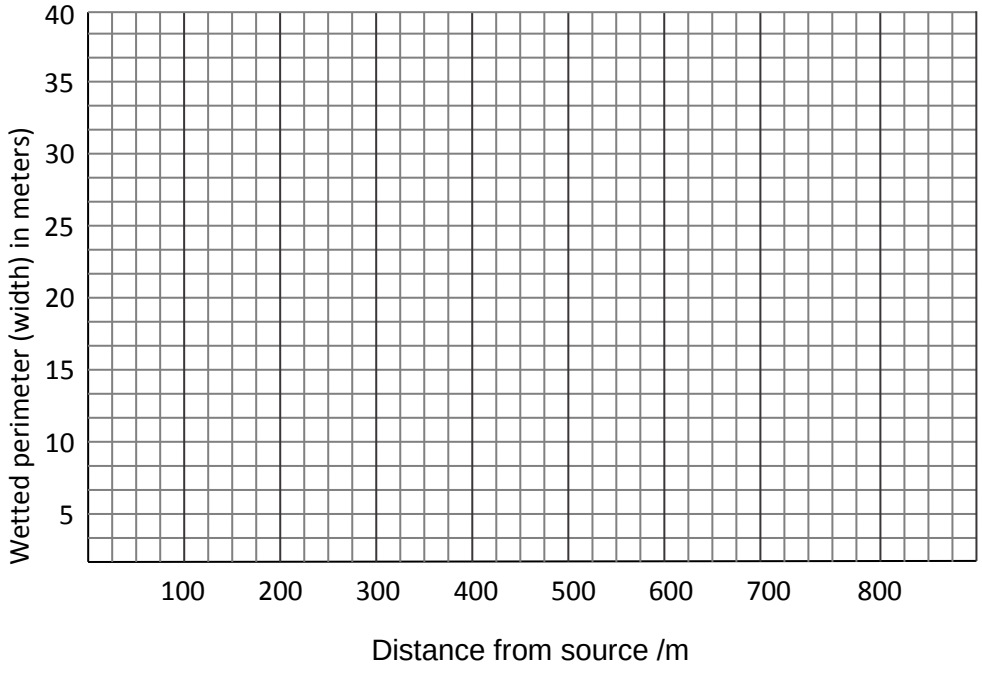


Fig. 13

[4]

(i) Plot the information for site S,T,U,V on the graph Fig. 13

(ii) Using information from Table 7 describe and explain how changes in the wetted perimeter affects the speed of flow of river.

- Generally, as wetted perimeter increase the speed of flow decreases
- Site S wetted perimeter of 5m with speed of 60 m/s
- Site T wetted perimeter of 10m with speed of 40 m/s
- Site U wetted perimeter of 20m with speed of 37 m / s
- Site V wetted perimeter of 30m across speed lasts 15/mls [3]

(iii) Write a conclusion to the investigation on the Hypothesis: *The wetted perimeter decreases downstream.*

- Hypothesis is untrue/false/incorrect
- Closer to the source wetted perimeter is narrow(5m)
- Medium point 400/600m wetted perimeter is 910 / 20 m)
- V. last site 800m from source wetted perimeter(30m) [3]

[Total: 30 Marks]