

24. (a) State **three** factors that contribute to increase in divorce in marriages. (3 marks)
- (b) State **two** factors that lead to increase in population. (2 marks)
- (c) State **two** effects of drought to a country. (2 marks)
- (d) State **two** ways in which Savings and Credit Co-operative Societies contribute to nation building. (2 marks)

PART II (20 marks)

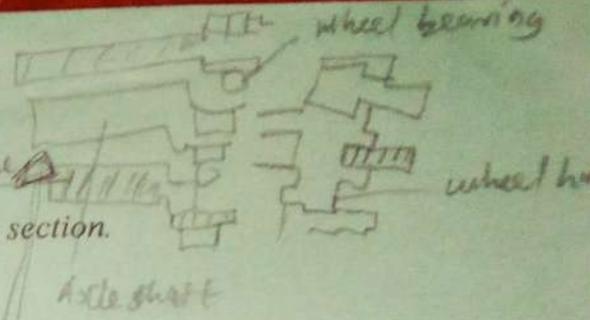
Answer any **FIVE** questions from this part.

25. (a) State **two** purposes of using official forms in offices. (2 marks)
- (b) List **two** functions of a public relations department in an organisation. (2 marks)
26. (a) State **two** types of markets to whom a business may sell its products. (2 marks)
- (b) List **two** reasons for signing contracts in a business. (2 marks)
27. (a) List **two** ways of raising business capital. (2 marks)
- (b) List **two** types of bank accounts that a business may operate. (2 marks)
28. (a) State **two** methods of buying a product. (2 marks)
*→ Barter method
 → Currency method
 → Electronic method*
- (b) List **two** methods of advertising a product. (2 marks)
29. (a) State **two** details that are contained in a cash book. (2 marks)
- (b) List **two** benefits of preparing a budget. (2 marks)
30. (a) State **two** reasons why innovation is important to a country. (2 marks)
- (b) State **two** reasons why Kenyans are being encouraged to use biogas. (2 marks)

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0103/215	0301/215	0401/215	
0105/215	0302/215	0402/215	
0106/215	0304/215	0404/215	
		0405/215	

SECTION B

Answer any **FOUR** questions from this section.



11. (a) State **two** functions of the suspension system. (2 marks)
- (b) Sketch a front double wish bone independent suspension and explain its advantages and operation. (13 marks)
12. (a) State the purpose of a final drive. (2 marks)
- (b) Using a diagram, explain the construction of a fully floating axle. (13 marks)
13. (a) Draw and label the main features of a piston. (5 marks)
- (b) Explain the operation of a four stroke C.I engine. (10 marks)
14. (a) Name **two** main functions of a coil ignition system. (2 marks)
- (b) With the aid of a sketch, explain the operations of a coil ignition system. (13 marks)
15. (a) State **one** function of a starter motor. (1 mark)
- (b) With the aid of a sketch, explain the operation of a starter motor. (14 marks)

Induction
 - Piston moves downward.
 - Inlet valve is open.

Compression
 - Inlet valve remains open.
 - No power is generated.
 - Air is compressed.
 - There is air compression.

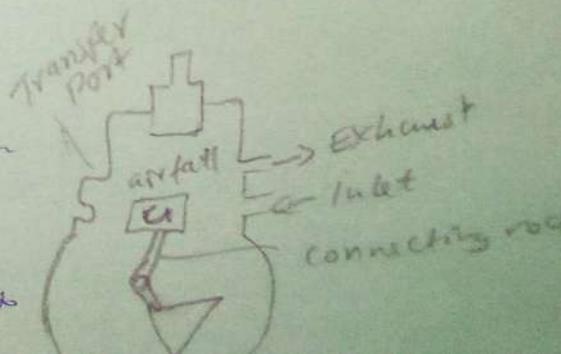
Power
 - Both inlet and exhaust valves are open.
 - High multiplication of air.
 - Power is generated.
 - Fuel is injected.
 - Just before B.P.C the fuel is injected.
 - Both inlet and exhaust valves are open.

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Exhaust

- Piston moves upward.
 - Exhaust valve is open.
 - The ~~inlet~~ port is opened.

The fresh air ~~enter~~ pushing the burnt gases to pass through the transfer port into the exhaust valve and emitted to the atmosphere.



When the drive starts the vehicle to motion runs from the starter to

SECTION A: MATHEMATICS

PART I (24 marks)

Answer ALL the questions in this part.

1. Solve the equation $\frac{3x}{5} - \frac{x}{2} = \frac{1}{2}$. (3 marks)
2. Figure 1 shows a quadrant of radius 14 cm. Determine the area of the shaded part. (3 marks)

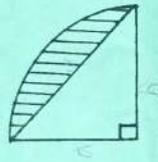


Fig. 1

3. 6 kg of tea of a certain grade is mixed with 3 kg of tea costing Sh. 27 more per kg. The value of the mixture is Sh. 100 per kg. Calculate the cost of the cheaper tea. (3 marks)
4. Solve the equation $b^2 - 3b - 4 = 0$. (3 marks)
5. A dress is sold at Sh. 1,800. The profit made is Sh. 300. Calculate the percentage profit. (3 marks)
6. A certain sum of money is sufficient to pay the wages of 18 people for 20 days. If each person is given the same daily wage, determine the number of days the same amount will be sufficient to pay 24 people. (3 marks)

7. Make U the subject of the formula

$$S = \frac{1}{2}(U + V)t$$

(3 marks)

8. Without using a calculator, evaluate $\frac{8(5^3 - 3^3)}{2^3 - 8 \div 2}$ (3 marks)

PODIMS

PART II (16 marks)

Answer any **TWO** questions from this part.

9. Companies A, B, and C invest Sh. 800,000, Sh. 400,000 and Sh. 200,000 respectively in a business. A and B receive 20% and 10% respectively of the annual profits as salaries and the remainder is shared among the three in proportions of the capitals they invested. If the annual profit is Sh. 320,000, determine the amount each receives at the end of the year. (8 marks)
10. A square carpet is laid in one corner of a room, leaving uncovered floor 2 m wide along one side and 1 m wide along the other side. If the area of the room is 56 m^2 , determine the dimensions of the carpet. (8 marks)
11. The heights in centimetres of 30 boys in a class were:

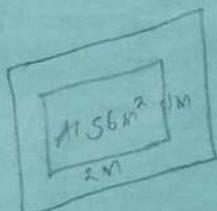
141	145	163	149	152	166	156	159	139	145
147	150	158	150	149	143	159	154	167	146
171	152	162	144	169	162	150	173	162	167

Starting with 135 cm and using class intervals of 11 cm:

- (a) use tally and hence make a frequency table;
- (b) calculate the average height of the boys from grouped data.

(8 marks)

$$\frac{12}{12} = 24$$



$$8 \times 8$$

SECTION B: SCIENCE

PART I (24 marks)

Answer ALL questions in this part.

12. List any **three** characteristics of images formed by plane mirrors. (3 marks)
13. Figure 2 shows the processes involved when substances change from one state of matter to another. Identify the processes named Q, R and S. (3 marks)

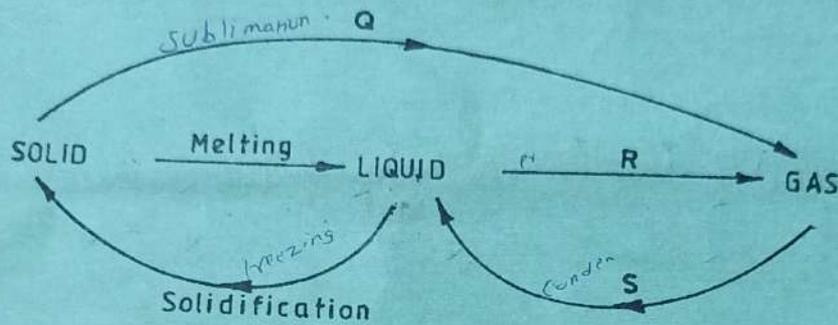


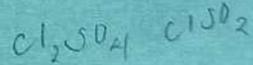
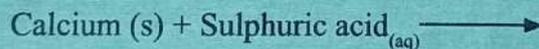
Fig. 2

14. (a) State the composition of the following alloys:

- (i) bronze;
- (ii) brass.

(2 marks)

- (b) Complete the reaction shown below:



(1 mark)

15. Figure 3 shows a pair of magnets placed close to each other. Re-draw the magnets and sketch the magnetic field pattern. (3 marks)

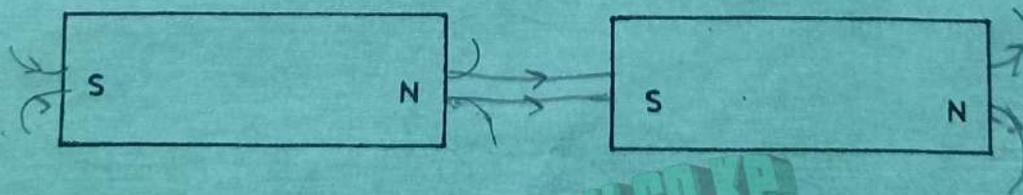


Fig. 3

0103/213
TRADE THEORY
June/July 2020
Time: 2 $\frac{1}{2}$ hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
ARTISAN CERTIFICATE IN MOTOR VEHICLE MECHANICS

TRADE THEORY

2 $\frac{1}{2}$ hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Drawing instruments.

This paper consists of TWO sections; A and B.

Answer ALL questions in section A and any FOUR questions from section B.

Maximum marks for each part of a question are indicated.

Candidates should answer the questions in English.

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This paper consists of 3 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.