1.

3.

SECTION I (50 MARKS) Attempt ALL the questions in this section

Without using tables or calculators estimate the value of 5.96×10^3

apers and Answers

 $\frac{5.96 \times 10^3}{2.02 \times 10^2}$ correct to three significant figures. 3 mks * Tso *

In a cross-country, three competitors Oji long, Emai and Emodo take 8 minutes, 10 minutes and 15 minutes to complete one lap round the circuit. If the three once passed a check point together at 9.10am when will they next pass the same point together. 3mks*Tso*Without using tables or calculators find

$$\frac{12^{3/2} \times 16^{1/8}}{27^{1/6} \times 18^{\frac{3}{2}}}$$
3mks**Tso**

4. Find the shortest distance from P(9,1) to the line 2y - x - 8 = 0 4mks**Tso**
5. A Kenyan tourist arrived in London with Ksh. 720,000 He exchanged them into Euros. During his stay he spends 3450 Euros before he proceeds to Germany. As he leaves he exchanges the remaining money into Germany DM. Given the exchange rates at the time.

	Exchange Rates in Euros				
Foreign currency	Buying	Selling			
1 ksh	0.0083	0.008333			
1 German DM	2.5	2.55			
\mathbf{m} is a here \mathbf{m} as \mathbf{h} (and \mathbf{n}) \mathbf{D} (b) as \mathbf{h} (are an array \mathbf{h})					

determine how much Germany DM he got (give answer to 2d.p) 3mks**Tso**
During a sales promotion Mama Watoto supermarket gave out discount vouchers which lowered the total shopping bill to customers. All vouchers were of the same amount. If six tins of Nescafe with four vouchers cost sh.828.20 while three tins of Nescafe with one voucher cost sh.429.20 what was the value of one voucher. 3mks**Tso**

7. Write down the integral values of x if $2x - 3 \le 5x + 2 < -5x$

3mks*Tso*

- 8. Two similar cylinders have total surface areas of 45cm^2 and 20cm^2 . If the larger has a mass of 81g find the mass of the smaller one. 3 mks*Tso*
- 9. A trader increased the price of a shirt by 20% at the beginning of the month and then reduced it by 30% at the end of the month. Express the new price as a ratio of the original price giving answer in its simplest form. 3mks**Tso**
- 10. A cyclist passes a point at 1.00p.m at a speed of 15km/h. One hour later a motorist passes the same point traveling in the same direction at 60km/hr. Assuming both continue along the same road at what time does the motorist overtake the cyclist. 3mks**Tso**
- 11. In an experiment award scheme, a candidate gets two marks for each correct answer, losses one mark for each wrong answer and no mark if a question is unattempted. In a test with 20 questions a candidate scores 24 marks after leaving two questions unattempted. Find the number of correct answers. 3mks**Tso**
- 12. In the figure below angle ABC = angle $BCD = 90^{\circ}$

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(the units are in metres)

a) Taking AC as the base line and assuming that the survey is from A to C enter the measurements of the farm in a surveyor's book.
b) Find the area of the farm
2mks**Tso**
2mks**Tso**

SECTION II (50 MARKS)

(Attempt any five questions in this section)

17. An open rectangular tank has an internal square base x metres long and a volume of 7m³.
a) Show that the internal surface area of the tank is

$$+ \frac{28}{x}$$

3mks*Tso*

b) Complete the table below for $y = x^2 + 28$

 \mathbf{x}^2

	X							
	Х	1	2	3	4	5	6	7
	у	29		18.3		30.6		
1							2	2mks <i>*Tso*</i>

c) Using a scale of 2cm to one unit on the x-axis and 2cm to five units on the y-axis draw the graph of $y = x^2 + \frac{28}{x}$ for $1 \le x \le 7$. 3mks**Tso**

- d) Using your graph, find the values of x when
- (i) The internal surface area is $25m^2$
- (ii) The tank has the least internal surface area.

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1mk*Tso*

1mk*Tso*

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The diagram below shows built on a horizontal road AB before a children's crossing 18. line its cross-section is in the shape of a segment of a circle radius 42cm; with O (hidden in underground) as the centre angle. Angle $AOB = 120^{\circ}$



50

4CSE Revisi Calculate

19.

- a) The length over the bump from A and B.
- b) The area of the cross-section of the bump.
- c) The volume of the material used to construct the bump if the road is 10m wide. (Take π as $^{22}/_{7}$)
- The table shows the masses of some 200 people

Mass in kg	20-29	30-39	40-49	50-59	60-69	70-79	80-89
No. of people	11	23	60	50	32	16	8
a) Using $A = 54.5$ find							

- (i) The actual mean
- (ii) The standard deviation
- b) Determine the median
- Water is pumped into 2 equal cylindrical tanks of height 2.1 metres each at the rate of 90.6
- 20. litres per minute by a petrol pump. The pump started pumping water into he tank at 7.30am and both tanks were full by 12.30pm.
 - a) Calculate the radius of the tank.

6mks*Tso*

4mks*Tso*

3mks*Tso*

b) Petrol costs sh. 69.99 per litre and the pump consumes fuel at the rate of 2 litres per hour. A school uses all the water in these tanks in 5 days. Calculate the amount of money the school spent on water pumping during the month of June. 4mks*Tso*

- A pilot intends to fly from A to D through B and C B is 750 km from A and on a bearing of 21. 050° . C is on a bearing of 320° from B and their distance apart is 600km. D is 265° from C and at a distance of 1050 km.
 - a) Using the scale 1cm for 100km show the flight route. 5mks*Tso*
 - b) If the pilot now flies directly from D to A in what direction does he fly. 1mk*Tso*
 - c) The plane flies at 500km/h. if it leaves D at 8.00am at what time did it arrive at A.
 - 4mks*Tso*
- 22. The figure below shows two intersecting circles centre C₁ and C₂ with radii 5cm and 10cm respectively. Their common chord AB is 15cm.



a) Calculate the area of the shaded region.

b) Calculate the length C_1C_2

6mks*Tso* 4mks*Tso*

The diagram below shows the shape of a 2.4 litres thermos flask. It comprises a hemispherical 23. bottom of radius 5.6cm, a cylindrical middle of length 15cm and a frustrum of a cone at the

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3mks*Tso* 4mks*Tso*





In the figure below PQR is a tangent to the circle at Q.



Given that $< PQV = 42^{\circ} < TQS = 27^{\circ} < QVS = 49^{\circ}$. Find the following angles giving reasons. a) SVT 2mks*Tso* b) SQR 2mks*Tso* c) VUT 3mks*Tso* d) QRS 3mks *Tso*

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