

INSTRUCTIONS TO CANDIDATES

- 1. Write your name, index number, class and school in the spaces provided above.
- 2. This paper consists of TWO sections I & II
- 3. Answer ALL the questions in section I and only FIVE questions from section II
- 4. All answers and working must be written on the question paper in the spaces provided below each question.
- 5. Show all the steps in your calculations giving your answers at each stage in the spaces below each question.
- 6. Marks may be given for correct working even if the answer is wrong.
- 7. Non-programmable silent electronic calculators and KNEC mathematical tables may be used except where stated otherwise.

FOR EXAMINERS USE ONLY

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOTAL
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17	18	19	20	21	22	23	24	TOTAL	GRAND TOTAL	
						-				



5. The sum of interior angles of two regular polygons of sides; n and n + 2 are in the ratio 3:4. Calculate the sum of the interior angles of the polygon with n sides. (4 marks)

6. A group of 10 soldiers set off with enough food to last 7 days. After 4 soldiers deserted. How many more days will the food last for the remaining soldiers? (3 marks)



Find (a) The length of any side of the pentagon

(2 marks)

(b) The area of the shaded region

(2 marks)

A line whose gradient is positive is drawn on the Cartesian plane and its equation is 8. x - y = -3. Calculate the angle formed between the lien and x-axis. (3 marks) Find all the integral values of a which satisfy the inequality

(3 marks)



An arc subtends an angle of 0.9 radians at the centre of a circle whose radius is 13cm. (2 marks)

11. The scale of a map is given as 1:50,000. Find the actual area in hectares of a region represented by a triangle of sides 6cm by 7cm (Give your answer to the nearest whole number). (3 marks)

12. Two passenger trains A and B, 240m apart are travelling at 164kmh and 88km/h respectively towards each other on a straight railway line. Train A is 150 metres long, while B is 100 metres long. Determine the time in seconds that elapses before the two trains completely pass each other. (4 marks)

the (4 marks) (4 marks) 13. Given that $\cos A = 5/13$ and angle A is acute, find the value of (3 marks) $2 \tan A + 3 \sin A$.

14. Given that $4x^2 - 32x - 20 + k$ is a perfect square, find k. (3 marks)

A watch which looses a half-minute every hour was set to read the correct time at 0545h 15. on Monday. Determine the time, in the 12 hour system, the watch will show on the eor more pree kcst papers visit work . following Friday at 1945. (3 marks)

16. Use t	he exchange ra	ates below to	answer this	question.
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	Buying	Selling
1 US dollar	63.00	63.20
1 UK £	125.30	125.95

A tourist arriving in Kenya from Britain had 9600 UK Sterling pounds (£). He converted the pounds to Kenya shillings at a commission of 5%. While in Kenya, he spent ³/₄ of this money. He changed the balance to US dollars after his stay. If he was not charged any commission for this last transaction, calculate to the nearest US dollars, the amount he received. (3 marks)

SECTION II (50 MARKS)

FOR NOTE Free KCSB Past pager

akcsepastpapers.com Answer only Five questions from this Section

PQCB shows a frustum of a cone. The radius of the top and bottom circular parts of the 17. frustum are 7.5cm and 12.5cm respectively, centres M and O are 10cm part.



- a) Calculate the slant length QB of the frustum correct to d.p. (1 mark)
- b) Calculate the volume of frustum

(5 marks)

- c) If the frustum is of solid metal and is melted down and recast into a solid cylinder having a radius of 10.5cm, calculate.
 - The height of cylinder correct to 3 d.p. (3 marks) (i)

(ii) The surface area of the cylinder

18. a)	Complete the table	below giving you	r values correct to	2 decimal places.	(2 marks)
				-	

	etpapets.com												
18. a) Comple	18. a) Complete the table below giving your values correct to 2 decimal places. (2 marks)												
\mathbf{x}^{0}	-90°	-75 ⁰	5.7 60 0	-45°	-30°	-15^{0}	0^0	15 ⁰	30^{0}	45^{0}	60^{0}	75 ⁰	90 ⁰
$3\cos 2x^0$ -3 -2.60x^1 0 1.50 3 2.60 0 -1.50 -3													
$\sin(2x+30^{0})$	-0.5	, p	-1	-0.87		0	0.5		1	0.87		0	-0.5

On the grid provided draw, on the same axes the graph of $y = 3 \cos 2x0$ and $y = \sin (2x + 30^{\circ})$ for interval -90° x 90° . Take the scale: 1cm represent 15° on x-axis and 2cm to represent 1 unit on the y-axis. (4 marks) b)



(c) Use the graph in (b) above to solve the equation.

(i)	$3\cos 2x = \sin \left(2x + 30\right)$	(2 marks)

(ii) $6\cos 2x + 5 = 0$

19.



a) Given that OP = p and OP = q, Express the following vectors in terms of p and q

	i)	PQ	(1 mark)
	ii)	ON	(2 marks)
	iii)	РТ	(2 marks)
	iv)	PM	(1 mark)
b)	(i) Sho	w that point P, T and M are collinear	(3 marks)

(ii) Determine the ratio MT: TP (1	mark	5)
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(ii) Its displacement by the time it comes to rest momentarily (2 marks)

(d) Calculate the maximum speed attained

- 21. Three ports A, B and C are situated in such a way that port A is 140km on a compass bearing of N65⁰E from port B. Port Cos 200km on a compass bearing of S32⁰E from A. A ship S is docked in the sea, 86km on a bearing of 190° from port B.
- .m to .m to www. Papers Visit with Reserve Papers Visit with Reserve Papers Visit With the Papers Visit With t (a) Using a scale of 1cm to represent 20km, draw a diagram to show the position of ports A, B, (4 marks)

(h) Heir	ισ νομ	r diaoram	find
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(i) The distance between the ship and the port A

(ii) The bearing of the ship from port C

- (iii) The distance from B to C
- (iv) Find how far C is south of A

(v) Compass bearing of S from A

(1 mark)

(1 mark)

(1 mark)

(1 mark)



a) <tou< th=""><th>(2 marks)</th></tou<>	(2 marks)
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b) <XUP

c) <STR

(2 marks)

(2 marks)

d) Reflex <SXU

e) <RPU

(2 marks)

23. At an agricultural Research Centre, the length of a sample of 50 maize cobs were measured and recorded as shown in the frequency distribution table below.

Length	10-11	12-13	14-15	16-19	20-26
No. of Labs	6	8	11	18	7

- si <u>i</u> <u>lo-</u> <u>i</u> <u>labs</u> <u>6</u> <u>viet</u> a) Calculate the mean <u>paper</u> <u>paper</u> <u>paper</u> <u>paper</u> <u>paper</u> <u>paper</u> <u>paper</u> <u>paper</u> <u>paper</u> (3 marks) b) Draw a histogram to represent the above information (5 marks) c) (i) State the class in which the median length lies (1 mark)
 - (ii) Draw a vertical line, in the histogram, showing where the median length lies

(1 mark)

- 24. A youth group decided to raise Ksh.480,000 to buy a piece of land costing Kshs.80,000 per hectare. Before the actual payment was made, four of the members pulled out and each of those remaining had to pay an additional Kshs.20,000.
 - a) If the original number of the group members was x, write down;
 - (i) An expression of how much each was to contribute originally. (1 mark)
 - An expression of how the remaining members were to contribute after the four pulled out. (1 mark)
- FOT NOTE Free KCSE b) Determine the numbers who actually contributed towards the purchase of the land. (5 marks)

- c) Calculate the ration of the supposed original contribution to the new contribution. (1 mark)
- d) If the land was sub-divided equally, find the size of land each member got.