AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X

General Mathematics Paper II

Time: 2 hours 15 minutes Marks: 45

AKU-EB
Model Paper 2022
Teaching & Learning only

INSTRUCTIONS

Please read the following instructions carefully.

1. Check your name and school information. Sign if it is accurate.

I agree that this is my name and school. **Candidate's Signature**

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2. There are NINE questions. Answer ALL the Questions. Choices are specified inside the paper.

3. When answering the questions:

   Read each question carefully.
   Use a black pointer to write your answers. DO NOT write your answers in pencil.
   Use a black pencil for diagrams. DO NOT use coloured pencils.
   DO NOT use staples, paper clips, glue or correcting fluid.
   Complete your answer in the allocated space only. DO NOT write outside the answer box.

4. The marks for the questions are shown in brackets ( ).

5. You may use a simple calculator if you wish.

(ATTEMPT EITHER PART a OR PART b OF Q.1.)

Q.1. (Total 5 Marks)

a. A person's salary is Rs 60, 000 per month. Before deduction of income tax the following monthly deductions are made from his salary.

- Provident fund Rs. 6,000
- Professional fee Rs. 2,000
- EOBI charges Rs. 100
- Miscellaneous charges Rs. 900

Find his annual taxable income and his annual payable tax if the rate of tax is 9% per annum. Also find his annual income after deduction of tax. (5 Marks)

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(ATTEMPT EITHER PART a OR PART b OF Q.1.)

b. Rubab, Zahra and Naeem work for a software development company.

Rubab works on contract according to which she is required to complete 23 hour working week for which she is paid at an hourly rate of Rs 2,000.

Zahra works on contract according to which she is required to complete 38 hour working week for which she is paid at an hourly rate of Rs 1,100.

Naeem's annual salary is Rs 1,060,000.

Assuming that there are exactly 4 weeks in a month, find the monthly income of each person and state which person has the highest monthly income? (5 Marks)

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Q.2. (Total 5 Marks)

a. A small office has a staff of 20 employees. The distance (in km) of the office from their homes is shown in the given table. Complete the table and find arithmetic mean for this data. (4 Marks)

Distance (km)	**Number of Employees**		
1 – 4	2		
5 – 8	1		
9 – 12	6		
13 – 16	10		
17 – 20	1		
Total	$\sum f = 20$	–	

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b. On a certain day, 9 friends spend the following amount (in Rs) on a shopping trip. Find the median amount that was spent. (1 Mark)

1200, 1500, 1500, 1700, 2000, 2500, 3200, 3500, 3800

(ATTEMPT EITHER PART a OR PART b OF Q.3.)

Q.3. (Total 5 Marks)

a. Simplify the given expression to its lowest terms.

$$\left(1-\frac{(x^2-1)}{(x+1)^2}\right)\div\frac{2}{(x+1)^2}$$

b. Find the highest common factor (H.C.F) of $8a^3-1$, $4a^2-1$ and $(2a-1)^3$.

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Q.4. (Total 5 Marks)

i. Find the solution set of the linear equation $x-\frac{2}{3}=\frac{2x}{3}+\frac{7}{3}$. (3 Marks)

ii. Find the solution set of $12>3x$, where $x \in N$. (2 Marks)

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Q.5. (Total 5 Marks)

Find the solution set of the quadratic equation $2x^2 + 8x + 3 = 0$ by completing square method.

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Q.6. (Total 5 Marks)

A lecture hall has 15 seats in the first row, 18 seats in the second row, 21 seats in the third row, 24 seats in the fourth row and so on. The lecture hall has total 10 rows of seats.

i. Find the number of seats in the tenth row of the lecture hall. (3 Marks)

ii. Find how many more seats are in the tenth row than in the first row of the lecture hall. (1 Mark)

iii. Find the total number of seats in the ninth and the tenth rows. (1 Mark)

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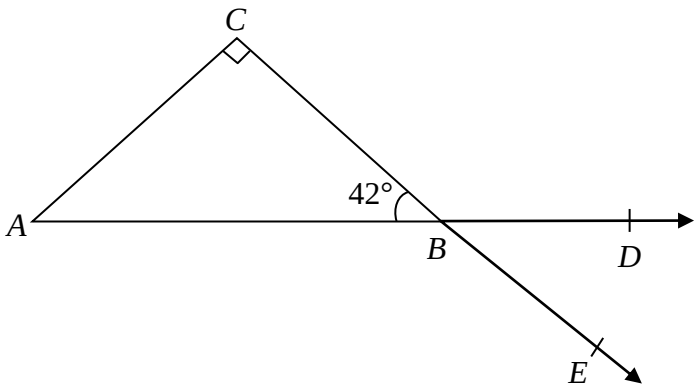
(ATTEMPT EITHER PART a OR PART b OF Q.7.)

Q.7. (Total 5 Marks)

a. Consider the diagram and answer the following questions.



NOT TO SCALE

i. $m\angle A$ is equal to _____.

ii. The supplementary angles are _____ and _____.

iii. The complementary angles are _____ and _____.

iv. $m\angle DBE$ is equal to _____.

v. The vertical angle of $\angle CBD$ is _____.

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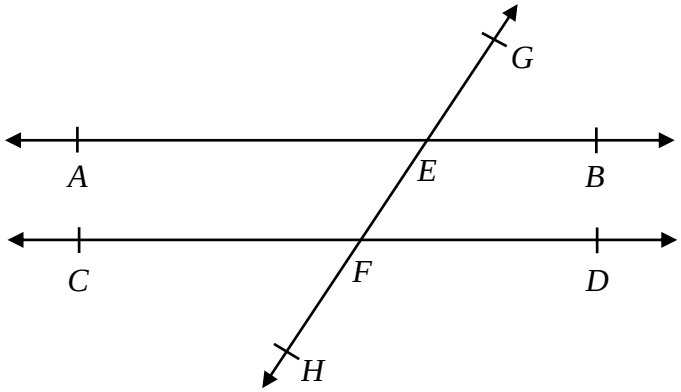
(ATTEMPT EITHER PART a OR PART b OF Q.7.)

b. Consider the given diagram and complete the following statements.



i. One pair of vertically opposite angles is _____

ii. One pair of adjacent angles is _____

iii. One pair of corresponding angles is _____

iv. One pair of alternate angle is _____

v. One pair of supplementary angle is _____

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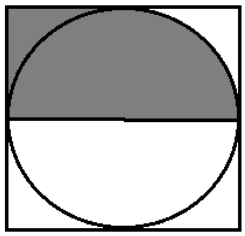
Q.8. (Total 6 Marks)

i. In the given diagram, the area of the square is *s* and the area of the circle is *c*. Find the area of the shaded region in the diagram. (4 Marks)



ii. It is given that the sides of a triangle measure 24 cm, 8 cm and 25 cm. Is it a right-angled triangle? Justify your answer. (2 Marks)

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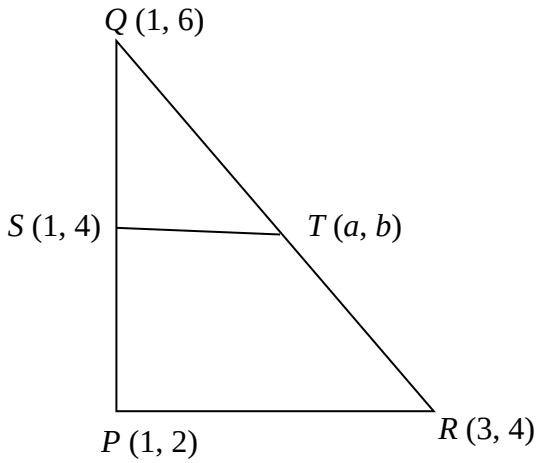
Q.9. (Total 4 Marks)

The coordinates of the vertices of a triangle *PQR* are *P* (1, 2), *Q* (1,6) and *R* (3,4). The midpoints of *PQ* and *QR* are *S* (1, 4) and *T* (*a*, *b*) respectively. Find the coordinates of point *T* and distance between *S* and *T*.



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END OF PAPER

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