

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

APRIL/ MAY 2017

Mathematics Paper I

Time: 40 minutes Marks: 30

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 30 only.
4. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the circle for your choice with a pencil as shown below.

Correct Way	Incorrect Ways
1 ☐ A ☐ B ☒ C ☐ D	1 ☐ A ☐ B ☒ C ☐ D
	2 ☐ A ☐ B ☒ C ☐ D
	3 ☐ A ☐ B ☒ C ☐ D
	4 ☐ A ☐ B ☒ C ☐ D

Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. The real part of $i(2i - 1)$ is
 - A. -2
 - B. -1
 - C. 1
 - D. 2
2. If $Z = 10 + i$, then the value of $Z \times \overline{Z}$ will be
 - A. 99
 - B. 101
 - C. $99 - 20i$
 - D. $101 + 20i$
3. $\frac{8^3}{2}$ is equal to
 - A. 0
 - B. 1
 - C. $2^{\frac{2}{3}}$
 - D. 2
4. If $5^a \times 5^3 = 25$, then the value of a is
 - A. -2
 - B. -1
 - C. 1
 - D. 2
5. If $A = \{1, 2, 3, 4\}$ and $B = \{10, 20\}$, then the number of elements in the Cartesian product $A \times B$ is
 - A. 18
 - B. 16
 - C. 8
 - D. 6
6. For any three sets X , Y and Z , the associative property with respect to union is
 - A. $X \cup (Y \cup Z) = (X \cup Y) \cup Z$
 - B. $X \cup (Y \cap Z) = (X \cap Y) \cup Z$
 - C. $X \cap (Y \cup Z) = (X \cup Y) \cap Z$
 - D. $X \cup (Y \cap Z) = (X \cup Y) \cap (X \cup Z)$

7. Which of the following can be an ordered pair of the relation $R = \{(x, y) \mid y = x^3\}$?
- I. (8, 2)
 - II. (1, 3)
 - III. (3, 27)
- A. I only
B. III only
C. I and II
D. II and III
8. If $K = L = \{2, 3\}$ and $K \cap M = L$, then which of following options is TRUE for the set M ?
- I. $\{2, 3\}$
 - II. $\{1, 3, 5\}$
 - III. $\{1, 2, 3, 6\}$
- A. I only
B. II only
C. I and III
D. II and III
9. $\log_5 7$ can also be expressed as
- A. $\frac{\log_3 7}{\log_3 5}$
 - B. $\frac{\log_3 5}{\log_3 7}$
 - C. $\log_3 \frac{7}{5}$
 - D. $\log_3 7 + \log_3 5$
10. 0.0036 expressed in scientific notation is
- A. 36×10^{-4}
 - B. 3.6×10^{-3}
 - C. 3.6×10^3
 - D. 36×10^4
11. $3\sqrt{5} - 10\sqrt{5}$ is equal to
- A. $-30\sqrt{5}$
 - B. $49\sqrt{5}$
 - C. $-7\sqrt{5}$
 - D. $7\sqrt{5}$

12. If $W = \frac{t(u+1)}{v}$ and $t = 2$, $u = -1$ and $v = 5$, then the value of W is

- A. 0
- B. $\frac{2}{5}$
- C. $\frac{4}{5}$
- D. 1

13. The simplified form of $\frac{x^2 - y^2}{x^3 + y^3}$ is

- A. $\frac{(x+y)}{(x^2 - xy + y^2)}$
- B. $\frac{(x+y)}{(x^2 + xy + y^2)}$
- C. $\frac{(x-y)}{(x^2 - xy + y^2)}$
- D. $\frac{(x-y)}{(x^2 + xy + y^2)}$

14. The factors of $100q^2 - 9r^2$ are

- A. $(10q - 3r)^2$
- B. $(100q - 9r)^2$
- C. $(10q + 3r)(10q - 3r)$
- D. $(100q + 9r)(100q - 9r)$

15. If $(x - b)$ is a factor of a polynomial $P(x)$, then $P(b)$ is equal to

- A. $-b$
- B. b
- C. 0
- D. 1

16. If $P(x) = x^3 + 1$ is divided by $(x + 2)$, then the remainder is

- A. -7
- B. -5
- C. 7
- D. 9

17. Given that y is directly proportional to the square root of x and k is the constant of proportionality. Mathematically, this can be expressed as

- A. $y = \frac{k}{\sqrt{x}}$
- B. $x = \frac{\sqrt{y}}{k}$
- C. $y = k\sqrt{x}$
- D. $x = k\sqrt{y}$

18. It is given that $y \propto \frac{1}{x}$ and k is the constant of proportionality. If $x = 2$ and $y = 3$, then k is equal to

- A. $\frac{3}{2}$
- B. $\frac{2}{3}$
- C. $\frac{5}{6}$
- D. $\frac{6}{5}$

19. If $A = \begin{bmatrix} 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 1 \\ 5 \end{bmatrix}$, then $A \times B$ is

- A. $\begin{bmatrix} 17 \end{bmatrix}$
- B. $\begin{bmatrix} 2 \\ 15 \end{bmatrix}$
- C. $\begin{bmatrix} 2 & 15 \end{bmatrix}$
- D. not possible.

20. The adjoint of matrix $\begin{bmatrix} -2 & -6 \\ 1 & 5 \end{bmatrix}$ is

- A. $\begin{bmatrix} 2 & 6 \\ -1 & -5 \end{bmatrix}$
- B. $\begin{bmatrix} 5 & 1 \\ -6 & -2 \end{bmatrix}$
- C. $\begin{bmatrix} 2 & 1 \\ -6 & -5 \end{bmatrix}$
- D. $\begin{bmatrix} 5 & 6 \\ -1 & -2 \end{bmatrix}$

21. If $\begin{bmatrix} 5 & -1 \\ 2 & 3 \end{bmatrix} + A = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$, then the value of A is

A. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

B. $\begin{bmatrix} 5 & -1 \\ 2 & 3 \end{bmatrix}$

C. $\begin{bmatrix} 3 & 1 \\ -2 & 5 \end{bmatrix}$

D. $\begin{bmatrix} -5 & 1 \\ -2 & -3 \end{bmatrix}$

22. The average of 6 numbers is 10. If one of the numbers is 5, then what is the average of the remaining 5 numbers?

A. 10

B. 11

C. 12

D. 13

23. According to the following table, how many students obtained more than 30 marks?

Marks Obtained	Number of Students
11 – 20	3
21 – 30	7
31 – 40	15
41 – 50	8

A. 8

B. 10

C. 15

D. 23

24. The following data represents the number of students absent in a class for 8 consecutive days.

6, 6, 8, 5, 6, 7, 8, 7

The median of the number of students absent is

A. 5

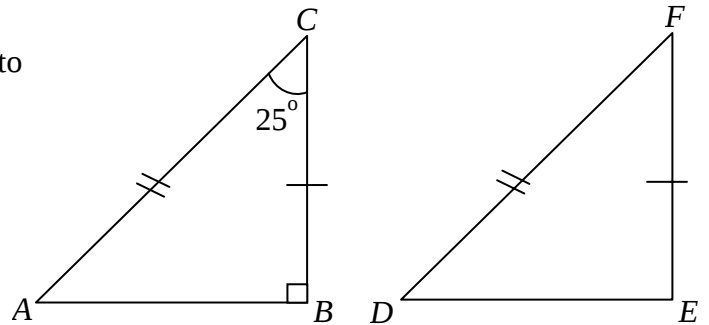
B. 5.5

C. 6

D. 6.5

25. If $\triangle ABC \cong \triangle DEF$, then $\angle D$ is equal to

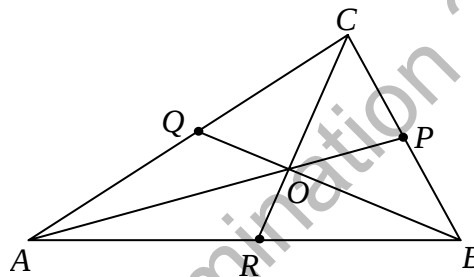
- A. 25°
- B. 55°
- C. 65°
- D. 75°



NOT TO SCALE

26. In the given triangle ABC , AP , BQ and CR are the medians intersecting at point O , such that $QB = 3a$. The length of OQ must be

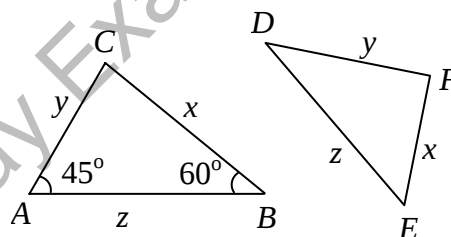
- A. a
- B. $2a$
- C. $\frac{1}{3}a$
- D. $\frac{3}{2}a$



NOT TO SCALE

27. For the given triangles, $\angle F$ is equal to

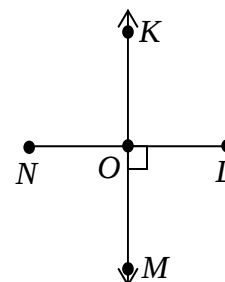
- A. 45°
- B. 60°
- C. 65°
- D. 75°



NOT TO SCALE

28. In the given diagram, if KM is the right bisector of NL , then which of the following conditions is TRUE?

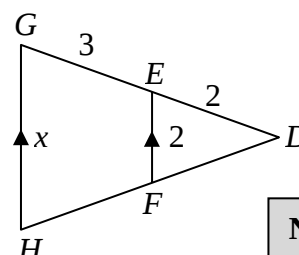
- A. $KO = OL$
- B. $KM = LN$
- C. $KL = KN$
- D. $KN = LM$



NOT TO SCALE

29. In the given diagram, the value of x is equal to

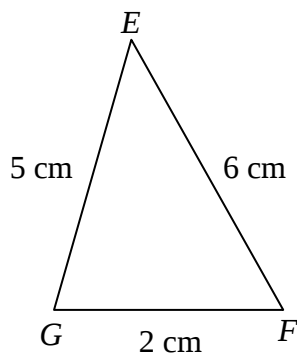
- A. 2
- B. 3
- C. 4
- D. 5



NOT TO SCALE

30. For the given triangle EFG , which of the following is TRUE?

- A. $\angle F > \angle G$
- B. $\angle G > \angle E$
- C. $\angle E > \angle F$
- D. $\angle G = \angle E + \angle F$



NOT TO SCALE

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