

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

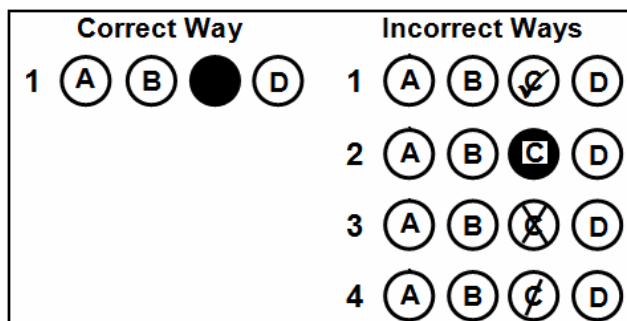
MAY 2012

Mathematics Paper I

Time allowed: 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.



Candidate's Signature

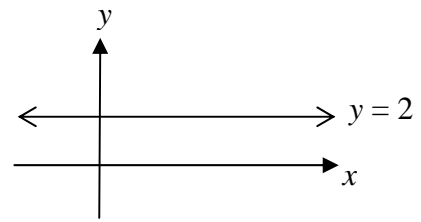
5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. The Highest Common Factor (H.C.F) of $\frac{1}{x^2}$, $\frac{1}{xy}$ and $\frac{1}{xyz}$ is
- A. $\frac{1}{x}$
 - B. $\frac{1}{y}$
 - C. $\frac{1}{xy}$
 - D. $\frac{1}{xyz}$
2. If $P(x) = x(3-x)^2$, Least Common Factor (L.C.M) = $x^2(3-x)$ and Highest Common Factor (H.C.F) = $(3-x)$, then the other polynomial will be
- A. 1
 - B. x
 - C. $x(3-x)$
 - D. $\frac{(3-x)}{x}$
3. $\sqrt{\frac{1}{a^2} + \frac{1}{b^2} - \frac{2}{ab}}$ is equal to
- A. $\frac{1}{a} + \frac{1}{b} - \frac{1}{ab}$
 - B. $\frac{1}{a} + \frac{1}{b} - \sqrt{\frac{2}{ab}}$
 - C. $\frac{1}{a} - \frac{1}{b}$
 - D. $\frac{1}{a} + \frac{1}{b}$
4. If $\frac{5}{(x-1)^2} = \frac{A}{(x-1)^2} + \frac{B}{(x-1)}$, then the value of A is equal to
- A. 0
 - B. 1
 - C. 2
 - D. 5

5. If $\sqrt{\frac{5-2x}{2x}} = 0$, then the value of x is equal to
- A. $\frac{2}{5}$
 - B. $\frac{4}{5}$
 - C. $\frac{5}{2}$
 - D. $\frac{5}{4}$
6. Which of the following properties is called transitive property?
- A. $x < y$ and $y < z \Rightarrow x < z$
 - B. $x < y$ or $x = y$ or $x > y$
 - C. $x < y \Rightarrow x + z < y + z$
 - D. $x < y \Rightarrow xz > yz$
7. Which of the following equations has the solution set $\{-6, 2\}$?
- A. $|x+2|=4$
 - B. $|x-2|=4$
 - C. $|x+2|=-4$
 - D. $|x-2|=-4$
8. If $2x + 2 = 11$, then the value of $\sqrt{2x+7}$ is equal to
- A. 3
 - B. 4
 - C. 5
 - D. 6
9. The ordered pair which satisfies the equation $x + y = 3$ is
- A. $(2, 1)$
 - B. $(9, -3)$
 - C. $(-6, 3)$
 - D. $(-1, -2)$

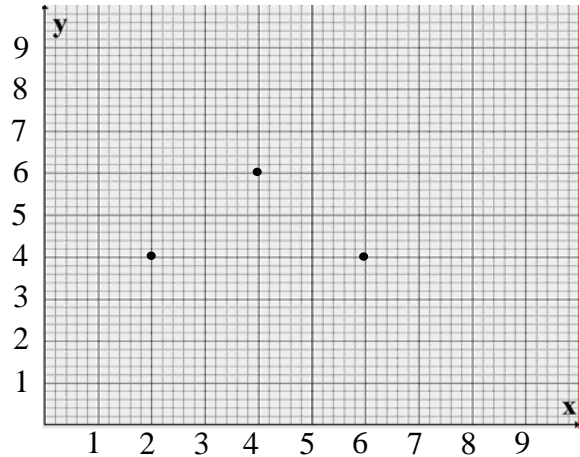
10. The point of intersection of the line $y = 2$ and y - axis is

- A. $(2, 0)$
- B. $(2, y)$
- C. $(0, 0)$
- D. $(0, 2)$



11. In the given graph the coordinates of the fourth point which forms a square is

- A. $(4, 2)$
- B. $(4, 3)$
- C. $(7, 6)$
- D. $(8, 6)$



12. If $px^2 - 5x + 6 = \left(x - \frac{5}{2}\right)^2 - \frac{1}{4}$, then the value of p is equal to

- A. 4
- B. 2
- C. 0
- D. 1

13. If $2x = \frac{1}{x}$, then the value of $\frac{1}{x}$ is equal to

- A. ± 2
- B. $\pm \frac{1}{2}$
- C. $\pm \sqrt{2}$
- D. $\pm \frac{1}{\sqrt{2}}$

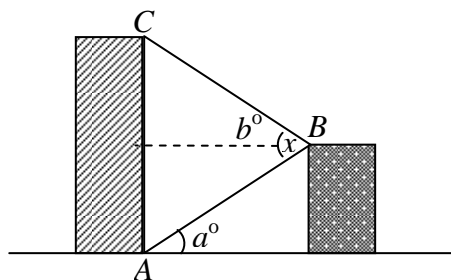
14. Which of the following equations is **NOT** a quadratic equation?

- A. $x - \frac{3}{x} = 3$
- B. $3x - \frac{5}{x} = x^2$
- C. $x + \frac{1}{x} = 3$
- D. $x^2 - 3 = 4x^2 - 4x$

15. The point collinear to the points $(0, 0)$ and $(1, 1)$ is
- A. $(2, 2)$
 - B. $(2, 0)$
 - C. $(0, 1)$
 - D. $(1, -1)$
16. If $A(a, 3)$, $B(0, 1)$ and $m\overline{AB}$ is equal to $\sqrt{4}$ units, then the value of a is equal to
- A. -3
 - B. -1
 - C. 0
 - D. 1
17. If the distance between the points (x, y) and $(0, 0)$ is k , then we have
- A. $x^2 + y^2 = k$
 - B. $x^2 + y^2 = k^2$
 - C. $x^2 - y^2 = k$
 - D. $x^2 - y^2 = k^2$
18. $30^\circ 30'$ is equal to
- A. 30.30°
 - B. 30.03°
 - C. 30.5°
 - D. 30.05°
19. If $x = 45^\circ$, then the value of $(1 - \cos^2 x - \sin^2 x)$ is equal to
- A. 0
 - B. $\frac{1}{2}$
 - C. 1
 - D. 2
20. If $\tan \theta = m$, then $\sec \theta$ is equal to
- A. $1 + m^2$
 - B. $1 - m^2$
 - C. $\pm\sqrt{1 + m^2}$
 - D. $\pm\sqrt{1 - m^2}$

21. In the given diagram if the angle of elevation from A to B and B to C are a° and b° respectively, then the value of x is equal to

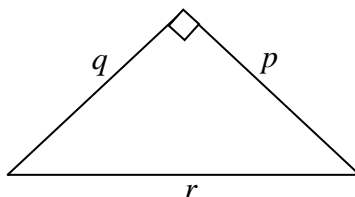
- A. $2a^\circ$
- B. $2b^\circ$
- C. $(a-b)^\circ$
- D. $(a+b)^\circ$



NOT TO SCALE

22. Which of the following statements is TRUE for the given diagram?

- A. $r = p + q$
- B. $r = p - q$
- C. $r^2 = p^2 + q^2$
- D. $r^2 = p^2 - q^2$



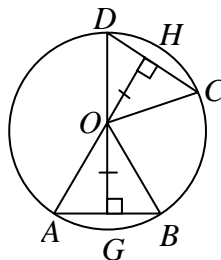
NOT TO SCALE

23. If x , y and z are the measures of the sides of a right angled triangle, then which of the following are also the measures of the sides of a right angled triangle?

- A. $x, y, \sqrt{2}z$
- B. $-x, -y, -z$
- C. $3x, 4y, 5z$
- D. kx, ky, kz

24. In the given figure if O is the centre of the circle, then which of the following conditions is TRUE ?

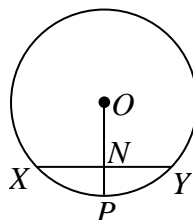
- A. $OC = OH$
- B. $AB = CD$
- C. $AD = BC$
- D. $OB = OG$



NOT TO SCALE

25. In the given diagram O is the centre of the circle. If $XY = 16$ cm, $OP = r$ cm and $ON = m$ cm, then NP in terms of r is equal to

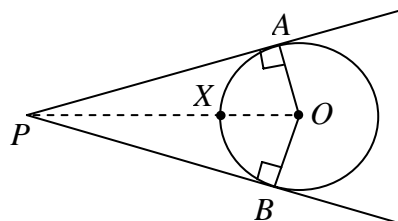
- A. $(r + m)$ cm
- B. $(r - m)$ cm
- C. r cm
- D. m cm



NOT TO SCALE

26. O is the centre of the circle as shown in the diagram. If $OB = 3$ cm and $OP = 15$ cm, then PX is equal to

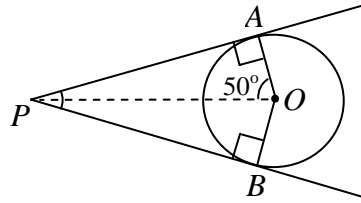
- A. 7 cm
- B. 8 cm
- C. 12 cm
- D. 18 cm



NOT TO SCALE

27. O is the centre of the circle as shown in the diagram. If $\angle AOP = 50^\circ$, then $\angle AOB$ is equal to

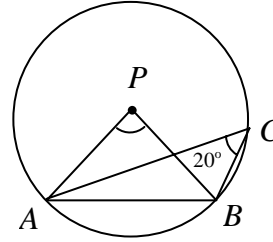
- A. 25°
- B. 40°
- C. 80°
- D. 100°



NOT TO SCALE

28. If P is the centre of the circle as shown in the diagram, then $\angle ABP$ is equal to

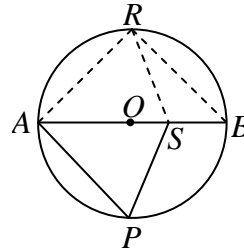
- A. 20°
- B. 40°
- C. 70°
- D. 140°



NOT TO SCALE

29. If O is the centre of the circle as shown in the diagram, then which of the following angles represents a right angle?

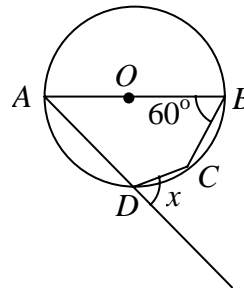
- A. $\angle ARS$
- B. $\angle SRB$
- C. $\angle APS$
- D. $\angle ARB$



NOT TO SCALE

30. If O is the centre of the circle as shown in the diagram, then the value of x is equal to

- A. 60°
- B. 90°
- C. 120°
- D. 270°



NOT TO SCALE

Please use this page for rough work