ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

MODEL PAPER, 2023

Subject: Mathematics	Grade- X	M. Marks: 75	Time: 3 Hours

SECTION "A"

Note: Chose the correct answer for each question from the given options. **(15)**

1. **If A = {1,2,3,4} and B = {2,4,6} then A∆B =.**
   a. {1,3} **b. {2,3}** **c. {1,3,6}** **d. {6}**
2. **If (*x*,6) = (2, *y*,6) than *x*+*y* =.**
   a. 8 **b. 10** **c. 12** **d. 14**
3. **The mean proportion between a^2 and b^2 is .**
   a. $\sqrt{ab}$ **b. ab** **c.** $\frac{a}{b}$ **d. ab**
4. **The mean proportion between a^2 and b^2 is.**
   a. 20 **b. 15** **c. 60** **d. 36**
5. **Find *x*, if** $\begin{bmatrix} 5 & 1 \\ 2 & x \end{bmatrix}$ **is a singular matrix.**
   a. $\frac{2}{5}$ **b.** $\frac{5}{2}$ **c.** $\frac{1}{5}$ **d. 0**
6. **Partial fraction of** $\frac{x}{(x-a)(x-b(x-c)}$ **can have a form.**
   a. $\frac{A}{x+a}+\frac{B}{x+b}+\frac{C}{x+c}$ **b.** $\frac{A}{x-a}+\frac{B}{x-b}+\frac{C}{x-c}$
   c. $\frac{A}{x+a}+\frac{B}{x-b}+\frac{C}{x+c}$ **d. None of these**
7. **The Positive square root of variance is called.**
   a. Standard deviation **b. Mean deviation** **c. Range** **d. Mode**
8. **These of the following are the sides of a right-angled triangle.**
   a. 3,4,5 **b. 2,3,4** **c. 5,6,7** **d. 4,5,6**
9. **Two equilateral triangles are also.**

a. Congruent **b. Similar** **c. Proportional** **d. Equivalent**

10. Diameter divides the circle into parts.

a. 2 **b. 3** **c. 4** **d. 5**

11. The inscribe angle of minor are of a circle is ____ angle.

a. acute **b. obtuse** **c. right** **d. reflex**

12. The area of the circular sector when r + 2_{cm} and θ=3 radian is

a. 6 **b. 2** **c. 3** **d. 12**

13. Closed. Sin θ= 3 radian is

a. 1 **b. 0** **c. -1** **d. 0.5**

14. Sec^2 θ- tan^2 θ= _____

a. 0 **b. 1** **c. -1** **d. $cos^2\theta$**

15. If 2*x*, 3y and 6‘~~z~~ are in continued proportion then.

a. $y^2=12xy$ **b. $9y^2=x\text{-}z$** **c. $9y^2=12x\text{-}z$** **d. $3y^2=4x\text{-}z$**

SECTION "B"
(SHORT ANSWER QUESTION)

Note: Attempt any (Six) questions from this section **(30)**

Q2. Solve the following equation by using componendo - dividendo theorem

$$\frac{\sqrt{x+6}-\sqrt{x-6}}{\sqrt{x+6}+\sqrt{x-6}}=\frac{2}{5}$$

If $a:b=c:d=e:f$ then show that $(a^2+c^2+e^2)(b^2+d^2+f^2)=(ab+cd+ef)^2$

Q3. If A= {1,2,3,4,6,12},B={2,4,6,8} and ∪ = {1,2,3-----12}prove that $A' \cap B' = (A \cup B)'$

OR

If A= {1,2,3,4,5,6} and B={2,4,6,8,10} prove that $A\Delta B = (A \cup B)'(A \cap B)$

Q4. Show that $(1+W)(1+W^2)(1+W^4)(1+W^8)=(W+W^2)^4$

OR

Find the cube roots of 216

Q5. Resolve the following into partial fraction.

$$\frac{x^2-3x+6}{x(x-2)(x-1)}$$

Q6. Find median 51,55,52,54,58,60,61,62,52,57,52,64

OR

Find the variance of the marks of student which are 10,20,30,40,50,60

Q7. Prove that (Any one)

1. $\frac{\sin^2\theta}{\cos\theta}+\cos\theta=\sec\theta$ **2.** $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}}=\frac{\sin\theta}{1-\cos\theta}$

Q8. Find the area of the sector, whose radius is 4cm with central angle of $\frac{\wedge}{4}$ radian.

OR

From the top of a light house 102m high measure of the angle of depression of a ship is $18^{o}30$. How far is the ship from the light house.

Q9. Prove that, the two tangents, drawn to a circle from a point outside it, are equal is length

Q10. Perpendicular from the center of a circle to a chord bisects it.

Q11. One and only one circle can pass through three non-collinear points.

SECTION "C"

DESCRIPTIVE ANSWER QUESTIONS

Note: Attempt all questions from the following. **(30)**

Note: Attempt any three questions from this section.

Q12. Find solution by matrix inverse method OR Cramer's rule of the following.

2*xx*+3*y*= 14 and -44*x* +*y* +28

OR

Find the inverse of the matrix by adjoint method $A=\begin{bmatrix}2 & 1 & 1\\ 3 & 2 & 1\\ 2 & 1 & 2\end{bmatrix}$

Q13. Draw two unequal circles of radii 3.3cm and 2.1 cm with Centre A and B respectively such that $m\overline{AB}=8cm,$

Draw direct common tangents to these circle (Also write steps of construction)

OR

Draw the circumcircle of Δ ABC in which $m\overline{AB}=6cm,\ m\overline{B}c=5cm$ **and** $\overline{AC}=7cm.$ **Also Write the steps of construction.**

Q14. If two chords of a circle are congruent then they will be equidistant from the Centre prove it.

Q15. A line parallel to one side of triangle and intersecting the other two sides, divides them proportionally. Prove it

Q16. If the square of one side of triangle 5 equal to the sum of the square of the other two sides, then the triangle is a right-angle triangle prove it.