## Atomic Energy Central School - Narora

## Periodic Test III - 2018-19 (Mathematics)

Time-1 hour
General Instructions: Q.N. 1-4 is of one mark each. Q.N. 5-8 is of two marks each. Q.N. 9-12 is of three marks each. Q.N. 13-16 is of four marks each.

Q1. Express $0 . \overline{6}$ in the form $\mathrm{p} q$, where p and q are integers and $\mathrm{q} \neq 0$.
Q2. Locate the points $(5,2)$ and $(-3,5)$ in the Cartesian plane.
Q3. If $A, B$ and $C$ are three points on a line, and $B$ lies between $A$ and $C$, then prove that $A B+B C=A C$.
Q4. The angles of quadrilateral are in the ratio $3: 5: 9: 13$. Find all the angles of the quadrilateral.
Q5. Two circles of radii 5 cm and 3 cm intersect at two points and the distance between their centres is 4 cm . Find the length of the common chord.
Q6. Show that bisectors of two linear pair angles are perpendicular to each other.
Q7. Find the value of $k$, if $x=2, y=1$ is a solution of the equation $2 x+3 y=k$.
Q8. Find the remainder when $x^{3}+3 x^{2}+3 x+1$ is divided by $x+1$
Q9. Verify that $x^{3}+y^{3}+z^{3}-3 x y z=\frac{1}{2}(x+y+z)\left\{\{x-y)^{2}+(y-z)^{2}+(z-x)^{2}\right\}$.
$Q 10$. $A D$ is an altitude of an isosceles triangle $A B C$ in which $A B=A C$. Show that (i) $A D$ bisects $B C$ (ii) $A D$ bisects $\angle A$.

Q11. Show that the line segments joining the mid-points of the opposite sides of a quadrilateral bisect each other.
"OR"
The medians $B E$ and $C F$ of a triangle $A B C$ intersect at $G$. Prove that the area of $\triangle G B C=$ area of the quadrilateral AFGE.
Q12. Find the area of a triangle, two sides of which are 8 cm and 11 cm and the perimeter is 32 cm $Q 13 . A B C D$ is a trapezium with $A B \| D C$. $A$ line parallel to $A C$ intersects $A B$ at $X$ and $B C$ at $Y$. Prove that $\operatorname{ar}(A D X)=\operatorname{ar}(A C Y)$.
Q14.(a)Prove that, the sum of either pair of opposite angles of a cyclic quadrilateral is $180^{\circ}$.
(b) ABCD is a cyclic quadrilateral whose diagonals intersect at a point E . If $\angle \mathrm{DBC}=70^{\circ}, \angle \mathrm{BAC}$ is $30^{\circ}$, find $\angle B C D$.

## "OR"

(a) The line segment joining the mid-points of two sides of a triangle is parallel to the third side.
(b) Show that the diagonals of a rhombus are perpendicular to each other.

Q15. Construct a triangle $A B C$, in which $\angle B=60^{\circ}, \angle C=45^{\circ}$ and $A B+B C+C A=11 \mathrm{~cm}$.
Q16. A field is in the shape of a trapezium whose parallel sides are 25 m and 10 m . The non-parallel sides are 14 m and 13 m . Find the area of the field.

