



ASIA ENGLISH SCHOOL		1 st Term Exam September 2009-10
Secondary /Higher Secondary Section		Date : 14-09-09
Asia Campus, Drive-in Road, Ahmedabad-380054		Time : 3 hrs.
Std : X	Sub : Maths	Total Marks : 100

Roll No. _____

Instructions :

- (1) There are 54 questions in this paper. All the questions are compulsory.
- (2) Internal options are available for certain questions.

SECTION – A

Fill in the blanks by selecting the proper alternative from those given below each question (1 mark each)

- (1) The sum of ages of 3 persons was 'x' years before 3 years. Then after 3 years, the sum of their ages will be _____ years.
[a] $3x+3$ [b] $x+9$ [c] $x+18$ [d] $x+6$
- (2) The pair of equations $x+y+1=0$ and $2x+2y+3=0$ has solution _____.
[a] $x=1, y=0$ [b] $x=0, y=1$
[c] Does not exist [d] Any $x \in R, y \in R$
- (3) H.C.F. of $5x^2y^2, 30x^5y^3x^2, \sqrt{4x^2y^2} \cdot 3x^2y^2$ is _____.
[a] $10x^4$ [b] $5x^2$ [c] $25x^4$ [d] $5x^3$
- (4) If $p(x) = x^2$ and $q(x) = x^3$ then $m(x) =$ _____.
[a] x^5 [b] x^4 [c] 1 [d] x^3
- (5) In the following, _____ is rational expression but not polynomial.
[a] $\frac{x^2+9}{x+3}$ [b] $\frac{x^3+1}{x^2+x+1}$ [c] $\frac{x+3}{3+x}$ [d] $\frac{x+3}{x+3}$
- (6) _____ is the reciprocal of additive inverse of rational expression $\frac{2+x}{x+3}$
[a] $\frac{3+x}{2+x}$ [b] $\frac{x+2}{x+3}$ [c] $\frac{x+2}{3+x}$ [d] $\frac{2+x}{x+3}$
- (7) Eleventh term of an arithmetic progression having nth term $(37n+41)$ is _____.
[a] 450 [b] 446 [c] 448 [d] 441
- (8) Sum of the first 'n' natural numbers is _____.
[a] $\frac{n}{2}$ [b] $\frac{n+1}{2}$ [c] $\frac{n \cdot (n+1)}{2}$ [d] None of these
- (9) The cash price of a mobile phone is Rs.10,000 one can purchase it by paying cash as down payment 25% of total cost and Rs.8000 at the end of three months. The interest paid by the customer in the instalment scheme is Rs._____.
[a] Rs.2000 [b] Rs.2500 [c] Rs.300 [d] Rs.500
- (10) $\triangle CAT \sim \triangle FOX, m\angle c = 40$ and $m\angle O = m\angle X =$ _____.
[a] 40 [b] 80 [c] 140 [d] 180
- (11) $\triangle XYZ \sim \triangle DEF$, If $XY=5$ and $DE=6$ and area of $\triangle DEF = 36$ then area of $\triangle XYZ$ is _____.
[a] 25 [b] 50 [c] 75 [d] 100
- (12) In $\triangle MNP, MN^2 + MP^2 = 50$. If median \overline{MX} has length 3, then $NP =$ _____.
[a] 4 [b] 32 [c] 8 [d] 16

(P.T.O.)

- (13) The volume and curved surface area of a cylinder are numerically equal. Then, the radius of the cylinder is _____ units.
[a] 2 [b] 3 [c] 4 [d] 5
- (14) The Y-axis divides the line segment joining A (-3, -4) and B(1, -2) in _____ ratio.
[a] 1 : 3 [b] 2 : 3 [c] 3 : 1 [d] 3 : 2
- (15) Joining points A (2, 0), B (2, 3) and C(0,3) by \overline{AB} , \overline{BC} and \overline{CA} we get a/an _____ triangle.
[a] right angled [b] equilateral
[c] isosceles [d] isosceles rights angled.

SECTION – B

Answer the following questions. (1 mark each)

- (16) The solution set of pair of equation.
 $a_1 x + b_1 y + c_1 = 0$
 $a_2 x + b_2 y + c_2 = 0$
- (17) What are 'mutually prime polynomials' ?
- (18) Are $\frac{x+4}{x^2+16}$ and $\frac{x+3}{x^2+7x+12}$ equal rational expressions ?
- (19) First term is $\frac{1}{4}$ and common difference is $\frac{1}{16}$, find fifteenth term.
- (20) What is an instalment ?
- (21) The cash Selling price of a table is Rs.595 or Rs.300 cash is to be paid at the time of purchase and the rest is to be paid after two months with interest of Rs.25. Then find the amount of instalment.
- (22) In $\triangle ABC$, G is the centroid. Line 'PQ' passes through G and meets \overline{AB} at P. $PQ \parallel \overline{BC}$ and $RB = 1.3$ cm. Find AR.
- (23) In $\triangle ABC$, \overline{AD} is the bisector of $\angle A$, $B - D - C$. If $BD : CD = 5 : 7$, $AB = 15$, $BC = 12$, Find the perimeter of $\triangle ABC$
- (24) If in $\triangle LMN$ and $\triangle DEF$, $\frac{LM}{DE} = \frac{MN}{FD} = \frac{LN}{FE}$ then which correspondence is a similarity.
- (25) In $\triangle ABC \sim \triangle LMN$ and $ABC : LMN = 28 : 63$ then find the ratio of their altitude.
- (26) In $\triangle XYZ$, $m\angle Y = 90^\circ$, $XZ = 9$, G is the centroid of $\triangle XYZ$. Find YG.
- (27) Radii of two cylinders of equal heights are in 2 : 3. Then what is the ratio of their volume.
- (28) Surface area of a sphere is half of its volume. Then what is the radius of a sphere.
- (29) Find the distance between the points (7, 5) and (2, 5)
- (30) Obtain the co-ordinate if point P divides the line segment joining points $A(x_1, y_1)$ and $B(x_2, y_2)$ internally in the ratio $k:1$

SECTION – C

Solve the following (2 marks each)

- (31) If $a = 8$, $d = 4$, $Sn = 1400$, then find n.
- (32) The cash price of wrist watch is Rs.9700 or Rs.200 cash as down payment and the rest amount is to be paid in 3 equal monthly instalments. If the rate of interest is 16% then find the amount of monthly instalment.

- (33) Solve the equation
 $a + b = 2ab$
 $3a + 2b = 3ab$
- (34) For an arithmetic progression if twice of the first term is same as thrice of its seventh term then prove that 11th term of this progression is zero.
- (35) If $P = \frac{x}{y} + \frac{y}{x} = 2$, $Q = \frac{1}{x} + \frac{1}{y}$, $R = \frac{x}{y} + \frac{y}{x}$ then obtain $P + Q + R$
- (36) Find the H.C.F. of $m^2 + m + 20, m^2 + 10m + 24$
- (37) The outer radius of a closed hemi-sphere is 1.4 metre. Find its total surface area.
- (38) In $\triangle LMN$, the bisector of $\angle L$ intersects \overline{MN} at X. $\angle M : \angle N = 3:4$, $MN=10.5$ Find NX.
- (39) In $\triangle ABC$, $m\angle B = 90^\circ$, $\overline{BM} \perp \overline{AC}$. $AB=3$ If $BM=2.4$, then find the length of \overline{AC}
- (40) In $\triangle MNP$, $X \in \overline{MN}$, $Y \in \overline{MP}$, $XM = 1, XN = 5, XN = 6, MY = 2, YP = 8$. Prove that $NP = 5 + Y$
- (41) In $\triangle ABC$, $m\angle B = 90^\circ$, $AC = AB + 6$ and $AC = BC + 3$, find the perimeter of $\triangle ABC$.
- (42) Find the co-ordinates of the mid point of \overline{BC} , if the centroid of $\triangle ABC$ is (3,-1) and the vertex A is (1,3)

SECTION – D

Solve the following(3 marks each)

- (43) Simplify $\frac{2x^2 + y^3 + x + y^3}{x + 2y} + \frac{2x^2 + y^3 + x + y^3}{3x} + \frac{x + \frac{y}{2} + 1 + \frac{y}{x}}{2}$
- (44) Simplify $\frac{x}{4x^2 + 6x + 2} + \frac{x}{4x^2 + 10x + 6} + \frac{2x}{4x^2 + 8x + 3}$
- (45) In an arithmetic progression m^{th} term is twice its n^{th} term. Then prove that $5m^{\text{th}}$ term is twice its $(2m + n)^{\text{th}}$ term.
- (46) A scooter can be purchased by paying Rs.30,000 cash or by paying in instalment scheme Rs.2500 cash as down payment and remaining the amount in five equal monthly instalments at the rate of 25%. Find the value of each instalment.

OR

- A lap-top can be purchased for Rs.32,000 cash or 10% cash as down payment at the time of purchase and ten equal monthly instalments of Rs.3,000 each. Find the rate of interest in the instalment scheme.
- (47) A solid is composed of cylinder with conical ends. The whole length of the solid is 41cm and the radius of the cylinder is 5 cm. If the height of both the cones is 12 cm. then find the total surface area of the solid.
- (48) The total surface area of a solid composed of a cone with hemi spherical base is 103.62 cm^2 . If the slant height of the cone is 5cm, find the total height of the solid.
- (49) If the mid points of the sides of a triangle are (4,3), (5,-1) and (2, 7) find the vertices of the triangle.

SECTION – E

Solve the following.

- (50) In a rectangle if we decrease the length by 5 units, and increase the width by 2 units, its area is decreased by 80 square units. If its length is increased by 10 and width is decreased by 5 units, its area is increased by 50 square units. Find the dimensions of the rectangle.

- (51) If the H.C.F of a polynomials $p(x) = x^2 + 4x + 21$ and $q(x) = x^2 + 5x + 6$ is $x + 3$, then find the value of a and b.
- (52) A line drawn parallel to a side of a triangle intersects the other two sides in two distinct points so that each of these sides becomes union of two line segments. Prove that each of the line segments of each side lying in the same semi-plane of that line are proportional to the lengths of corresponding sides.
- (53) In $\triangle PQR$, \overline{QM} is an altitude $PQ = 2 PM$ $RM = 3 PM$. Prove that $\triangle PQR$ is right angled.
- (54) Draw a circle of radius 4 cm . Take a point Q at a distance of 7 cm from P. Draw the tangents to the circle from Q without using the centre P of the circle. Find the length of the tangents.

OR

Construct an equilateral $\triangle PQR$ in which $PQ = 8.5\text{ cm}$. Draw an incircle and circumcircle of this triangle. Find the measure of inradius and circumradius.
