INSTITUTE OF MATHEMATICS EDUCATION

MATHS APTITUDE MOCK TEST – 2021 (Higher Primary Level)

Std. : VII and VIII **Question Paper** Date : 04.09.2021

Time : 2 Hours Total Marks : 100

Q.1 : Find HCF of 11.44 and 12.87

(A) 14.3 (B) 1.43

(C) 0.143 (D) Any other

Q.2 : Find the ratio of $9^{4.5} : 243^3$

(A) 1:729 (B) 1:81

(C) 3:5 (D) Any other

Q.3 : If a% of b is c, then what % of c is a ?

(A) $\frac{10^4}{c}$ (B) $\frac{10^4}{ab}$

(C) $\frac{10^4}{b}$ (D) Any other

Q.4 : If cost price of an article is 80% of it's sell price, then find profit or loss %

(A) 25% Profit (B) 20% Profit

(C) 25% loss (D) 20% loss

Q.5 : What is the difference between simple interest and compound interest if Rs. x are invested at 10 p.c.p.a. for 2 years ?

(A) $\frac{x}{100}$ (B) $\frac{x}{10}$

(C) x (D) 10

Q.6 : Find the average of first 71 odd numbers.

(A) 37 (B) 71

(C) 73 (D) 69

Q.7 : A train 350 m long crosses a pole in 21 sec. Find how much time it will take to cross the 250 m long tunnel ?

(A) 36 sec. (B) 20 sec.

(C) 24 sec. (D) Any other

Q.8 : 'A' takes double the time to do certain work than 'B'. If together they complete the work in 4 hours, find the time required for B to complete the work alone.

(A) 3 hrs. (B) 12 hrs.

(C) 6 hrs. (D) Any other

Q.9 : If $\sqrt{13689} = 117$, then the value of $\sqrt{1.3689} + \sqrt{136.89} + \sqrt{0.013689} = ?$

(A) 12.987 (B) 1.2987

(C) 129.87 (D) Any other

Q.10 : If $\left(\frac{2}{17}\right)^{-5} \times \left(\frac{2}{17}\right)^{3} \times \left(\frac{2}{17}\right)^{11} \div \left(\frac{2}{17}\right)^{-4} = x^y$ then find the reciprocal of x^y.

(A) $\left(\frac{2}{17}\right)^{13}$ (B) $\left(\frac{17}{2}\right)^{13}$

(C) $\left(\frac{17}{2}\right)^{-13}$ (D) Any other

Q.11 : If $\frac{\sqrt[3]{16} + \sqrt[3]{54} + \sqrt[3]{250}}{\sqrt[3]{128}} = x$, then find x.

(A) $\frac{5}{2}$ (B) $\frac{2}{5}$

(C) $\frac{\sqrt[3]{5}}{2}$ (D) $\frac{5}{\sqrt[3]{2}}$

Q.12 : Find complementary angle of $\frac{2}{5}$th of right angle.

(A) 54° (B) 36°

(C) 18° (D) Any other

Q.13 : If the side of a square is $(4x^2 - 5)$ cm, then find it's perimeter.

(A) $(4x^2 - 5)^2$ cm (B) $(16x^2 - 5)$ cm

(C) $(16x^2 - 20)$ cm (D) Any other

Q.14 : In Δ ABC, if $\angle A = 3x°$ $\angle B = (2x + 50)°$ and $\angle C = (x + 10)°$, then which is the greatest side?

(A) AB (B) BC

(C) AC (D) cannot say

Q.15 : Find LCM of $m^4 - n^4$ and $m^2 + n^2$

(A) $m^4 - n^4$ (B) $m^2 + n^2$

(C) $(m^2 + n^2)^2$ (D) Any other

Q.16 : Simplify : $\left[\sqrt{49 + \sqrt{211 + \sqrt{196}}}\right]^{\frac{1}{2}}$

(A) 8 (B) $2\sqrt{2}$

(C) 2 (D) Any other

Q.17 : If Rs. x are invested at r% simple interest to get amount Rs. y, then find the period for which it was invested.

(A) $\frac{y \times 100}{x.r}$ years (B) $\frac{(y-x)100}{x.r}$ years

(C) $\frac{x \times 100}{yr}$ years (D) Any other

Q.18 : If in Δ ABC, AB > BC and AC < BC, then which of the following is true ?

(A) $\angle A > \angle B > \angle C$ (B) $\angle B < \angle A < \angle C$

(C) $\angle C < \angle B < \angle A$ (D) None of these

Q.19 : If exterior angle of a regular polygon is 36°, then find it's perimeter if its side is 10 cm.

(A) 100 cm (B) 80 cm

(C) 120 cm (D) Any other

Q.20 : Find $x^2 + y^2 : 3x^2 + 2y^2$ if x : y = 3 : 2

(A) 35:13 (B) 9:4

(C) 13:35 (D) 27:8

Q.21 : A man sells two articles for Rs.500/- each, one at 5% loss and other at 5% profit. Find the total gain or loss.

(A) $\frac{1}{4}$% Loss (B) $1\frac{1}{4}$% Profit

(C) 4.5% Loss (D) Any other

Q.22 : If height of an equilateral triangle is $4\sqrt{3}$ cm, then find it's perimeter.

(A) $12\sqrt{3}$ cm (B) 24 cm

(C) 12 cm (D) Any other

Q.23 : If $0.0\overline{9}$ = 10% of 20% of x, then find x.

(A) 50 (B) 100

(C) 5 (D) Any other

Q.24 : Average marks obtained in 5 tests is 80. Average of first 3 tests is 70 and average marks of last 3 tests are 85. Find the marks obtained in the 3rd test.

(A) 75 (B) 65

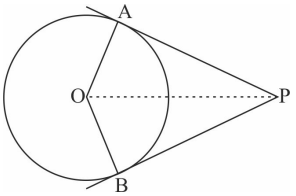
(C) 80 (D) Any other

Q.25 : If a bicycle wheel makes 2500 revolutions in moving a distance of 4.71 km, then find it's radius. [Use π = 3.14]

(A) 30 cm (B) 60 cm

(C) 15 cm (D) Any other

Q.26 : PA and PB are the tangents touching the circle with centre 'O' at A and B. If radius of the circle is 4.5 cm and OP = 20.5 cm, find perimeter of □OAPB.



(A) 50 cm (B) 49 cm

(C) 25 cm (D) Any other

Q.27 : Two trains 450 m and 350 m long are running in the same direction at speed of 30 km/hr and 50 km/hr respectively. How long will they take to cross each other?

(A) 2 min 24 sec (B) 1 min 24 sec

(C) 140 sec (D) Any other

Q.28 : Factorise : $4x^4 + 1$

(A) $(2x^2+1)(2x^2-1)$ (B) $(2x^2+1-2x)(2x^2+1+2x)$

(C) $(2x^2-1)^2$ (D) $(2x^2+1)^2$

Q.29 : The 3 sides of a triangle are in the ratio 3:4:5. If perimeter is 36 cm, then find it's area

(A) 54 sq.cm (B) 36 sq.cm

(C) 90 sq.cm (D) Any other

Q.30 : If diagonal of a cube is $10\sqrt{3}$ cm, then find it's total surface area

(A) 400 sq.cm (B) 600 sq.cm

(C) 1000 sq.cm (D) Any other

Q.31 : If $x + \frac{1}{x} = \sqrt{5}$, then find $x^2 + \frac{1}{x^2}$

(A) 2 (B) 4

(C) 3 (D) Any other

Q.32 : Let 'a' workers finish certain work in 'b' days. If number of workers are increased by 2, then in how many days they will finish the work?

(A) ab × (a+2) (B) $\frac{a+2}{ab}$

(C) $\frac{ab}{a+2}$ (D) Any other

Q.33 : If one angle of a rhombus is 60° and length of smaller diagonal is 10 cm, then find it's area

(A) 80 cm^2 (B) $50\sqrt{3}$ cm^2

(C) 100 cm^2 (D) Any other

Q.34 : If x% of a is the same as y% of 'b', then z% of b is ……..

(A) a% $\frac{zy}{x}$ (B) a% of $\frac{zx}{y}$

(C) y% $\frac{za}{x}$ (D) Any other

Q.35 : If lengths of two sides of a triangle are 4.2 cm and 2.9 cm, then which of the following can be the length of the third side?

(A) 3.2 cm (B) 7.1 cm
(C) 7.2 cm (D) 1.3 cm

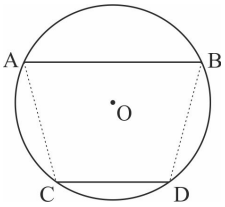
Q.36 : Surface area of a sphere is 400 sq.cm Find the total surface area of hemisphere having same radius.

(A) 200 cm^2 (B) 100 cm^2
(C) 300 cm^2 (D) Any other

Q.37 : Find the measure of interior angle of a regular 15 sided polygon.

(A) 24° (B) 156°
(C) 144° (D) Any other

Q.38 : In a circle with centre 'O', two chords AB and CD are parallel to each other as shown. If radius of the circle is 13cm and AB = 24cm and CD = 10cm, find the area of trapezium ABDC



(A) 289 cm^2 (B) 250 cm^2
(C) 298 cm^2 (D) Any other

Q.39 : Simplify : $\frac{5^{m+1}+5^m}{5^m+5^{m-1}}$

(A) 5^{2m} (B) 5^{m+1} (C) 5 (D) 5^{m-1}

Q.40 : If a + b = 2021, then $(-1)^a + (-1)^b$ = ? (a,b $\in$N)

(A) 2 (B) 0
(C) − 2 (D) Any other

Q.41 : If average of A and B is 'M', average of B and C is 'N' and average of C and D is 'L', then find the average of A, B, C and D

(A) $\frac{M+L}{2}$ (B) $\frac{N+L}{2}$
(C) $\frac{MN}{2}$ (D) $\frac{M+N+L}{4}$

Q.42 : If $a^2 + b^2 = 80$ and ab = 32, (a > b), then find the value of $\frac{a+b}{a-b}$, where (a, b > 0)

(A) 4 (B) 3
(C) 2 (D) Any other

Q.43 : How many five digit numbers are in the form aabaa? ($a \neq b$)

(A) 81 (B) 100
(C) 72 (D) 64

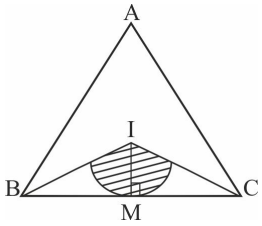
Q.44 : If $\sqrt{2}$ = 1.41, then find the value of $\frac{\sqrt{2}}{\sqrt{2}-1}$

(A) 0.59 (B) 0.73
(C) 3.41 (D) Any other

Q.45 : If $x = y^a$, $y = z^{2b}$ and $z = x^{4c}$, then find the value of abc.

(A) $\frac{1}{8}$ (B) 8 (C) 1 (D) Any other

Q.46 : The ΔABC is an equilateral triangle with side 12 cm. Find the ratio of area of Δ ABC to area of shaded part. ('I' indicates point of concurrence of medians)



(A) $\pi : 9\sqrt{3}$ (B) $9\sqrt{3} : \pi$
(C) $4\pi : 9\sqrt{3}$ (D) Any other

Q.47 : If A⊕ B = $A^2 + B^2$, then find the value of 4 ⊕ [3 ⊕ (2 ⊕ 1)]

(A) 1172 (B) 586 (C) 60 (D) 30

Q.48 : The number in the form 'abcabc' is always divisible by …..

(A) 55 (B) 77 (C) 65 (D) 33

Q.49 : If hypotenuse of 30-60-90 triangle is 2x cm, then find area of the triangle.

(A) $\frac{\sqrt{3}}{2}x^2$ sq.cm (B) $\sqrt{3}\,x^2$ sq.cm

(C) $\frac{\sqrt{3}}{4}x^2$ sq.cm (D) $\frac{\sqrt{3}}{8}x^2$ sq.cm

Q.50 : If $x = \frac{\sqrt{5}+1}{\sqrt{5}-1}$ and $y = \frac{\sqrt{5}-1}{\sqrt{5}+1}$, then find $x^2 - y^2$.

(A) $5\sqrt{3}$ (B) $3\sqrt{5}$

(C) $\sqrt{5}$ (D) Any other

❑ ❑ ❑ ❑ ❑ ❑