

INSTITUTE OF MATHEMATICS EDUCATION

MATHS APTITUDE TEST - 2017 (Higher Primary Level)

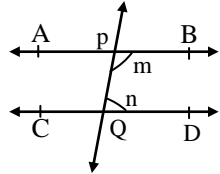
Std. - VII and VIII
Time : 2 Hours

Question Paper

Date : 19.08.2017
Total Marks :100

Instructions : 1) Use separate answer sheet to mark answers. 2) First read question carefully, get the answer and darken the circle of respective correct alternative on answer sheet 3) No change is allowed, so think of twice and then darken the appropriate circle. 4) Note that half circle darkened or more than one circle darkened, cross or tick on the circle, will not be given marks. 5) If questions are not attempted marks will not be given. 6) You can use separate paper for doing rough work.

- Q. 1)** Simplify : $3120 \div 26 - 13 \div 13 + 13$.
 A) 142 B) 132 C) 106 D) $120 - \frac{1}{2}$
- Q. 2)** Find G.C.D./H.C.F. of the following. $(x^n - 1)$ and $(x - 1)$, if 'n' is even.
 A) $x + 1$ B) $x^n - 1$ C) $x^2 + 1$ D) $x - 1$
- Q. 3)** Find L.C.M. of the following 289, $51x$, $68x^2$, $289x^3$.
 A) $51x^3$ B) $289x^3$ C) $68x^3$ D) $17^2 \times 12x^3$
- Q. 4)** Find third proportional to 17 and 289.
 A) 17^3 B) 17^2 C) 17 D) 289
- Q. 5)** If 47 is 12.5% of x, then x = ?
 A) 375 B) 374 C) 367 D) 376
- Q. 6)** What is \sqrt{x} % of $\sqrt{10000x}$?
 A) $x^{\frac{1}{2}}$ B) \sqrt{x} C) x D) 10x
- Q. 7)** If there is only 10% Loss in transaction, then what must be ratio of C.P. to S.P.?
 A) 10 : 9 B) 9 : 10 C) 10 : 1 D) 1 : 10
- Q. 8)** If Principal of Rs. 2000 is invested at 10% p.a. and simple interest obtained Rs. 400, but if I expect interest equal to principal only at same rate, then how many times period is to be increased?
 A) 4.5 B) 5 C) 5.5 D) 5.4
- Q. 9)** The difference in amounts by simple interest and compound interest of principal Rs. 500 is Rs. 5 at the end of 2 years, then what must be rate of interest?
 A) 20% B) 10.5% C) 5% D) 10%
- Q. 10)** Last three numbers give average 30 and all five numbers give average 19; then what must be average of first two numbers?
 A) 5 B) 5.2 C) 2.5 D) 3.5
- Q. 11)** If a car maintained speed 60 km./hr. for first 5 hrs. and then he increased the speed by 40 km./hrs. for last one hr. then what is total distance covered by car from starting?
 A) 360 km. B) 340 km. C) 350 km. D) 400 km.
- Q. 12)** A finishes certain work in 5 days and B finishes same work in 8 days, then how many days they will take to finish work, if they work together?
 A) $13\frac{1}{3}$ B) $\frac{13}{40}$ C) $3\frac{1}{13}$ D) Any other
- Q. 13)** $\sqrt{0.0441} \div \sqrt{0.000049} = ?$
 A) 3 B) 0.3 C) 30 D) .03
- Q. 14)** $(14)^{3.5} \times (6)^{3.5} \div (21)^{3.5} = ?$
 A) 64 B) 128 C) 256 D) Any other

- Q. 15)** Simplify :
 $7\sqrt{x} - 5\sqrt{y} + \frac{1}{2}\sqrt{x} - \frac{2}{3}\sqrt{y} + 6\sqrt{y} - 2\sqrt{x}$
 A) $\frac{11}{2}\sqrt{x} + \frac{1}{3}\sqrt{y}$ B) $\frac{11}{2}\sqrt{x} - \frac{1}{3}\sqrt{y}$
 C) $\frac{13}{2}\sqrt{x} - \frac{1}{3}\sqrt{y}$ D) Any other
- Q. 16)** Factorize : $x^4 + 8x^2 + 16$
 A) $(x^2 - 4)^2$
 B) $(x^2 + 2x + 4)(x^2 - 2x + 4)$
 C) $(x + 4)(x + 4)$
 D) Any other
- Q. 17)** A prism has area of base 'a' sq. units and height 'b' units, then its volume is
 A) $(a + b)$ cu. units B) $(a - b)$ cu. units
 C) (ab) cu. units D) Any other
- Q. 18)** Which of the following formula can be used to find the product 0.49×0.51
 A) $(a + b)^2 = a^2 + 2ab + b^2$
 B) $(a + b)(a - b) = a^2 - b^2$
 C) $(x + a)(x + b) = x^2 + (a + b)x + ab$
 D) None of these
- Q. 19)** In the given figure line AB || line CD and PQ is transversal. If $\angle n$ is less than two fifth of right angle then find $\angle m$.
 A) $\angle m < 144^\circ$
 B) $\angle m = 144^\circ$
 C) $\angle m > 144^\circ$
 D) cannot say
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- Q. 20)** If two angles of a triangle are $42^\circ 39'$ and $63^\circ 42'$ then find 3rd angle of the triangle.
 A) $63^\circ 39'$ B) $73^\circ 39'$
 C) $39^\circ 39'$ D) Any other
- Q. 21)** If one angles of a rhombus is 60° and length of smaller diagonal is 10 cm. Find perimeter of the rhombus.
 A) 40 cm. B) 20 cm. C) $20\sqrt{3}$ cm. D) Any other
- Q. 22)** What will be the area of semi circle whose perimeter is 36 cm and if $\pi = \frac{22}{7}$?
 A) 22 cm^2 B) 44 cm^2 C) 154 cm^2 D) 77 cm^2
- Q. 23)** $3^{2^2} = ?$
 A) 8 B) 16 C) 81 D) Any other

Q. 24) AB is a chord of a circle with center 'O' M is any point on the circle such that $OM \perp AB$, OM intersects AB at D if $AB = 8$ cm and $DM = 2$ cm find radius of the circle.

- A) 10 cm B) 6 cm C) 5 cm D) 4 cm

Q. 25) An exterior angle of a polygon is $\frac{2}{7}$ times its interior angle then find the number of sides of the polygon.

- A) 10 B) 8 C) 9 D) 7

Q. 26) Three numbers are in the ratio of 4 : 6 : 8 and their G.C.D. is 10 then find their L.C.M.

- A) 120 B) 90 C) 600 D) 240

Q. 27) If 25% of $x = 45\%$ of y , then $x : y = ?$

- A) 9 : 5 B) 5 : 9 C) 3 : 5 D) 5 : 3

Q. 28) If the loss is $\frac{1}{7}$ th of S.P., then how much percent loss is there?

- A) 10% B) 12% C) 10.5% D) 12.5%

Q. 29) If a certain Principal invested for x years at the $2x\%$ p.a. and Simple interest gained is Rs.5x, then find the principal.

- A) Rs. 250 B) Rs. 250x C) Rs. $\frac{250}{x}$ D) Rs. $\frac{x}{250}$

Q. 30) Average of first 4 natural numbers is 2.5 when 5th number is considered average becomes 6, so what must be 5th number?

- A) 15 B) 20 C) 25 D) 10.5

Q. 31) If the ratio of the speeds of A vehicle and B vehicle is 5:2 to cover distance 100 km, then what will be ratio of the times required to cover same distance by vehicles?

- A) 2 : 5 B) 5 : 1 C) 1 : 5 D) 2.5 : 1

Q. 32) A can do a certain job in 16 days B is 60% weaker (slower) than A. Then how many days B alone will require to finish the same work?

- A) 25 days B) 28 days C) $25\frac{3}{5}$ days D) Any other

Q. 33) If $\sqrt{3} = 1.7320$ then $\frac{\sqrt{3}}{3+\sqrt{3}} = ?$

- A) 0.7320 B) 2.7320 C) 0.3660 D) Any other

Q. 34) Simplify : $\frac{m^2 + 8m + 12}{m^2 + 4m - 12}$

- A) $\frac{m+6}{m-2}$ B) $\frac{m+2}{m+6}$ C) $\frac{m+2}{m-2}$ D) Any other

Q. 35) $A = 2a^2 + 2ab + 5b^2$

$$B = 3a^2 - 5ab - 2b^2$$

$$C = 7b^2 - 3a^2$$

$$\text{find } 2A + 3B - C$$

- A) $16a^2 - 11ab - 3b^2$ B) $10a^2 - 11ab + 11b^2$

- C) $16a^2 - 11ab + 11b^2$ D) Any other

Q. 36) 'A' is as much older to 'C' as he is younger to B if A is 24 years old what is the average of ages of B and C.

- A) 48 years B) 24 years C) 12 years D) Any other

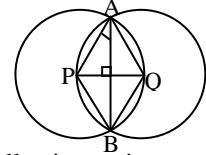
Q. 37) If $a = \frac{\sqrt{5}+1}{\sqrt{5}-1}$ $b = \frac{\sqrt{5}-1}{\sqrt{5}+1}$ then $(a+b)^2 = ?$

- A) 9 B) 3 C) $\frac{125}{4}$ D) Any other

Q. 38) Diameter of base of conical tent is 16m, height is $\frac{3}{4}$ th of radius of it then how much cloth is required for the tent ($\pi = 3.14$)

- A) 200.96 cm² B) 251.2 cm²
C) 188.4 cm² D) Any other

Q. 39) Two circles with centers P and Q are congruent circle of radius 5 cm. intersect each other at A and B. then what will $m\angle PAB$?



- A) 45° B) 35°
C) 30° D) 40°

Q. 40) Find the next term of the following series - 60, 90, 108, 120 ?

- A) 125 B) 129 C) 128.5 D) $128\frac{4}{7}$

Q. 41) What will be the remainder if $43^8 + 3$ is divided by 42?

- A) 4 B) 3 C) 41 D) 45

Q. 42) If $a = 10000001$ $b = 2017$, then how many digits will be there in product $a \times b$?

- A) 10 B) 9 C) 11 D) 12

Q. 43) Which of the following number is not a factor of $8^{37} - 8^{34}$?

- A) 2^{17} B) 511 C) 510 D) 4

Q. 44) If any two circles of centers P and Q intersect at A and B, then which of the following is always true?

- A) AB is perpendicular bisector of PQ.
B) $\square APBQ$ is a rhombus.
C) PQ is perpendicular bisector of AB.
D) AB is bisector of $\angle PAQ$

Q. 45) The distance between two stations A and B is 120 km. A train leaves station A 1 hr. before the scheduled time, but reaches station B right time as per schedule. If the normal speed of the train is 24 km/hr. then by how much speed is reduced by driver ?

- A) 6 km/hr. B) 5 km/hr. C) 4 km/hr. D) Any other

Q. 46) If $a - b = 4$ and $ab = 21$, then find value of $a^3 - b^3$

- A) 441 B) 361 C) 216 D) 316

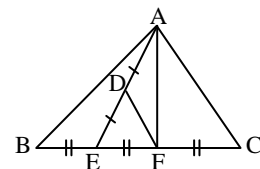
Q. 47) In $\triangle ABC$, $BE = EF = CF$ and Area of $\triangle ABE = x$ sq. units. 'D' is the mid point of AE, then find the area of $\square ACFD$.

- A) $2x$ sq. units

- B) $3x$ sq. units

- C) $\frac{x}{2}$ sq. units

- D) $\frac{3x}{2}$ sq. units



Q. 48) Find the sum of all three digit even natural numbers.

- A) 247500 B) 247050 C) 247005 D) Any other

Q. 49) The sum of squares of the lengths of the three sides of a right angles triangle is 3200, then what will be length of hypotenuse of it?

- A) 25 B) 55 C) 40 D) 65

Q. 50) A positive integer n is a multiple of 7, If \sqrt{n} lies between 19 and 20 how many values of 'n' are possible?

- A) 4 B) 5 C) 7 D) 6