



A.P.J. Abdul Kalam Welfare Society

# All India Bright Student Award Test 2016

Class :IX

Time:11 am to 1 p.m.

## Mathematics

- 1) If  $a^{m-n} \times a^{2n} = a^k$ ; then value of  $k$  is ....  
a)  $m + 2n$                       b) 1                                      c)  $m + n$                               d)  $mn$
- 2) If  $a = x + \frac{1}{x}$ , then  $x^3 + x^{-3} = \dots\dots\dots$   
a)  $a^3 + 3a$                       b)  $a^3 - 3a$                               c)  $a^3 + 2a$                               d)  $a^3 - 3$
- 3)  $\sqrt[3]{a^2} \times \sqrt{a^3} =$   
a)  $\sqrt[6]{a^{13}}$                       b)  $\sqrt[3]{a^6}$                               c)  $\sqrt[3]{a^{13}}$                               d)  $\sqrt{a^6}$
- 4) If  $2^x - 2^{x-1} = 4$ ; then  $x = \dots\dots$   
a) 1                                  b) 2                                      c) 3                                      d) 0
- 5) If  $a^x = b^y$  and  $a = b^2$  then relation between  $x$  and  $y$  is .....  
a)  $x = 2y$                       b)  $y = 2x$                               c)  $y = x$                               d)  $x = 2y$
- 6) If  $x^{-3} = -64$ ; then  $x = ?$   
a)  $-\frac{1}{4}$                               b)  $\frac{1}{4}$                                       c) 4                                      d)  $-4$
- 7) If  $8^x = 512$  then  $2 \times 4^x = \dots\dots\dots?$   
a) 32                                  b) 64                                      c) 512                                      d) none of these
- 8) If  $a^x = b$ ;  $b^y = c$ ;  $c^z = a$  then  $xyz =$   
a) 1                                  b)  $abc$                                       c)  $a + b + c$                               d)  $ab + bc + ca$
- 9) If  $x$  is the mean proportional of  $a$  and  $c$  then  $x = \dots\dots\dots?$   
a)  $\frac{a+c}{2}$                               b)  $\frac{ac}{2}$                                       c)  $ac$                                       d)  $\sqrt{ac}$
- 10) If two angles of a triangle are equal to the two angles of another triangles respectively they are .....  
a) Similar                      b) Congruent                      c) have the same area                      d) have the same corresponding altitudes
- 11) The angle subtended by a major arc at the centre is .....  
a)  $> 180^\circ$                       b)  $< 180^\circ$                               c)  $180^\circ$                               d)  $90^\circ$
- 12) Angle in a major segment is ..... ?  
a) An obtuse angle                      b) an acute angle                      c) a right angle                      d) none of these
- 13) If a rhombus is cyclic then it is a .....?  
a) Parallelogram                      b) trapezium                              c) square                              d) rectangle
- 14) ABCD is a rhombus. Then  $AB^2 + BC^2 + CD^2 + AD^2 = \dots\dots\dots$   
a)  $AD^2 + CD^2$                       b)  $AC^2 - BD^2$                               c)  $AC^2 + CD^2$                               d)  $AC^2 + BD^2$
- 15) A circumscribed parallelogram is a .....?  
a) Square                                  b) Rectangle                              c) Triangle                              d) Rhombus

- 16) Number of common tangents that can be drawn to two intersecting circles is.....?  
 a) 2                                      b) 4                                      c) 3                                      d) 1
- 17) In an equilateral triangle the ratio of the side to the height is .....  
 a)  $\sqrt{3} : 2$                               b)  $2 : \sqrt{3}$                               c)  $1 : \sqrt{2}$                               d)  $\sqrt{2} : 1$
- 18) In a square the ratio of the length of a side and a diagonal is -----?  
 a)  $\sqrt{2} : 1$                               b)  $1 : \sqrt{3}$                               c)  $1 : \sqrt{2}$                               d)  $1 : 1$
- 19) If two circles touch internally then the number of their common tangents is .....  
 a) 4                                      b) 3                                      c) 2                                      d) 1
- 20) Diagonal of a square is 12 cm, its area is ..... sq cm.  
 a) 49                                      b) 36                                      c) 72                                      d) 62
- 21) Name the Indian Scientist who gave the proof of Pythagoras theorem ..... ?  
 a) Bhaskaracharya      b) Ramanujan                      c) A.P.J Abdul Kalam      d) Mendal
- 22) The area of right angle triangle is 48 sq cms. If the length of one of the perpendicular sides is 12cms. Find the length of the side .....?  
 a) 10 cm                              b) 6 cm                              c) 8 cm                              d) 7.5 cm
- 23) The area of an Isoscales right angled triangle is 32 sq.cms. Find the length of the side....?  
 a) 6 cm, 7 cm,  $2\sqrt{3}$  cm      b) 8cm, 8 cm,  $8\sqrt{2}$  cm      c) 6cm, 6 cm,  $6\sqrt{2}$  cm      d) None of these
- 24) If the sides of triangle are 5, 6 and 7 cms repectively, find the area of triangle?  
 a)  $6\text{ cm}^2$                               b)  $6\sqrt{3}\text{ cm}^2$                       c)  $2\sqrt{5}\text{ cm}^2$                       d)  $6\sqrt{6}\text{ cm}^2$
- 25) The base and the other side of an isoscales triangle are 10 cm and 13 cm respectively. Find its area.....?  
 a)  $45\text{ cm}^2$                               b)  $30\text{ cm}^2$                               c)  $60\text{ cm}^2$                               d)  $35\text{ cm}^2$
- 26) The perimeter of an isosceles triangle is 64 cm. if the length of the equal side 12 cm, find the length of the base.....?  
 a)36 cm                              b)48cm                              c)40cm                              d)56cm
- 27) If the length of side of and equilateral triangle is 16 cm. Find the area and height of the triangle?  
 a) 216 sq.cm                              b)  $64\sqrt{2}\text{cm}^2$                       c)  $64\text{ cm}^2$                               d) None of these
- 28) Find the volume of cuboid whose length, breath and height are 3 cm, 4 cm, and 5 cm respectively....?  
 a)  $30\text{ cm}^3$                               b)  $45\text{ cm}^3$                               c)  $60\text{ cm}^3$                               d)  $72\text{ cm}^3$
- 29) Find the Diagonal of the cuboid whose length are  $l = 10\text{ cm}$ ,  $b = 8\text{ cm}$  and  $h = 6\text{ cm}$  ?  
 a)  $12\text{ cm}^3$                               b)  $\sqrt{141}\text{ cm}^3$                       c)  $\sqrt{126}\text{ cm}^3$                       d)  $21\text{ cm}^3$
- 30) Find the largest rod that can be placed in a room of 8 cm, 6 cm, and 12 cm.  
 a) 12 cm                              b) 8 cm                              c)  $8\sqrt{126}\text{ cm}$                       d) None of these
- 31) Find the volume of cube whose edge is 5 mt ?

- a)  $25 \text{ m}^2$                       b)  $121 \text{ m}^2$                       c)  $125 \text{ m}^3$                       d)  $12.5 \text{ m}^3$

32) Find the diagonal of cube whose edge is 6 cm?

- a)  $216 \text{ m}^2$                       b)  $6\sqrt{6} \text{ m}^2$                       c)  $8\sqrt{3} \text{ m}^2$                       d)  $6\sqrt{3} \text{ m}^2$

33) In a football match, Ronaldo makes 4 goals from 10 penalty kicks. Find the probability of converting a penalty kick into a goal by Ronaldo.

- a)  $\frac{1}{4}$                                   b)  $\frac{1}{6}$                                   c)  $\frac{1}{3}$                                   d)  $\frac{2}{5}$

34) From the month of August, whose first day is Tuesday, a day is selected. Find the probability that the day selected is not a Tuesday.

- a)  $\frac{5}{6}$                                   b)  $\frac{26}{31}$                                   c)  $\frac{6}{31}$                                   d)  $\frac{27}{31}$

35) Find the probability that a non leap year contains exactly 53 Mondays.

- a)  $\frac{6}{7}$                                   b)  $\frac{1}{7}$                                   c)  $\frac{52}{365}$                                   d) none of these

36) A day is selected from April, whose first day is Monday. Find the probability that the day selected is a Monday.

- a)  $\frac{1}{7}$                                   b)  $\frac{1}{6}$                                   c)  $\frac{1}{5}$                                   d)  $\frac{2}{5}$

37) In a cricket match, Shane Warne takes three wickets from every 27 balls he bowls. Find the probability of a batsman not getting out by Shane Warne's bowling.

- a)  $\frac{1}{9}$                                   b)  $\frac{4}{9}$                                   c)  $\frac{8}{9}$                                   d)  $\frac{5}{9}$

38) How many pair of x and y satisfy the equations  $2x + 4y = 8$  and  $6x + 12y = 24$  ?

- a) 0                                  b) 1                                  c) Infinite                                  d) None of these

39) The product of a number and 72 exceeds the product of the number and 27 by 360. Find the number.

- a) 12                                  b) 7                                  c) 8                                  d) 11

40) The total cost of 10 erasers and 5 sharpeners is at least Rs 65. The cost of each eraser cannot exceed Rs 4. Find the Minimum possible cost of each sharpener.

- a) Rs 6                                  b) Rs 5.50                                  c) Rs 5                                  d) 11

41) In a group of goats and hens, the total number of legs is 12 more than twice the total number of heads. The number of goats is

- a) 8                                      b) 6                                      c) 2                                      d) cannot be determined

42) Jeevesh had 92 currency notes in all, some of which were of Rs. 100 denomination and the remaining of Rs 50 denomination. The total amount of all these currency notes was Rs 6350. How much amount in rupees did he have in the denomination of Rs 50?

- a) 3500                                      b) 3350                                      c) 2850                                      d) 2600

43) Amar and Bhavan have a certain amount with them. If Bhavan give Rs. 20 to Amar, he will have half the amount with Amar. If Amar give Rs 40 to Bhavan, he will have half the amount with Bhavan. Find the amount with Bhavan.

- a) 70                                      b) 90                                      c) 60                                      d) 80

44) If the slope and the y-intercept of a line are the roots of the equation  $x^2 - 7x - 18 = 0$ , then the equation of the line can be

- a)  $2x + y - 9 = 0$                       b)  $2x - y + 9 = 0$                       c)  $9x - y + 2 = 0$                       d)  $9x + 2y - 2 = 0$

45) The points on the Y- axis which are at a distance of 5 units from (4, -1) are

- a) (0, -2), (0, 4)                      b) (0, 2), (0, -4)                      c) (0, 2), (0, 4)                      d) (0, -2), (0, -4)

46) The equation of the line making equal intercepts and passing through the point (-1, 4) is

- a)  $x - y = 3$                               b)  $x + y + 3 = 0$                       c)  $x + y = 3$                               d)  $x - y + 3 = 0$

47) The equation of a line passing through P (3, 4) such that P bisects the part of its intercepted between the coordinate axes is .....

- a)  $3x + 4y = 25$                       b)  $4x + 3y = 24$                       c)  $x + y = 7$                               d)  $x - y = -1$

48) In a triangle, the sum of any two sides exceeds the third side by 6 cm. Find its area (in sq cm).

- a)  $12\sqrt{3}$                                   b)  $9\sqrt{3}$                                   c)  $15\sqrt{3}$                                   d)  $18\sqrt{3}$

49) The length of diagonals of a rhombus is 9 cm and 12 cm. Find the distance between any two parallel side of the rhombus .....

- a) 7.2 cm                                  b) 8 cm                                  c) 7.5 cm                                  d) 6.9 cm

50) Form each corner of a square sheet of side 8 cm; a square of side y cm is cut. The remaining sheet is folded in to a cuboid. The minimum possible volume of a cuboid formed is M cubic cm. if y is an integer, then find M.

- a) 32                                      b) 18                                      c) 36                                      d) 12

### Science:

51) The frequency of a simple pendulum with amplitude .....

a) Increase                      b) Decreases                      c) Remains unchanged    d) None of these.

52) The frequency of a tuning fork when it is struck harder.....

a) Increase                      b) Decreases                      c) Remains Same            d) None of these.

53) If a small quantity of wax is added to one of the prongs, of tuning fork the frequency is .....

a) Increase slightly            b) Decreases slightly        c) Remains same            d) None of these.

54) The frequency of a simple pendulum when its length is increased .....

a) Increase                      b) Decreases                      c) Does not change        d) None of these.

55) When a body is set into vibration and then left to itself, the vibrations are called

a) Free vibrations              b) forced vibrations        c) damped vibrations      d) resonance.

56) The periodic vibrations of decreasing amplitude are

a) Natural Vibrations        b) forced vibrations        c) damped vibrations      d) resonance.

57) If we strike a tuning fork and then press its stem against the top of a table, the sound becomes louder because .....

a) Forced vibrations of the table                      b) natural vibrations of the table  
c) natural vibrations of the tuning fork              d) None of these

58) When a body executes vibrations under the action of an external periodic force, then the vibrations of the body are called

a) Natural Vibrations        b) forced vibrations        c) damped vibrations      d) resonance.

59) Sound waves belong to ..... ?

a) Electromagnetic waves    b) Electric waves            c) Radio waves              d) Mechanical.

60) The phenomenon in which if one of the two bodies of the same natural frequency is set into vibrations, the other body also vibrates under the influence of the first body is .....

a) Natural Vibrations        b) forced vibrations        c) damped vibrations      d) resonance.

61) If two persons speak on the moon they

a) Can listen slower than on the earth              b) can listen as it is on the earth  
c) Can listen quicker than on the earth              d) they can't listen

62) The frequency of a tuning fork when its prongs are filled

a) Increase                      b) Decreases                      c) Remains same            d) first increased then decreased

- 63) The amplitude of forced vibration
- a) Remains same      b) Increase      c) Decreases      d) either increased or decreased
- 64) When a vibrating tuning fork is brought to a tuning fork at rest then it also vibrates; this is due to
- a) Reflection      b) repulsion      c) attraction      d) resonance
- 65) The wave's originating in a source and travelling forward in a medium is called
- a) Progressive waves      b) stationary waves      c) electromagnetic waves      d) electric waves
- 66) Helio – centric theory was proposed by
- a) Ptolemy      b) Copernicus      c) Newton      d) Kepler
- 67) Geo- centric theory was proposed by;
- a) Ptolemy      b) Brahe      c) Kepler      d) Copernicus
- 68) The scientist who supported heliocentric theory
- a) Ptolemy      b) Newton      c) Tycho Brahe      d) Copernicus
- 69) The planet revolve round the sun in elliptical orbits was proposed by
- a) Ptolemy      b) Kepler      c) Tycho Brahe      d) Copernicus
- 70) Copernican theory was developed by Kepler and introduced that planets revolve round the sun in ..... orbits
- a) Circular      b) Elliptical      c) Conical      d) None
- 71) ..... Data on planetary motion was analyzed and introduced Kepler's law of motion
- a) Ptolemy      b) Copernicus      c) Tycho Brahe      d) Newton
- 72) What happens when Pith ball and a stone were dropped simultaneously from the same height?
- a) Pith ball reaches the ground first      b) stone reaches the ground first
- c) Pith ball does not reach the ground      d) both reach the ground at a time
- 73) Who made an experiment from the leaning tower of Pisa that a feather and a metal coin dropped simultaneously from the same height would reach the ground at the same time?
- a) Newton      b) Galileo      c) Kepler      d) Ptolemy
- 74) According to this law the velocity of the planet increases when it reaches close to the sun
- a) Kepler's orbital law      b) Kepler's law of areas      c) Kepler's law of period of revolution      d) None

- 75) The gravitational force between two objects of 10 kg and 2 kg separated by a distance of 1m is .....
- a)  $1.334 \times 10^{-11}\text{N}$       b)  $1.334 \times 10^{-9}\text{N}$       c)  $1.334 \times 10^{-13}\text{N}$       d)  $133.4 \times 10^{-14}\text{N}$
- 76) If the distance between two objects is halved, then the gravitational force between them is.....
- a) Doubled      b) Halved      c) 4 times increases      d) 4 times decreases
- 77) If the distance between two objects is doubled then the gravitational force between them is .....
- a) Doubled      b) Halved      c) 4 times increases      d) Decreases to  $\frac{1}{4}$ th
- 78) What is the gravitational force on stone of mass 10 kg?
- a) 98N      b) 9.8N      c) 0.98N      d) 0.098N
- 79) The moon makes one revolution about the earth in:
- a) 1 year      b) 1 month      c) 2 hrs      d) 27.3 days
- 80) The distance of the moon from the earth is about
- a) 6400km      b)  $3.85 \times 10^5\text{km}$       c)  $6.67 \times 10^{11}\text{km}$       d)  $3.85 \times 10^5\text{m}$
- 81) The moon is directed towards the earth with acceleration:
- a)  $1.67 \text{ ms}^{-2}$       b)  $9.8 \text{ ms}^{-2}$       c)  $27.4 \text{ ms}^{-2}$       d)  $0.0027 \text{ ms}^{-2}$
- 82) The weight of a body is measured by using the:
- a) Archimedes principle      b) Laws of flotation      c) Hooke's law      d) Universal gravitational law
- 83) Spring balance works on the:
- a) Archimedes principle      b) Laws of flotation      c) Hooke's law      d) Universal gravitational law
- 84) Variation of 'g' value is due to:
- a) Altitude      b) depth      c) local condition      d) All
- 85) Which of the following principle is not true?
- a) Ptolemy      b) Cope      c) Kepler      d) Newton's universal law of attraction
- 86) According to Kepler the revolution of the planet around the sun in one time;
- a) Is same for all planet      b) depends on the size of the planet
- c) depends on the distance between sun and the planet      d) depends on the speed about its own axis
- 87) The universal law of gravitation.....

- a) Depends on the size of the planet                      b) depends on the distance between the sun and the planet
- c) Depends on the speed about its own axis                      d) is applicable in the universe
- 88) The weight of 400 gram stone is ...
- a) 0.041N                      b) 0.4N                      c) 3.9N                      d) 3920N
- 89) According to Kepler the speed of the planet when it is close to the sun is....
- a) Maximum                      b) Minimum                      c) Zero                      d) Same
- 90) The origin of the universal law of gravitation is .....
- a) Kepler's Law                      b) Newton's Law                      c) Hooke's law                      d) None
- 91) The distance between the sun and the planet is 4 times that the distance between sun and the earth. What is the revolution of the planet about the sun? (The revolution of the earth about the sun is 1 year)
- a) 2 years                      b) 4 years                      c) 8 years                      d) 16 years
- 92) Artificial satellite Apple is 3600 km away from the equator and rotates in circular path. What is the no. of rotations made by it in seven days?
- a) 1                      b) 7                      c) 49                      d) 14
- 93) At what height above the earth's surface a person's weight will be 20 kg? The actual weight of the person is 80 kg. (Radius of the earth is  $R = 6400$  km)
- a) 6400km                      b) 3200 km                      c) 12,800 km                      d) 3600km
- 94) At what depth below the earth's surface a person's weight will be half of his actual weight on the surface of the earth |
- (Radius of the earth  $R = 6400$  km)
- a) 6400km                      b) 3200 km                      c) 12,800 km                      d) 3600km
- 95) What will be the gravitational force on the surface of the planet whose mass and radius are double to that of the earth?
- a)  $9.8\text{m/sec}^2$                       b)  $19.6\text{m/sec}^2$                       c)  $1.45\text{m/sec}^2$                       d)  $4.9\text{m/sec}^2$
- 96) The acceleration due to gravity on a planet whose mass and radius are half that of the earth
- a)  $9.8\text{m/sec}^2$                       b)  $4.9\text{ m/sec}^2$                       c)  $19.6\text{ m/sec}^2$                       d)  $2.45\text{ m/sec}^2$
- 97) Weight of an object at poles
- a) Not changes                      b) increases                      c) decreases                      d) becomes zero



98) At present the following theory is no more accepted:

- a) Ptolemy theory
- b) Copernicus theory
- c) Kepler's law of motion of planets
- d) Newton's universal gravitational law

99) A particle of mass 100g moves at a speed of 1m/sec. Its kinetic energy is

- a) 50J
- b) 5J
- c) 0.5J
- d) 0.05J

100) A ball is thrown upward from a point A. It reaches up to the highest point B and returns.

- a) Kinetic energy at A = Kinetic energy at B
- b) Potential energy at A = potential energy at B
- c) Potential energy at B = Kinetic energy at B
- d) Potential energy at B = Kinetic energy at A