A.P.J Abdul Kalam Welfare Society

All India Bright Student Award Test 2016

Class :X Time:11 am to 1 p.m.

Mathematics

1) A box contains 4 red, 6 green and 8 black balls. Three balls are drawn from the box at random find the probability that the three balls are different colours ?
   a) 55/84 b) 4/17 c) 5/84 d) 84.
2) A bag contains 26 tickets marked with numbers 1 to 26. One ticket is drawn at random. Find the probability that will be multiple of 2 or 5 ?
   a) $\frac{8}{13}$ b) $\frac{10}{26}$ c) $\frac{15}{26}$ d) $\frac{5}{13}$
3) There are four hotels in a certain town. If 3 men check into hotels in a day, what is the probability that each check into different hotel ?
   a) $\frac{5}{8}$ b) $\frac{3}{5}$ c) $\frac{3}{8}$ d) $\frac{3}{4}$
4) What is the chance that a leap year should have 52 Sundays ?
   a) $\frac{1}{7}$ b) $\frac{5}{365}$ c) $\frac{3}{365}$ d) $\frac{2}{7}$
5) There are 17 balls , numbered from 1 to 17 in a bag. If a person selects one ball at random what is the probability that the number printed on the ball will be an even number greater than 9.
   a) $\frac{3}{17}$ b) $\frac{4}{17}$ c) $\frac{5}{17}$ d) $\frac{6}{17}$
6) The product of Ketan's age five years ago with his age 9 years later is 15. Find his present age ?
   a) 6 years b) -24 years c) 24 years d) -6 years
7) Find the two consecutive natural number whose squares have the sum of 365 ?
   a) 15, 16 b) 17, 16 c) 14, 15 d) 13, 14
8) A journey of 192 km from Pune to Mumbai takes 2 hours less by a fast train than by a slow train. If the average speed of slow train is 16 kmph less than that of the fast train find the average speed of each train ?
   a) 36 kmph, 48 kmph b) 24 kmph, 48 kmph c) 32 kmph, 48 kmph d) 28 kmph, 32 kmph
9) If 2x + 5 = 109 and 2x +5 = y + 12 then y-x= ?
   a) 7 b) 6 c) 5 d) 17
10) If the three points A (p, 2), B (-3, 4) and C (7, -1) are collinear, then the value of p is ……?
   a) 1 b) 2 c) 3 d) 7
11) $\sin^2 74^\circ + \sin^2 16^\circ$ = …….?
   a) 1 b) 2 c) 0 d) – 1
12) A person walking 2 mtrs towards a chimney in a plane, observes that the angle of elevation changes from 30° to 45°. The height of the chimney ……..?
   a) $\frac{20}{\sqrt{3}}$ m b) 20 ($\sqrt{3}$ - 1) m c) $\sqrt{3}$ + 1 mts d) 20

13) The angle of elevation of the top of a tower at a point 120 mts is to be raised when the elevation is to be 60^o at the same point.

a) $120\sqrt{3}$ m b) 120 m c) $120(\sqrt{3}-1)$ m d) $120(\sqrt{3}+1)$ m

14) In a cyclic quadrilateral ABCD, cos A + cos B + cos C + cos D =……..?

a) -1 b) 1 c) 2 d) 0

15) If ABCD is a parallelogram and if AB = 9 cm, BC = 6 cm, altitude on AB = 4 cm, then altitude on BC = ……

a) 6 cm b) 9 cm c) 10 cm d) 12 cm

16) The lengths of the corresponding medians of two similar triangles are 3 cm and 4 cm. Then the ratio of their corresponding areas is ……..?

a) 3 : 4 b) 9 : 16 c) $\sqrt{3}$: 2 d) 2 : $\sqrt{3}$

17) A man goes 150 m due to east and then 200 m due to north. How far is he from the starting point ?

a) 250 m b) 125 m c) 160 m d) None of these

18) A triangle and a parallelogram each have the same base of 40 sq. cm. Their heights are …..?

a) 8 cm, 4 cm b) 10 cm, 5 cm c) 18 cm, 14 cm d) 10 cm, 4 cm

19) The radii of two non intersecting circles are 4 cm and 2 cm. if the length of the direct common tangent is $2\sqrt{15}$ cms; then the distance between their centre's is (cms)

a) 8 b) 6 c) $4\sqrt{15}$ d) 3

20) ABCD is a quadrilateral. The sides AB, BC, CD, and DA touch the circle at P, Q, R, S respective, then AB + CD = …….?

a) AP + PB b) AS +SD c) AD + BC d) DR + CR

21) If $x + 2 = 3\cos\theta$, $y - 1 = 4\sin\theta$, then …….?

a) $16(x+2)^2 + 9(y-1)^2 = 25$ b) $16(x+2)^2 + 9(y-1)^2 = 144$

c) $9(x+2)^2 + 16(y-1)^2 = 144$ d) $16(x-2)^2 + 9(y+1)^2 = 25$

22) $\cos^2 0^o + \cos^2 60^o$ = ……. ?

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

23) If a cos A + b sin A = 1; a sin A – b cos A =1

a) $a^2 + b^2 = 2$ b) $a^2 + b^2 = 1$ c) $a^2 - b^2 = 1$ d) $a^2.b^2 = 0$

24) A kite is flying in the sky with a thread of 68 m and making an angle 'θ'. If $\tan\theta = \frac{15}{8}$ then find . The height of kite above the ground (mts)

a) 50 b) 60 c) 70 d) 80

25) The minutes hand of a clock is 3 cm. long. How far does its tip move in 20 minutes?

a) 9 cm. b) 10 cm. c) 22 cm. d) $\frac{44}{7}$ cm.

26) The A.M. of 10 consecutive numbers starting with x + 1 is ……

a) x + 55 b) 10 x + 55 c) 10x +5.5 d) x + 5.5

27) The roots of the equation : $x^2 - 5x + 6 = 0$ are

a) (3, 2) b) (-2, 3) c) (2, -3) d) None of these

28) The sum of two numbers is 8 and the sum of their suares is 34. Taking one number as x, form an equation in x and hence find the numbers. The numbers are:

a) (7, 10) b) (4, 4) c) (3, 5) d) (2, 6)

29) The points (8, 2), (5, -3) and (0, 0) are the vertices of triangle, which is :……..

a) right angled b) Isosceles c) equilateral d) None of these

30) If 27a = 81b; then a : b = ……...?

a) 1 : 3 b) 3 : 1 c) 1 : 2 d) 2 : 1

31) Sum of the multiples of 5 in between 107 and 253 is ……..?

a) 5220 b) 5200 c) 5210 d) 5240

32) G.M of two positive numbers is 6; and H.M is 2. So A.M of the two numbers is ……..?

a) 6 b) 2 c) 16 d) 8

33) Sum of the numbers between 50 and 350 having 1 in units place is ……..?

a) 5539 b) 5208 c) 5880 d) 4566

34) 13 and 12 are respectively the A.M and G.M. of two numbers. Then the numbers are ……?

a) 13, 12 b) 26, 14 c) 23, 27 d) 18, 8

35) Diagonal of a square is 12 cm, its area is …….. sq. cm.

a) 49 b) 36 c) 72 d) 62

36) If a ladder of 20 mts touches a window of a house, which is at a height of 16 mts, the distance from the bottom of the ladder and foot of a wall is ……..

a) 6 mts b) 12 mts c) 34 mts d) 64 mts

37) The area of a paralleogram is 60 sq.cm. Its base is 10 cm, then the corresponding height is ……

a) 6 cm b) 3 cm c) 9 cm d) 10 cm

38) The bisector of the vertical angle of a triangle divides the base…….?

a) equally b) bisects perpendicularly c) in the ratio of the other two side d) in the ratio of 2 : 1

39) Area of the triangle formed by joining the mid points of the sides with lengths 3 cm, 4 cm and 5 .. cms in (sq. centimeters) …….

a) 12 b) 9 c) 6 d) 1.5

40) The diameter of a circle is 4 cm. If a maximum possible biggest square is inscribed in it, then the . side of the square is (cms)…….

a) $2\sqrt{2}$ b) 2 c) 4 d) $4\sqrt{2}$

41) The height of and equilateral triangle is $\sqrt{3}$, the area of the triangle is ……

a) $\sqrt{3}$ b) 3 c) $3\sqrt{3}$ d) $2\sqrt{3}$

42) ABC is a triangle. AB = AC, D is any point on BC then $AB^2 - AD^2$ = …….. ,

a) BD . CD b) BC . AD c) AB . AC d) AD . BD

43) Which are the sides of right angled triangle …….?

a) 8, 15, 17 b) 6, 8, 12 c) 5, 8, 11 d) 3, 4, 6

44) The slope of a line perpendicular to the line 5x – 3y + 4 = 0 is ……..?

a) $\frac{3}{4}$ b) $\frac{1}{\sqrt{2}}$ c) $\frac{5}{4}$ d) $None\ of\ these$

45) The father of Coordinate Geometry is ……. ?

a) George Canter b) Carshe c) Lebntiz d) Renede Carte

46) In an A.P there are 60 terms. First term is 2 and last term is 179. So c.d is ……. ?

a) 2 b) 3 c) -2 d) – 3

47) Which of the following statements is false?

a) Equivalent sets have same cardinal numbers b) Equivalents sets contain same elements

c) Equivalents sets have on-to-one correspondence d) Equivalent sets and equal sets are not the same

48) In a group of 15 members 10 are good at mathematics and 8 are good at statistics. Then how many are …… good at both ?

a) 3 b) 5 c) 7 d) 17

49) If one root of $x^2 - 8x + k = 0$ is three times the other, then k =

a) 12 b) 8 c) -8 d) – 12

50) If the sum of the squares of roots of a quadratic equation is 5 and the product of the roots is 2 then the equation is { }

a) $x^2 - 3x + 2 = 0$ b) $x^2 - 3x - 2 = 0$ c) $x^2 + 3x - 2 = 0$ d) $x^2 + 3x + 5 = 0$

Science:

51) If NaOH is added to water at 25°C, the value of $[OH^-]$ is increased from 10^{-7} to 10^{-4}. Then the value of $[H^+]$, from 10^{-7} is ……..?

a) Increased to 10^{-10} b) Decreased to 10^{-10} c) Increased to 10^{-4} d) Decreased to 10^{-4}

52) pH scale is introduced by …….?

a) Lewis b) Arhenius c) Bronsted d) Sorensen

53) The product of concentration of H^+ and OH^- ions in a solution is called……..?

a) Product of solution of ions b) Ionization constant c) Equilibrium constant d) Ionic product of water

54) NH_3 is not an Arhenius base because ……

a) This is covalent substance b) It donot contain OH group
c) Its structure is pyramidal d) Its ionization is very less

55) These are formed when metallic oxides dissolve in water.

a) Acids b) Bases c) Salts d) Water

56) 4 grams of NaOH is dissolved in 36 grams of H_2O then weight percentage of solute is …….?

a) 1 b) 9 c) 0.1 d) 10

57) The Law of octaves was proposed by…….?

a) Dobereiner b) Newlands c) Mendeleef d) Mosley

58) Mendeleef's periodic table depends on …….?

a) Atomic size b) Atomic weight c) Atomc number d) none

59) Ionisation energy of nitrogen is higher than ionisation energy of oxygen. This is due to

a) Decrease in the atomic radius. b) Increase in the atomic radius
c) Stable electronconfiguration d) None of these.

60) The elements with atomic number 90 to 103 are called……?

a) Representative elements b) Alkali metals c) Actinides d) Alkali earth metals

61) Which of the following sets of elements is not of transition elements ?

a) Ti, Zr, Hf b) Fe, Co, Ni c) Cu, Ag, Au d) Ga, In, Tl

62) One of the following statements is Not TRUE. It is …….

a) As the atomic number increases, the size of the atom decrease.

b) As the atomic number increases, the nuclear charge also increases.

c) In a group, as we move from top to bottom; the size of the atom increases

d) In a period, as we move from right to left, the size of the atom decreases.

63) Which of the following element is highly electropositive ?

a) Li b) Be c) B d) C

64) Which of the following has the largest atomic size ?

a) F b) Cs c) Kr d) Xe

65) The formation of salt and water when an acid reacts with a base is …… ?

a) Chemical combination b) Chemical decomposition c) Chemical displacement d) Neutralization

66) The acid having less volatility is …… ?

a) H_2SO_4 b) HCl c) CH_3COOH d) None of these

67) Mention the formula of gas evolved when Na_2CO_3 salt reacts with HCl acid…..

a) H_2 b) O_2 c) CO d) CO_2

68) Which of the following substances does not completely ionise in water ?

a) NaOH b) H_2SO_4 c) HCl d) NH_4OH

69) Graphite is soft because, it……..?

a) It black b) having less density c) has sepration between layers of hexogonal rings d) is a crystalline solid.

70) An example for paramagnetism is …… ?

a) Air b) Water c) Nickel d) Bismuth

71) The neutral points on the equatorial line were found to be at 0.2 m. from the centre of a short-bar magent. The horizontal component of earths magnetic field induction is 0.39 x 10^{-4} Tesla. If $\mu_0 = 4\pi \times 10^{-7}$ Henry / m, the magnetic moment of the short-bar-magnet is …….. ?

a) 3.12 A-m b) 1.56 A-m^2 c) 3.12 A/m d) 3.12 A-m^2

72) The North pole of a short magnet of length 5 cm. is facing the geographical North. If the pole strength of the magnet is 3 x 10^{-2} ampere-meter; the magnetic moment will be

a) 3.0 x 10^{-2} A-m^2 b) 1.5 x 10^{-3} A-m^2 c) 6.0 x 10^{-2} A-m^2 d) 3 x 10^{-2} A-m^2

73) The shape of PH_3 molecule is ……..?

a) V – shape b) Linear c) Pyramidal d) Trigonal Bi-pyramidal

74) A satillite is revolving round a planet. Its time period does not depends on …….

a) mass of the planet b) radius of the planet c) mass of the satellite d) all

75) The chemical name of Soda water is ……..?

a) Sulphurus acid b) Carbonic acid c) Sulphuric acid
d) Phosphoric acid.

76) A body is projected vertically upward with a velocity 10 m/s. The travels to a maximum height is … (g= 10m/s^2).

a) 20 m b) 15 m c) 10 m d) 5 m

77) Time taken by a particle in a circular motion to complete one revolution is ……. ?

a) Time period b) Centripetal acceleration c) Centripetal force d) Centrifugal force

78) The first and second resonces occur with the air columns 10 cms and 50 cms respectively. The frequency of the tuning fork is 412 Hz. The velocity of sound in air is ……. ?

a) 164.8 m/s b) 329.6 m/s c) 659.2 m/s d) 494.4 m/s

79) Bending of wave from the original direction of propogation on meeting a small obstacle is ……. ?

a) Interference b) Reflection c) Diffraction d) Refraction.

80) To find the frequency of tuning fork is …… ?

a) Disc siren b) Seismograph c) SONAR d) None of these

81) Chemial Formula of Chrome Alum ……..?

a) $K_2S0_4, Al_2(SO_4)_6 24H_2O$ b) $K_2S0_4, Al_2(SO_4)_4 24H_2O$
c) $K_2S0_4, Al_2(SO_4)_2 24H_2O$ d) $K_2S0_4, Al_2(SO_4)_3 24H_2O$

82) A heater of resistance 23Ω is connected to mains of 230V. What is the strength of current in heater?

a) 23 Amp. b) 0.23 Amp. c) 10 Amp. d) 0.10 Amp.

83) The work done in-moving 0.1coulomb of charge to a point is 1 Joule. What is the electric potential of that point ?

a) 10 volts b) 0.10 Volts c) 100 volts d) 1 volts.

84) An electric motor has a frequency of 25Hz. What is its revolutions per minute ?

a) 150 b) 1500 c) 15 d) 15000

85) The minimum and maximum resistance that can be obtained with resistances 2Ω and 4Ω is …..?

a) 1.33Ω, 6Ω b) 6 Ω, 1.33 Ω c) 3 Ω, 6 Ω d) 2 Ω, 4 Ω

86) A transformer converts 100 V of A.C INTO 1000V. The number of turns in secondary, if the number of turns on primary is 100.

a) 10 b) 100 c) 1000 d) 10000.

87) How much heat is absorbed when 10 g of ice at 0^oC is completely converted to water at 0^oC ?

a) 330 J b) 3360 J c) 3660 J d) none of these

88) According to Newton, different colours of light are due to the differnce in _____ of the corpuscles.

a) mass b) nature c) shape d) size

89) One kilowatt is equal to _____ horse power.

a) 1.34 b) 1.32 c) 1.28 d) 1.38

90) The free electron density is more in ……..?

a) conductors b) insulators c) semi conductors d) electrolytes

91) A transformer

a) converts AC to DC b) converts DC to AC

c) increases or decreases (step up or, step down) AC voltage

d) increases or decreases (step up or, step down) DC voltage

92) Heat gained by 1 g of water when heated from 0^oC is (Hint : used $H = m s\Delta\theta$)

a) 4200 cal b) 4.2 cal c) 100 cal d) 1 cal

93) Snow balls are formed due to …… ?

a) melting of ice b) freezing of atmospheric moisture c) regelation d) sublimation

94) Sea water and river water are heated to their boiling points. Then ……..?

a) river water boils at lower temperature . b) sea water boils at lower temperature.

c) both boil at the same temperature. d) cannot be said

95) If water is converted into ice and maintained at 0^oC, which of the following statements is true for the molecules of the substance ?

a) Only kinetic energy decreases b) Only potential energy decreases

c) Both the energies increase d) Potential energy increases and kinetic energy decreases

96) Two bodies of masses 50 g and 100 g are taken if their water equivalents are 10 g and 20 g respectively. Then the value of their specific heat capacities are _____ cal g^{-1} $^oC^{-1}$ and ___calg^{-1} $^oc^{-1}$

a) $\frac{1}{5}$ and $\frac{1}{5}$ b) $\frac{1}{3}$ and $\frac{1}{3}$ c) $\frac{11}{5}$ and $\frac{11}{5}$ d) $\frac{1}{2}$ and $\frac{1}{2}$

97) The process in which the electrons in the excited atoms are released on their own from their higher energy stat to the ground state is called ……?

a) forced emission b) population inversion c) spontaneous emission d) None of these.

98) The apparent vertical shift of the image of a coin placed at the bottom of a water tank having constant depth of water is proportional to …….

a) μ b) $\frac{1}{\mu}$ c) $\mu - 1$ d) $\mu + 1$

99) According to Newton, different colours of light are due to difference in……. of the corpuscles.

a) mass b) nature c) shape d) None of these

100) In a parallel circuit of bulbs,

a) same current exists in all the bulbs b) voltage across each bulb remains the same

c) failure of any bulb leads to a break in the circuit d) All the above

All The Best

If Any Mistake is their just mail: apjedu2001@gmail.com