Time Allowed : 180 mins   **CLASS : X**   **Maximum Marks :** 120

Section A - MATHEMATICS

1 The largest number which divides 245 and 1029 leaving remainder 5 in each case is **[1]**
a) 8   b) 12   c) 4   d) 16

2 The total number of factors of a prime number is: **[1]**

a) 2   b) 1   c) 3   d) 0

3 If 9^{x+2} = 240 + 9^x , then the value of x is **[1]**

a) 0.5   b) 0.1   c) 0.3   d) 0.2

4 HCF of 144 and 198 is: **[1]**

a) 18   b) 12   c) 9   d) 6

5 120 can be expressed as a product of its prime factors as: **[1]**

a) 15×2^3 b) $5 \times 2^3 \times 3$ c) $5 \times 8 \times 3$ d) $10 \times 22 \times 3$

6 The product of a rational number and an irrational number is **[1]**

a) both rational and irrational number   b) none of these

c) an irrational number only   d) a rational number only

7 The number $\frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}-\sqrt{2}}$ is **[1]**

a) an irrational number   b) an integer

c) not a real number   d) a rational number

8 If one zero of the polynomial f(x) = $(k^2 + 4)x^2 + 13x + 4k$ is reciprocal of the other, **[1]** then k=

a) 1   b) − 1   c) 2   d) - 2

9 The sum and the product of the zeros of a quadratic polynomial are 3 and - 10 **[1]** respectively. The quadratic polynomial is

a) $x^2 - 3x + 10$ b) $x^2 - 3x - 10$ c) $x^2 + 3x - 10$ d) $x^2 + 3x + 10$

10 Which of the following is a true statement? **[1]**

a) $5x^3$ is a monomial   b) $x^2 + 5x - 3$ is a linear polynomial

c) x + 1 is a monomial   d) $x^2 + 4x - 1$ is a binomial

11 If the sum of the zeros of the quadratic polynomial for $kx^2 + 2x + 3k$ is equal to the **[1]** product of its zeros then k = ?

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

12 A polynomial of degree n has **[1]**

a) one zero   b) n zeroes   c) at most n zeroes   d) at least n zeroes

13 If one zero of the quadratic polynomial $x^2 + 3x + k$ is 2, then the value of 'k' is **[1]**

a) -10 b) -5 c) 10   d) 5

14 If the sum and product of the roots of the equation $kx^2+6x+4k=0$ are equal then k=   **[1]**

a) $-\dfrac{3}{2}$ b) $\dfrac{3}{2}$ c) $\dfrac{2}{3}$ d) $-\dfrac{2}{3}$

15 The value of aso that the point (3, a) lies on the line represented by $2x - 3y = 5$ is   **[1]**

a) $\dfrac{1}{3}$ b) -1 c) 1   d) $\dfrac{-1}{3}$

16 5 years hence, the age of a man shall be 3 times the age of his son while 5 years earlier the age of the man was 7 times the age of his son. The present age of the man is   **[1]**

a) 50 years   b) 45 years   c) 47 years   d) 40 years

17 If the sum of the roots of the equation $x^2 - x = a(2x - 1)$is zero then a =   **[1]**

a) -2 b) 2   c) $-\dfrac{1}{2}$ d) $\dfrac{1}{2}$

18 The system of equations $x - 4y = 8$, $3x - 12y = 24$ **[1]**

a) has infinitely many solutions   b) may or may not have a solution

c) has no solution   d) has a unique solution

19 Graphically, the pair of equations $6x - 3y + 10 = 0$, $2x - y + 9 = 0$ represents two lines which are   **[1]**

a) parallel   b) Intersect at two points   c) coincident   d) intersect at a point

20 If $2x - 3y = 7$ and $(a + b)x - (a + b - 3)y = 4a + b$ represent coincident lines, then a and b satisfy the equation   **[1]**

a) $a - 5b = 0$ b) $5a - b = 0$ c) $a + 5b = 0$ d) $5a + b = 0$

21 In$\triangle$ ABC, if $\angle C = 3\angle B = 2(\angle A + \angle B)$, then $\angle C =$ **[1]**

a) 90° b) 150° c) 120° d) 60°

22 The lines represented by $3x + y - 12 = 0$ and $x - 3y + 6 = 0$ intersects the x − axis at   **[1]**

a) $(-6, 0)$ and $(4, 0)$ b) $(-6, 0)$ and $(-4, 0)$

c) $(6, 0)$ and $(-4, 0)$ d) $(6, 0)$ and $(4, 0)$

23 The graphs of the equations $2x + 3y - 2 = 0$ and $x - 2y - 8 = 0$ are two lines which are   **[1]**

a) perpendicular to each other   b) parallel

c) intersecting exactly at one point   d) coincident

24 The graphs of the equations $5x - 15y = 8$ and $3x - 9y = \dfrac{24}{5}$ are two lines which are   **[1]**

a) intersecting exactly at one point   b) coincident

c) perpendicular to each other   d) parallel

25 The lines represented by $3x + y - 12 = 0$ and $x - 3y + 6 = 0$ intersects the y − axis at   **[1]**

a) $(0, -2)$ and $(0, 12)$ b) $(0, 2)$ and $(0, -12)$

c) $(0, -2)$ and $(0, -12)$ d) $(0, 2)$ and $(0, 12)$

26 For what value of k, do the equations $kx - 2y = 3$ and $3x + y = 5$ represent two lines   **[1]**

intersecting at a unique point?

a) all real values except - 6   b) k = 3   c) k = 6   d) k = - 3

27 The area of the triangle formed by the lines $2x + 3y = 12$, $x - y = 1$ and $x = 0$ is   **[1]**

a) 6.5 sq. units   b) 7 sq. units   c) 7.5 sq. units   d) 6 sq. units

28 If a pair of linear equation is consistent, then the lines will be   **[1]**

a) always intersecting   b) intersecting or coincident

c) always coincident   d) parallel

29 A rectangular field is 16m long and 10m wide. There is a path of uniform width all   **[1]**
around it having an area of 120 sq.m, then the width of the path is

a) 5 m   b) 3 m   c) 2m   d) 4 m

30 If x=1 is a common root of the equations $ax^2 + ax + 3 = 0$ and $x^2 + x + b = 0$, then ab =   **[1]**

a) 3   b) 3.5   c) 6   d) -3

31 In the equation $ax^2 + bx + c = 0$, it is given that $D = (b^2 - 4ac)$. Then, the roots of the   **[1]**
equation are

a) imaginary   b) real and equal   c) real and unequal   d) none of these

32 If 2 is a root of the equation $x^2 + ax + 12 = 0$ and the quadratic equation $x^2 +$ **[1]**
$ax + q = 0$ has equal roots, then q =

a) 20   b) 16   c) 12   d) 8

33 $(x + 1)^2 - x^2 = 0$ has   **[1]**

a) no real roots   b) 1 real root   c) 2 real roots   d) 4 real roots

34 Which of the following is not a quadratic equation?   **[1]**

a) $x = x^2 + 3 + 4x^2$ b) $2(x - 1)^2 = 4x^2 - 2x + 1$

c) $\left(\sqrt{2}x + \sqrt{3}\right)^2 + x^2 = 3x^2 - 5x$ d) $2x - x^2 = x^2 + 5$

35 A two - digit number is such that the product of the digits is 20. When 9 is added to   **[1]**
the number then the digits interchange their places. The number is

a) 45   b) 54   c) 50   d)None of these

36 The number of quadratic equations having real roots and which do not change by   **[1]**
squaring their roots is

a) 3   b) 1   c) 4   d) 2

37 The roots of the quadratic equation $x^2 - 11x - 10 = 0$ are   **[1]**

a) None of these   b) not real roots   c) real and equal   d) real and distinct

38 The perimeter of a rectangle is 82 m and its area is 400 m^2 . The breadth of the   **[1]**
rectangle is

a) 25 m   b) 9 m   c) 16 m   d) 20 m

39 $2x^2 + 5\sqrt{3}x + 6 = 0$ have   **[1]**

a) Real and equal root   b) Real roots   c) No Real roots   d) Real and Distinct roots

40 The roots of the quadratic equation $2x^2 - x - 6 = 0$ are   **[1]**

a) $2, \frac{-3}{2}$ b) $2, \frac{3}{2}$ c) $-2, \frac{-3}{2}$ d) $-2, \frac{3}{2}$

Section – B : Science

41 What happens when silver chloride is placed in sunlight?   **[1]**

a) Silver chloride turns black   b) Silver chloride turns grey

c) Silver chloride turns blue   d) Silver chloride show no change

42 What happens when dilute HCl is added to iron fillings?.   **[1]**

a) Hydrogen gas and iron chloride are produced b) Iron salt and water are produced

c) No reaction takes place   d) chlorine gas and iron hydroxide are produced

43 What is the nature of the new product which is formed by the action of water on quick lime?   **[1]**

a) Amphoteric   b) Acidic   c) Neutral   d) Basic

44 On the basis of evolution or absorption of heat, chemical reactions can be divided in how many types ?   **[1]**

a) One   b) Two   c) Three   d) Four

45 Which one of the following types of medicines is used for treating indigestion?   **[1]**

a) Antacid   b) Antiseptic   c) Antibiotics   d) Analgesic

46 If the pH of a solution is 13, it means that it is   **[1]**

a) Weakly acidic   b) Strongly Basic   c) Strongly acidic   d) Weakly basic

47 Litmus is an example of   **[1]**

a) olfactory indicator   b) artificial indicator c) natural indicator d) self indicator

48 Baking soda is a   **[1]**

a) mild non - corrosive base   b) strong corrosive base

c) mild corrosive base   d) mild non - corrosive acid

49 Bleaching powder is produced by the action of chlorine on   **[1]**

a) calcium chloride   b) calcium hydroxide c) dry slaked lime   d) moist slaked lime

50 When a student added zinc granules to dilute HCl, a colourless and odourless gas was evolved, which was tested with a burning matchstick, it was observed that   **[1]**

a) The matchstick continued to burn brilliantly.

b) The matchstick extinguished and the gas burnt with pop sound.

c) The matchstick burnt slowly with a blue flame.

d) The matchstick extinguished and the gas burnt with no sound.

51 pH (power of Hydrogen) value of black coffee is: **[1]**

a) 5   b) 3   c) 7   d) 8

52 Acetic acid was added to a solid X kept in a test tube. A colourless, odourless gas Y was evolved. The gas was passed through lime water, which turned milky. It was concluded that   **[1]**

a) X is sodium bicarbonate and Y is SO_2 b) X is sodium bicarbonate and Y is CO_2

c) X is sodium acetate and Y is CO_2 d) X is sodium hydroxide and Y is CO_2

53 Which of the following salts contains water of crystallization?   **[1]**

    A. Gypsum   B. Green vitriol   C. Blue vitriol   D. washing soda

    a) C and D   b) A, B, C and D   c) A and B   d) B and D

54 Oxygen liberated during photosynthesis comes from   **[1]**

    a) Carbon dioxide   b) Water   c) Glucose   d) Chlorophyll

55 Which is the first step of photosynthesis?   **[1]**

    a) Formation of ATP   b) Excitation of electron of chlorophyll

    c) Ionization of water   d) Attachment of CO_2 to 5 - carbon sugar

56 Name the blood vessel which carries deoxygenated blood from the heart to the lungs.   **[1]**

    a) Capillaries   b) Pulmonary vein   c) Pulmonary artery   d) Aorta

57 Which of the following equations is the summary of photosynthesis?   **[1]**

    a) $6CO_2 + 12H_2O + Chlorophyll + Sunlight \rightarrow C_6H_{12}O_6 + 6O_2 + 6H_2O$

    b) $6CO_2 + 12H_2O + Chlorophyll + Sunlight \rightarrow C_6H_{12}O_6 + 6CO_2 + 6H_2O$

    c) $6CO_2 + 12H_2O \rightarrow C_6H_{12}O_6 + 6O_2 + 6H_2O$

    d) $6CO_2 + H_2O + Sunlight \rightarrow C_6H_{12}O_6 + O_2 + 6H_2O$

58 Choose the correct path of urine in our body   **[1]**

    a) Kidney$\rightarrow$ Ureter $\rightarrow$ Urethra $\rightarrow$ Urinary bladder

    b) Urinary bladder$\rightarrow$ Kidney $\rightarrow$ Ureter $\rightarrow$ Urethra

    c) kidney$\rightarrow$ Urinary bladder $\rightarrow$ Urethra $\rightarrow$ Ureter

    d) Kidney$\rightarrow$ Ureters $\rightarrow$ Urinary bladder $\rightarrow$ Urethra

59 A black strip of paper was clipped onto a destarched leaf in a potted plant to cover a   **[1]**
    part of the leaf. The plant was then exposed to sunlight for four hours, the paper strip
    was removed and the leaf was tested for starch. When iodine solution was added:

    a) The entire leaf turned blue - black.

    b) The uncovered part of the leaf became blue - black.

    c) The colour of the iodine solution remain unchanged.

    d) The covered part of the leaf became blue - black.

60 In the experiment to prove that light is necessary for photosynthesis, which one of   **[1]**
    the following is not required?

    a) Water   b) KOH   c) Iodine   d) Alcohol

61 When iodine was added to a particular vegetable that had been crushed into a paste,   **[1]**
    blue - black colour was obtained. This indicates the presence of

    a) protein   b) glucose   c) starch   d) sugar

62 The kidneys in human beings are a part of the system for   **[1]**

a) respiration   b) excretion   c) nutrition   d) transportation

63 In the experiment to demonstrate that CO_2 is given out during respiration, what would you observe in the delivery tube dipped in water?   **[1]**

a) Water level rises in the delivery tube.

b) Water turns milky and rises in the delivery tube.

c) Water turns milky but does not rise in the delivery tube.

d) Water level in the delivery tube remains unchanged.

64 Name a plant that does not have a transport system.   **[1]**

a) Banana tree   b) Mango tree   c) Chlamydomonas   d) Banyan tree

65 Where are proteins first digested in the alimentary canal?   **[1]**

a) Oesophagus   b) Small intestine   c) Stomach   d) Mouth

66 During deficiency of oxygen in tissues of human beings, pyruvic acid is converted into lactic acid in the   **[1]**

a) Golgi body   b) Mitochondria   c) Chloroplast   d) Cytoplasm

67 During respiration exchange of gases take place in   **[1]**

a) alveoli of lungs   b) throat and larynx

c) alveoli and throat   d) trachea and larynx

68 The refractive indices of four media A, B, C, and D are 1.44, 1.52, 1.65, and 1.36 respectively. When light travelling in air is incident in these media at equal angles, the angle of refraction will be the minimum: **[1]**

a) in medium B   b) in medium C   c) in medium A   d) in medium D

69 The lateral displacement of an incident ray passing out of a rectangular glass slab   **[1]**

a) independent of the thickness of the glass slab.

b) inversely proportional to the thickness of the glass slab.

c) is directly proportional to the thickness of the glass slab.   d) None of these

70 Which of the following diagrams give a correct picture?   **[1]**

a)   b)   c)   d)
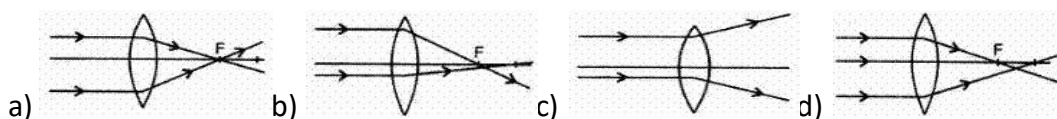
71 A sharp image of a distant object is obtained on a screen by using a convex lens. In order to determine the focal length of the lens, you need to measure the distance between the   **[1]**

a) lens and the object b) object and the screen c) lens and the screen d) None of these

72 You are given water, mustard oil, glycerine and kerosene. In which of these media a ray of light incident obliquely at same angle would bend the most?   **[1]**

a) Glycerine   b) Kerosene   c) Water   d) Mustard oil

73 Which of the following lenses would you prefer to use while reading small letters found in a dictionary?   **[1]**

a) A convex lens of focal length 50 cm   b) A convex lens of focal length 5 cm

c) A concave lens of focal length 50 cm   d) A concave lens of focal length 5 cm

74   A 10 mm long awl pin is placed vertically in front of a concave mirror. A 5 mm long **[1]**
     image of the awl pin is formed at 30 cm in front of the mirror. The focal length of this
     mirror is

     a) - 20 cm   b) - 40 cm   c) - 30 cm   d) - 60 cm

75   The image formed by a concave mirror is observed to be virtual, erect and larger than **[1]**
     the object. Where should be the position of the object?

     a) Between the principal focus and the centre of curvature

     b) Beyond the centre of curvature   c) At the centre of curvature

     d) Between the pole of the mirror and its principal focus.

76   With an increase in the thickness glass slab the lateral displacement: **[1]**

     a) remains same   b) increases   c) decreases   d) zero

77   The angle between an incident ray and the plane mirror is 30°. The total angle **[1]**
     between the incident ray and reflected ray will be:

     a) 120°   b) 90°   c) 60°   d) 30°

78   In torches, search lights and head lights of vehicles, the bulb is placed :   **[1]**

     a) At the centre of curvature   b) Very near to the focus

     c) Between the pole and the focus   d) Between the focus and the centre of curvature

79   The refractive indexes of four substances P, Q, R, and S are 1.77, 1.50, 2.42, and 1.31 **[1]**
     respectively. When light travelling in air is incident on these substances at equal
     angles, the angle of refraction will be the maximum in:

     a) substance S   b) substance P   c) substance Q   d) substance R

80   A convex lens has a focal length of 40 cm. Calculate its power.   **[1]**

     a) 2.5 D   b) 3.5 D   c) 6.6 D   d) 4.5 D

Section – C : Social Science

81   Which among the following are the three lists in Constitution?   **[1]**
     a) Concurrent   List   b) State List   c) UnionList   d) All of these
82   Which of the following is an example of holding together federation?   **[1]**

     a) Both Spain and India   b) Australia   c) India   d) Spain

83   Choose the right statement as to when the major national parties had to enter into an
     alliance with many parties including several regional parties to form a government at the
     Centre?   **[1]**

     a) no party is allowed without having a coalition.

     b) when there no single party get a clear majority in the RajyaSabha.

     c) when there no single party get a clear majority in the LokSabha   d)None of these

84   _____ is an example for coming together federation   **[1]**

     a) Australia   b) China   c) Japan   d) North Korea

85   Rural local government is popularly known by the name of: **[1]**

     a) national level   b) state level   c) panchayati raj   d) block level

86 The Parliament cannot on its own change the sharing of power between the Union Government and the State government's arrangement because: **[1]**

a) this arrangement is basic to the structure of the Constitution

b) only the President is entitled with such powers

c) the states do not agree for the same

d) there is no provision in the constitution to do so

87 Which of the following activity is not from the tertiary sector?**[1]**

a) Fishing   b) Banking   c) Transportation   d) Communication

88 Which of these is a feature of the organised sector?   **[1]**

a) Job insecurity   b) No provision for paid leave

c) Jobs are low paid and often not regular d) Fixed no of working hours

89 Which of the given activity is not from the secondary sector?   **[1]**

a) Making sugar from sugarcane   b) Cloth weaving c) Animal husbandry d) Construction

90 Why the tertiary sector has become so important in India?   **[1]**

a) Increase in requirement of basic services   b) Increase in population

c) Increase in unemployment   d) Expansion of banking sector

91 Which of these is a primary sector activity?   **[1]**

a) Construction   b) Fishing   c) Tourism   d) Communication

92 Which of these sectors are classified on the basis of the term of employment?   [1]

a) Organized and unorganized sectors   b) Primary and tertiary sectors

c) Primary and secondary sectors   d) Public and private sectors

93 What territories did the Habsburg Empire rule over?   [1]

a) Hungary   b) Austria   c) Both Austria and Hungary   d) Romania

94 The print of **The Dream of Worldwide Democratic and Social Republics** was prepared by whom?   [1]

a) FrédéricSorrieu b) Pablo Picasso c) Giuseppe Mazzini d) Leonardo da Vinci

95 In revolutionary France, who were granted exclusive rights to vote?   [1]

a) All men b) Property - owning men c) All women d) Property - owning women

96 What major issue was criticised by the liberal nationalists?   [1]

a) Efficient bureaucracy   b) Censorship laws to control the press

c) A modern arm   d) Preservation of the Church

97 A large part of the Balkans was under the control of which Empire?   [1]

a) Ottoman   b) Russian   c) Dutch   d) Portuguese

98 Who was admitted only as observers to stand in the visitors' gallery when the Frankfurt parliament convened in the Church of St Paul?   [1]

a) Minorities   b) Women   c) Men   d) Children

99 Give one word for: A direct vote by which all the people of a region are asked to accept or reject a proposal.   [1]

a) Plebiscite   b) Absolutist   c) Socialist   d) Veto

100 When and who prepared a series of four prints visualising a world of **democratic and social Republics** ?   [1]

a) 1804, Napoleon   b) 1815, Duke Metternich

c) 1848, Frederic Sorrieu   d) None of these

101 Unclassed forests in the northeast and Gujarat are managed by: [1]

a) Both Forest department and private individuals   b) Private individuals

c) Local communities   d) Forest department

102 Which one of the following is not a major product directly obtained from the forests? [1

a) Timber wood and barks   b) Firewood   c) Fodder   d) Medicines

103 Which of the following states has the largest area under permanent forests?   [1]

a) Madhya Pradesh   b) West Bengal   c) Manipur   d) Assam

104 The Chipko Movement was associated with _____.   [1]

a) Forest conservation b) Woman rights c) Political rights d) Rights of adivasis

105 Where is the Buxa Tiger Reserve located?   [1]

a) West Bengal   b) Maharashtra   c) Madhya Pradesh   d) Punjab

106 Which of the following states have a very high percentage of their forests as unclassed forests managed by local communities?   [1]

a) All Western states and parts of Gujarat.

b) All Central states and parts of Gujarat.

c) All North - Eastern states and parts of West Bengal.

d) All Northern - Eastern states and parts of Gujarat.

107 What is the Narmada Sagar project of Madhya Pradesh related to?   [1]

a) Protecting forests   b) Plantation project   c) Clearing of forests d) None of these

108 Which one of the following States has the largest area under permanent forest?   [1]

a) Jammu & Kashmir   b) Madhya Pradesh   c) Punjab   d) Uttar Pradesh

109 Which one of the following was launched in 1973?   [1]

a) Indian Wildlife Act b) Indian Wildlife Protection Act c) Wildlife Act d) Project Tiger

110 Which of the following are regarded as the most valuable forest?   [1]

a) Open forest b) Unclassed forest c) Protected forest   d) Reserved forest

111 Today, in western Rajasthan, sadly the practice of rooftop rainwater harvesting is on the decline as plenty of water is available due   [1]

a) rivers   b) dams construction

c) to the perennial Rajasthan Canal   d) to the tap connections

112 From the 20 houses, in Gendathur village net amount of rainwater harvested annually amounts to _____.   [1]

a) 6,00,000 litres   b) 4,00,000 litres   c) 2,00,000 litres   d) 1,00,000 litres

113 Water scarcity in most cases is caused by: [1]

a) high population   b) low population   c) over - exploitation   d) low rainfall

114 Which one of the following statements is not an argument in favour of multipurpose river projects?   [1]

a) Multi - purpose projects by regulating water flow helps to control floods

b) Multi - purpose projects generate electricity for our industries and our homes

c) Multi - purpose projects bring water to those areas which suffer from water scarcity

d) Multi - purpose projects lead to large scale displacements and loss of livelihood

115 _____ percent of the freshwater occurs as ice sheets and glaciers in Antarctica, Greenland and the mountainous regions of the world.   [1]

a) 60 b) 90 c) 50 d) 70

116 The word **matkas** refers to: [1]

a) collecting and storing water   b) cooking food and eating

c) serving food and donating   d) washing clothes and cleaning

117 Is it possible that an area or region may have ample water resources but is still facing water scarcity? This possibly can be due to: [1]

a) low population   b) heavy temperature

c) growing population   d) scanty rainfall

118 The moment we speak of water shortages, we immediately associate it with regions having: [1]

a) high rainfall or those that are drought - prone

b) low temperature or those that are abundance water

c) low rainfall or those that are drought - prone

d) heavy temperature and heavy rainfall

119 Where water is sufficiently available to meet the needs of the people, but, the area still suffers from water scarcity due to which of the following reasons?   [1]

a) More usage   b) Over experimental attitude

c) Much of it may be polluted by domestic and industrial wastes.   d) Unequal distribution

120 _____ of the earth's surface is covered with water.   [1]

a) One third   b) Two fourth   c) One fourth   d) Three fourth