SAMPLE PAPER

for student presently in Class 9 going to 10

Time: 3 Hours ***Maximum Marks: 320***

Instructions:

1. This Question paper consists of **Five** sections. **All questions will be multiple choice single correct out of four choice with marking scheme in table below:**

Section		Question No.	Marking Scheme for each question	
			Correct answers	Wrong answers
Section – I	IQ	1 – 15	+ 4	- 1
Section – II	Physics	1 – 15	+ 4	- 1
Section – III	Chemistry	1 – 15	+ 4	- 1
Section – IV	Mathematics	1 – 20	+ 4	- 1
Section – V	Biology	1 - 15	+ 4	- 1

2. Answer have to be marked on the OMR sheet.
3. The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work
4. Blank papers, clip boards, log tables, slide rule, calculator, cellular phones and electronic devices, in any form, are not allowed.
5. Before attempting paper write your Name, Registration number and Test Centre in the space provided at the bottom of this sheet.

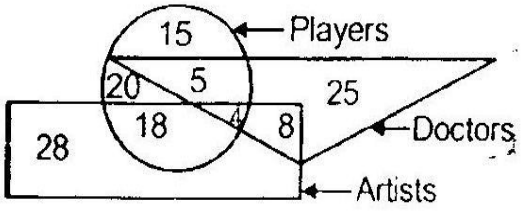
Registration Number : _____

Name of the Candidate : _____

Test Centre : _____

SECTION – I (IQ)

Directions : (1 to 5) The following questions are based on the figure given below. In this figure the rectangle represents artists, the circle represents players and the triangle represents doctors. The numbers in different sections refer to the number of persons in that area. A few questions are then asked based upon this information



1. How many players are neither artists nor doctors ?
   (A) 35 (B) 28 (C) 24 (D) 18

2. How many doctors are players but not artists ?
   (A) 4 (B) 5 (C) 20 (D) 25

3. What percentage of doctors has at least one more interest – either arts or sports in life ?
   (A) 55 % (B) 50 % (C) 45 % (D) 40 %

4. How many players are artists but not doctors ?
   (A) 28 (B) 25 (C) 18 (D) 5

5. In terms of number, arrange artists, players and doctors in decreasing order (Those with maximum number first, with minimum number last)
   (A) Players, Artists, Doctors (B) Players, Doctors, Artists
   (C) Artists, Doctors, Players (D) Artists, Players, Doctors

6. In the following number series, how many 8 ‘s are there which are immediately preceded by a number which does not divide it but followed by a number which divides it ?
   2 8 2 8 3 8 5 8 8 5 3 2 8 2 3 8 4 7 1 5 8 3 8 2 8 6
   (A) 1 (B) 2 (C) 3 (D) 4

Space for Rough Work

7. In the following series of numbers, find out how many times 1, 3 and 7 have appeared together . 7 being in the middle and 1 and 3 on either side of 7 ?
2 9 7 3 1 7 3 7 7 1 3 3 1 7 3 8 5 7 1 3 7 7 1 7 3 9 0 6
(A) One (B) Two (C) Three (D) Four

8. The positions of how many digits in the number 423157698 will remain unchanged after the digits within the number are arranged in ascending order ?
(A) None (B) One (C) Two (D) Three

9. Kishan walks 10 km towards North. From there, he walks 6 km towards South. Then, he walks 3 km towards East. How far and in which direction is he with reference to his starting point ?
(A) 5 km, North (B) 5 km, North – East (C) 7 km, East (D) 7 km, West

10. A man was facing East. He took Three paces forward, turned right, walked another two paces and then turned right again, took three paces and turned about . Which direction was he last facing ?
(A) East (B) North (C) South (D) None of these

11. The value of $1001 \div 11$ of 13 is :
(A) 7 (B) 91 (C) 143 (D) 169

12. The value of $\frac{(6+6+6+6) \div 6}{4+4+4+4 \div 4}$ is equal to :
(A) 1 (B) $\frac{3}{2}$ (C) $\frac{4}{13}$ (D) $3\frac{6}{13}$

13. What mathematical operation should come at the place of ? in the equation :
$2 ? 6 - 12 \div 4 + 2 = 11$
(A) + (B) $-$ (C) $\times$ (D) $+$

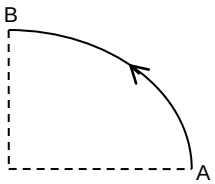
14. If $\times$ means $\div$, $-$ means $\times$, $\div$ means + and + means $-$, then $(3 - 15 \div 19) \times 8 + 6 = ?$
(A) 8 (B) 4 (C) 2 (D) -1

15. If a means 'plus', b means ' minus'. c means 'multiplied' by' and d means ' divided by' then
16 c 12 b 6 d 2 a 17 = ?
(A) 65 (B) 55 (C) 216 (D) 206

Space for Rough Work

SECTION – II (PHYSICS)

1. A particle goes from point A to point B, moving in a quarter circle with uniform speed. The ratio of magnitude of average velocity to that of average speed



(A) Does not depends on its speed

(B) Depends on its speed inversely

(C) Depends on its speed directly

(D) Data is insufficient to predict the value.

2 . From a building two balls A and B are thrown such that A is thrown upward and B downward (both vertically with same speed). If V_a and V_B are their respective velocities on reaching the ground, then

(A) $V_B > V_A$ (B) $V_A = V_B$

(C) $V_A > V_B$ (D) Velocity depend on their mass

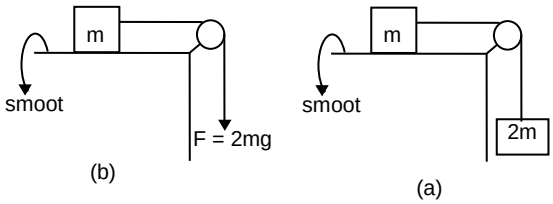
3. A car moving with a speed of 50 km/hr, can be stopped by breaks after at least 6m. If the same car is moving at a speeds of 100 km/hr, the minimum stopping distance is

(A) 12m (B) 18 m (C) 24 m (D) 6 m

4. Two cars of mass m_1 and m_2 are moving in circles of radii r_1 and r_2, respectively. Their speeds are such that they move complete circles in the same time t. The ratio of their centripetal acceleration

(A) $m_1r_1 : m_2r_2$ (B) $m_1 : m_2$ (C) $r_1 : r_2$ (D) 1 : 1

5. The pulley arrangement of figures (a) and (b) are identical. The mass of the rope is negligible. In (a) the mass m slide by attaching a mass 2 m to the other end of the rope. In (b), m slide by pulling the other end of the rope with a constant downwards force F = 2 mg. The acceleration of mass m



(A) In case (a) is less then in case (b).

(B) In case (a) is more then in case (b)

(C) equal in both the case

(D) In case (a) may be less or more then in case (b)

6. When a person walks on a rough surface, the frictional force exerted by the surface on the person

(A) is along the direction of his motion (B) is opposite to the direction of his motion

(C) is zero (D) Can't be predicted

7. A marble block of mass 2 kg lying on ice when given a velocity of 6 m/s is stopped by friction in 10 s. Then the coefficient of friction is

(A) 0.02 (B) 0.03 (C) 0.04 (D) 0.06

8. A ball of mass 0.2 kg is thrown vertically upward by applying a force by hand. If the hand moves 0.2m while applying the force and the ball goes upto 2m height further, find the magnitude of the force

(A)4 N (B) 16 N (C) 20 N (D) 22 N

Space for Rough Work

9. A player caught a cricket ball of mass 150 gm moving at a rate of 20 m/s. If the catching process is completed in 0.1 sec, the force of the blow exerted by the ball on the hand of the player is equal to

(A) 150 N (B) 3 N (C) 30 N (D) 300 N

10. If suddenly the gravitational force of attraction between earth and a satellite revolving around it becomes zero, then the satellite will

(A) Continue to move in its orbit with same velocity

(B) move tangentially to the original orbit in the same velocity

(C) become stationary in its orbit.

(D) move towards the earth.

11. The change in the value of 'g' at a height 'h' above the surface of the earth is the same as at a depth 'd' below the surface of earth. When both 'd' and 'h' are much smaller then radius of earth, then which one of the following is correct

(A) $d = \frac{3h}{2}$ (B) $d = \frac{h}{2}$ (C) d = h (D) d = 2h

12. The height at which the acceleration due to gravity becomes g/9 (where g = the acceleration due to gravity on the surface of the earth) in terms of R, the radius of the earth is

(A) $\frac{R}{\sqrt{2}}$ (B) $\frac{R}{2}$ (C) $\sqrt{2}R$ (D) 2 R

13. Two spherical bodies of mass M_1 and M_2 are radii R_1 and R_2 respectively are released in free space with initial separation between their centers equal to d. If they attract each other due to gravitation force only then

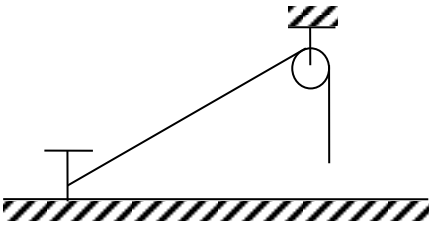
(A) Both will collide at centre

(B) Collide near to point of heavier body

(C) Collide near to point of lighter body

(D) Data is insufficient to predict the above option(s).

14. One end of a massless rope, which passes over a massless and frictionless pulley P is tied to a hook T while the other end is free. Maximum mass that the rope can support is 36 kg at free end with . what value of maximum safe acceleration (in m/s^2) can a mass of 60 kg climb on the rope



(A) 16 (B) 6

(C) 4 (8)

15. A rocket with a lift-off mass 3.5×10^4 kg is blasted upward with an initial acceleration of 10 m/s^2. Then the initial thrust (of the initial thrust) of the blast is

(A) 3.5×10^5N (B) 7.5×10^5N (C) 14×10^5N (D) 1.75×10^5 N

Space for Rough Work

SECTION – III (CHEMISTRY)

1. Which of the following has the strongest intermolecular force of attraction:
   (A) Laughing gas (B) Oxygen (C) Water (D) Steam

2. Which of the following has the highest kinetic energy of one mole their particle?
   (A) Water at 70°C (B) Graphite
   (C) Carbon monoxide at 60°C (D) SO_2 at 65°C

3. Which of the following has least compressibility?
   (A) Copper (B) Petrol (C) Hydrogen (D) Nitrogen

4. Liquid boils only when its:
   (A) vapour pressure become higher than atmospheric pressure.
   (B) vapour pressure become lower than atmospheric pressure.
   (C) vapour pressure become equal to the atmospheric pressure.
   (D) both a and c

5. Which of the following is a physical change:
   (A) Souring of milk (B) Digestion of food
   (C) Burning of coal (D) Dissolution of common salt into water

6. Suspension is a
   (A) Homogeneous mixture (B) Heterogeneous mixture
   (C) Has at least two different phases (D) both b and c

7. Electrophoresis is shown by
   (A) True solution (B) Colloidal solution
   (C) Suspension (D) All the above

Space for Rough Work

8. Cooling occurs always during
   (A) Vaporization (B) Transpiration
   (C)Dissolution of gases (D) Dissolution of solids

9. The type of bond present between atom of iron is
   (A) Electrovalent (B) Covalent (C) Metallic (D) all

10. An example of substance that sublimes is
    (A) ammonium chloride (B) sodium chloride
    (C) potassium chloride (D) calcium chloride

11. Which one of the following does not consist of single element ?
    (A) diamond (B) ozone
    (C) silica (D) graphite

12. Tyndall effect is shown by
    (A) copper sulphate solution (B) sugar solution
    (C) salt solution (D) mixture of milk and water

13. Which property is not shown by colloids?
    (A) Coagulation (B) Brownian motion (C) Cataphoresis (D) Homogeneity

14. Milk is an example of
    (A) foam (B) sol (C) gel (D) emulsion

15. As the pressure of surrounding increases, boiling points
    (A) increases (B) decreases (C) both (D) remains constant

Space for Rough Work

SECTION – IV (MATHEMATICS)

1. Let 'P' be a point in an equilateral triangle with each side of length 'a'. Let h_1, h_2 and h_3 be the perpendicular distances from 'P' to the three sides of the triangle. Then value of $h_1 + h_2 + h_3$, is

   (A) $\sqrt{3}a$ (B) $\frac{\sqrt{3}}{2}a$ (C) $\frac{\sqrt{3}}{4}a$ (D) $\frac{\sqrt{3}}{5}a$

2. Number of points on the straight line which joins (-4, 11) to (16, -1) whose coordinates are positive integral, is

   (A) 1 (B) 2 (C) 3 (D) 16

3. If α and β are the roots of the equation $2x^2 – 3x – 6 = 0$, then the equation whose roots are $\alpha^2 + 2$ and $\beta^2 + 2$, is

   (A) $4x^2 – 49x + 118 = 0$ (B) $4x^2 + 49x + 118 = 0$

   (C) $x^2 – 49x + 118 = 0$ (D) $4x^2 + 49x – 59 = 0$

4. One fourth of herd of goats was seen in the forest. Twice the square root of the number of the herd had gone up to hill and the remaining 15 goats were on the bank of the river, then total number of goats is

   (A) 6 (B) 16 (C) 25 (D) 36

5. If a polynomial P(x) of degree greater than two is divided by (x – 1) and (x + 1) gives remainder 4 and 8 respectively, then the remainder when P(x) is divided by $(x^2 – 1)$ is

   (A) – 2x + 6 (B) x + 6 (C) x – 6 (D) x – 12

6. Let $f(x) = x^3 – 3x^2 + 2x + 5$ and f(a) = f(b) = f(c) = 0, then value of (2 – a) (2 – b) (2 – c) is

   (A) 3 (B) 5 (C) 7 (D) 9

7. The remainder when $x^3 + 3px + q$ is divided by $(x – a)^2$, is

   (A) $3x^2 + q – 2a^3$ (B) $3(p + a^2)x + q – 2a^3$ (C) $q – 2a^3$ (D) None of these

8. If n is even natural number, then the largest natural number by which n(n + 1) (n + 2) is always divisible, is

   (A) 6 (B) 8 (C) 12 (D) 24

9. Number that has to be added to 345670 in order to make it divisible by 6 is

   (A) 2 (B) 4 (C) 5 (D) 6

10. An equilateral triangle is circumscribed and a square is inscribed in a circle of radius 'r'. The area of triangle is T and the area of square is S. Then, value of $\frac{T}{S}$ is

    (A) $\frac{\sqrt{3}}{2}$ (B) $\frac{3}{2}$ (C) $\frac{3\sqrt{3}}{2}$ (D) None of these

11. The point Q(9, 14) and R(a, b) are symmetric with respect to the point (5, 3). Then the coordinates of the point R(a, b) are

    (A) $\left(7, \frac{17}{2}\right)$ (B) $(13, 25)$ (C) (1, - 8) (D) None of these

Space for Rough Work

12. If $-1 \le x \le 2$ and $1 \le y \le 3$, then least possible value of $(2y - 3x)$, is

(A) - 4 (B) – 2 (C) 0 (D) 5

13. The number 10101 is a

(A) composite number (B) prime number

(C) even number (D) None of these

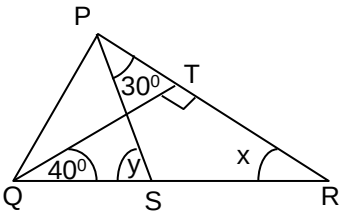
14. If x679y is a five digit number that is divisible by 72 then value of x + y is

(A) 4 (B) 6 (C) 3 (D) 5

15. If $QT \perp PR$, $\angle TQR = 40^0$ and $\angle SPR = 30^0$, value of x and y are

(A) 45^0, 70^0 (B) 50^0, 75^0

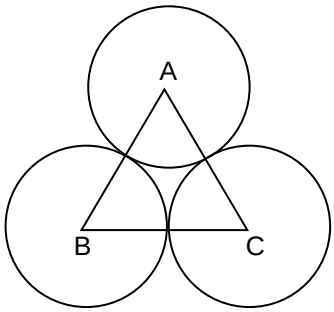
(C) 65^0, 55^0 (D) 50^0, 80^0



16. With the vertices of a Δ ABC as centres, three circles are described, each touching the other two externally. If the sides of the triangle are 9 cm, 7 cm and 6 cm, then the radii of the circles are

(A) 7 cm, 5 cm, 2 cm (B) 4 cm, 5 cm, 2 cm

(C) 5 cm, 4 cm, 3 cm (D) 4 cm, 7 cm, 3 cm



17. If xyz = 1, then $\frac{1}{1+x+y^{-1}} + \frac{1}{1+y+z^{-1}} + \frac{1}{1+z+x^{-1}} =$

(A) x + y + z (B) 0 (C) – 1 (D) 1

18. If $\frac{3^x}{1+3^x} = \frac{1}{9}$, the value of $\frac{9^x}{1+9^x}$ is

(A) $\frac{1}{27}$ (B) $\frac{1}{64}$ (C) $\frac{1}{65}$ (D) None of these

19. Two sides of a plot measure 32 m and 24m and angle between them is perfect right angle. The other two sides measure 25 m each and the other three angles are not right angles. The area of plot (in m^2) is

(A) 534 (B) 754 (C) 705 (D) 684

20. The value of $\sqrt{7+4\sqrt{3}} + \sqrt{7-4\sqrt{3}}$ is

(A) 14 (B) $8\sqrt{3}$ (C) 4 (D) None of these

Space for Rough Work

SECTION – V (BIOLOGY)

1. Four strips are cut from a fresh potato. The length of each strip is measured. One strip is palced in water and others in different concentrations of sugar solution. After an hour, the strips were measured again. The results are shown in the table. Which of the liquids P, Q, R and S is water?

Liquid	Original length of strip (mm)	Final length of strip (mm)
P	75	75
Q	78	80
R	82	80
S	86	85

(A) P (B) Q (C) R (D) S

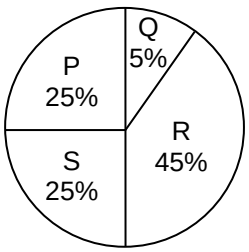
2. Blue revolution refers to the drastic increase in the production of _____
(A) Milk (B) Cereals (C) Water (D) Fish

3. Select the correct statement regarding meristematic tissues.
(A) They are found at specific locations in the animal body.
(B) They have cells with thick secondary walls.
(C) They perform the function of growth and division.
(D) Both (A) and (C)

4. Which of the following tissues provides mechanical strength and flexibility to plants?
(A) Parenchyma (B) Collenchyma (C) Aerenchyma (D) Sclerenchyma

5. Which of the following is not an effect of deforestation?
(A) Biodiversity loss (B) Global warming (C) Soil erosion (D) None of these

6. Soil is a complex mixture. The given figure shows the percentage by volume of different soil components as P, Q, R and S. What will you place at S?



(A) Air (B) Water
(C) Organic Water (D) Either air or water

7. Which of the following activities will not lead to both air and water pollution?
(A) Burning of fossil fuels (B) Use of CFCs
(C) Use of pesticides in Crop fields (D) Setting up of a chemical factory near water body

8. Organisms like lichens are very sensitive to the levels of
(A) Carbon dioxide (B) Suplhurdioxide (C) Carbon monoxide (D) Methane

Space for Rough Work

9. Which of the following statements is correct for a secretory cell?
   (A) Goigi apparatus is absent
   (B) Rough endoplasmic reticulum is abundantly present in the cell.
   (C) Only smooth endoplasmic reticulum.
   (D) Secretory granules are formed in nucleus.

10. Select the group that contains only the micronutrients.
   (A) Sulphur, Molybdenum, Nitrogen (B) Zinc, Copper, Manganese
   (C) Oxygen, Iron, Potassium (D) Carbon, Chlorine, Nickel

11. R is an organic compound containing only carbon, chlorine and fluorine. It has been widely used as refrigerant, propellent and solvent. Montreal protocol phased out manufacture of such compounds because R contributes to S in the atmosphere.
   Which of the following would not be a consequence of S?
   (A) Increased incidences of severe sunburns.
   (B) Increased incidences of cataracts.
   (C) Increased incidences of premature skin ageing.
   (D) Increased incidences of diabetes.

12. Some species of fish can be cultured in a single fish pond. These fish do not complete for food as they have different food habits. In the following options fish are paired with their food habits. Select the incorrect match.
   (A) Labeo rohita – Column feeder (B) Catla catla – Surface feeder
   (C) Cirrhinus mrigala – Bottom feeder (D) Common carp – Surface feeder

13. Robert Hooke is a well known scientist as he discovered _____
   (A) Lysosome (B) Vacuole (C) Cell (D) Nucleus

Direction Q. No. 14 and 15: Read the given passage and answer the following questions.

Three different cropping patterns, viz. X, Y and Z are applied to get the maximum benefits from a crop field. In X, two or more crops are grown together in the same field in different rows or strips. In Y also, two or more crops are grown together but not in definite rows. In Z, different crops are gown on a piece of land in a preplanned succession. These cropping patterns maintain soil fertility and crop yield.

14. Select the option that correctly identifies any two of these cropping patterns.
   (A) X – Mixed cropping, Y – Intercropping (B) X – Intercropping, Z – Crop rotation
   (C) Y – Mixed cropping, Z – Intercropping (D) X – Mixed cropping, Z – Crop rotation

15. Which of the following options is correct regarding criteria of crop selection for these cropping patterns?
   (A) In Z, the crops used must have different maturation times.
   (B) In Y, the crops used must require the similar amount and type of nutrition.
   (C) In X, the crops used should have different sowing and harvesting dates.
   (D) In Z, the crops should not be of different growth habits, i.e., should be either both tall or both dwarf.

Space for Rough Work