M.M: 60   **Time : 1 hour**

English (10 Marks)

Q1.   **'To be above board'** means :-

(A) To be honest in any business deal.

(B) To have a good height.

(C) To try to be beautiful.

(D) To have no debts.

Q2.   '**To leave someone in the lurch**' means :-

(A) To come to compromise with someone

(B) To put someone at ease

(C) To annoy himself

(D) To desert someone in his diffculities

Q3.   **Fill in the blank with correct verb.**

The last train _____ at mid-night.

(A) leave

(B) leaves

(C) have left

(D) are left

Q4.   <u>She dares not speak</u> directly as she is junior to me. **(Improve the underlined part of the sentence)**

(A) She dare not speak

(B) She dares not to speak

(C) She dare not to speak

(D) She does not speaks

Q5.   **Fill in the blank with correct modal.**

A Judge _____ be just at any cost.

(A) may

(B) might

(C) have to

(D) must

Q6. Each of the six students are going to participate in the function. **(Which part of the sentence has an error)**

(A) Each of the six students

(B) are going

(C) to participate

(D) in the function

Q7. Stray cattles were on the road as I tried to approach them. **(Which part of the sentence has an error)**

(A) Stray cattles were

(B) on the road

(C) as I tried

(D) to approach them

Q8. **Select the Indirect speech of the following sentence.**

My grandmother said to me, "Wait here till I come back."

(A) My grandmother ordered me to wait there till she came back.

(B) My grandmother requested me to waited there till she come back.

(C) My grandmother ordered me to wait there till I come back.

(D) My grandmother asked me to wait here till she came back.

Q9. **Select the Indirect speech of the following sentence.**

Ankur said to his friends, "Let's go for a drive."

(A) Ankur proposed his friends that he will go for a drive.

(B) Ankur said to his friends that they should go for a drive.

(C) Ankur proposed his friends that they should go for a drive.

(D) Ankur asked his friends for going a drive.

Q10. **Fill in the blank with correct verb.**

The Great Chicago fire of 1871 _____ in more than 300 deaths.

(A) resulted

(B) have resulted

(C) has resulted

(D) result

Mathematics (20 Marks)

Q11. When $a + b + c + 3a^{1/3}b^{2/3} + 3a^{2/3}b^{1/3}$ is divided by $a^{1/3} + b^{1/3} + c^{1/3}$, what is the remainder?

(A) 3a

(B) 2b

(C) 0

(D) $c^{2/3}$

Q12. If a679b is a five digit number that is divisble by 72 determine 'a' and 'b'.

(A) 2

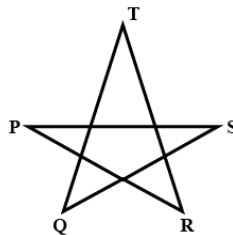(B) 3

(C) 4

(D) 12

Q13. If $x + y + z = 0,\ then\ x(y - z)^3 + y(z - x)^3 + z(x - y)^3$ equals

(A) 0

(B) $y + z$

(C) 1

(D) $(z + x)^2$

Q14. Find $\angle P + \angle Q + \angle R + \angle S + \angle T$.

(A) 90º

(B) 60º

(C) 45º

(D) 180º

Q15. The difference between altitude and base of a right angled triangle is 17 cm and its hypotenuse is 25 cm. What is the sum of the base and altitude of the triangle is?

(A) 24 cm

(B) 31 cm

(C) 34 cm

(D) can't be determined

Q16. In the adjoining figure $\angle B = 70^0\ and\ \angle C = 30^0.\ BO$ and CO are the angle bisectors of $\angle ABC$ and $\angle ACB$ respectively. Find the value of $\angle BOC$:

(A) 30º

(B) 40º

(C) 120º

(D) 130º
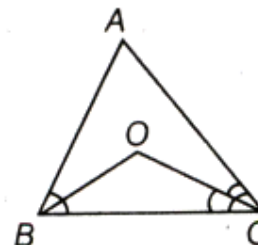
Q17. If ΔABC is equilateral triangle, then find the height of ΔABC, if the distances from the interior point O to the sides are 4, 5 and 6 respectively.

 (A) 15

(B) 14

(C) 11

(D) None of these

Q18. The sum of the present age of father and his son is 99 years. When the father was as old as his son is now, his age was four times the age of the son at that time. The ratio of the present ages of the son and the father is:
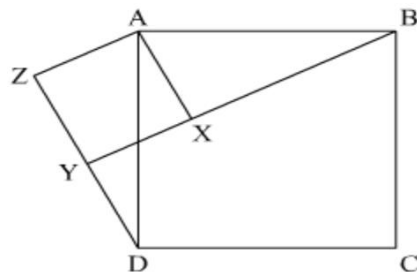
(A) 3 : 7

(B) 3 : 8

(C) 4 : 9

(D) 4 : 7

Q19. In fig. X is point in the interior of square $ABCD$ and $AXYZ$ is also a square. If $DY = 3$ cm and $AZ = 2$ cm, then $BY =$

(A) 5 cm

(B) 6 cm

(C) 7 cm

(D) 8 cm

Q20. A circle is inscribed in a square and the square is circumscribed by another circle. What is the ratio of the areas of the inner circle to the outer circle?

(A) 1 : 2

(B) 1 : $\sqrt{2}$

(C) $\sqrt{2}$: 4

(D) 1 : $\sqrt{3}$

Q21. The A.M. of n observation is M. If the sum of (n−4) observation is a, then find the mean of remaining 4 observaions.

(A) $\frac{nM-a}{4}$

(B) $\frac{nM+a}{4}$

(C) $\frac{a-nM}{4}$

(D) None of these

Q22. The median and mode of a frequency distribution are 525 and 500 then mean of same frequency distribution is -

(A) 75

(B) 107.5

(C) 527.5

(D) 537.5

Q23. A train goes from Sealdah to Ranaghat with velocity 60 km/hr and returns from Ranaghat to Sealdah with velocity 80 km/hr. The average velocity of the train will be

(A) 70 km/hr

(B) $68\frac{4}{7}$ km/hr

(C) $70\frac{4}{7}$ km/hr

(D) 68 km/hr

Q24. Of the following four numbers, the largest is?

(A) 3^{210}

(B) 7^{140}

(C) $(17)^{105}$

(D) $(31)^{70}$

Q25. If n is a perfect square, then the next perfect square greater than n is:

(A) $n^2 + 1$

(B) $n^2 + n$

(C) $n + 2\sqrt{n} + 1$

(D) $2n + 1$

Q26. Two parallel chords AB and CD in a circle are of lengths 8 cm and 12 cm respectively and the distance between them is 6 cm. The chord EF, parallel to AB and CD and midway between them is of length $\sqrt{k}$. Then k is equal to:

 (A) 100

(B) 140

(C) 144

(D) 150

Q27. The area of the triangle formed by the line $x + 3y = 12$ and the co-ordinate axes is

(A) 12 sq units

(B) 18 sq units

(C) 24 sq units

(D) 30 sq units

Q28. If $10^{2017} - 2017$ is expressed as integer, what is the sum of its digits?

(A) 18144

(B) 17468

(C) 16466

(D) 18564

Q29. If x is a positive integer, then the greatest number with which $5^x + 5^{x+1} + 5^{x+2}$ would be always divisible is

(A) 31

(B) 155

(C) 225

(D) None of these

Q30. $f(x)$ is a polynomial in x. When $f(x)$ is divided by $(x - 2)$, the remainder obtained is 3, when the same polynomial is divided by $(x - 3)$, the remainder obtained is 2. What is the remainder when $f(x)$ is divided by $(x - 3)(x - 2)$

(A) $-x + 5$

(B) $-\frac{5}{3}x + 7$

(C) 0

(D) 5

Social Science (10 Marks)

Q31. The Preamble of Indian Constitution has been amended by which of the Constitutional Amendment Act ?

(A) 27th Constitutional Amendment Act

(B) 42nd Constitutional Amendment Act

(C) 44th Constitutional Amendment Act

(D) 40th Constitutional Amendment Act

Q32. Match the following –

List I	List II
(a) Vicious Cycle	(1) Tourism, Banking
(b) Virtuous Cycle	(2) Investment in Education
(c) Non-economic activity	(3) Cooking for family
(d) Tertiary Activities	(4) No investment in education

(A) a-4, b-2, c-3, d-1

(B) a-4, b-3, c-2, d-1

(C) a-1, b-2, c-3, d-4

(D) a-2, b-4, c-3, d-1

Q33. What is meant by New Harmony in Indiana, USA?

(A) A bank

(B) A capitalist society

(C) Common man

(D) A cooperative community

Q34. Who among the following sought to refute the Doctrine of the Divine and Absolute Right of the Monarch ?

(A) John Locke

(B) Plato

(C) Aristotle

(D) Rousseau

Q35. An appropriate reason to the fact that in Tibet, Brahmaputra river does not create devastation by floods is that it _____ .

(A) Carries large volume of water

(B) is very small stream in this area

(C) Carries smaller volume of water and less silt

(D) is very cold in this region and it remains frozen most of the year

Q36. In which Indian state is Bandhavgarh National Park situated?

(A) West Bengel

(B) Uttarakhand

(C) Assam

(D) Madhya Pradesh

Q37. Which name is given to the periodic development of a warm ocean current along the coast of Peru as a temporary replacement of the cold Peruvian current is known as –

(A) Monsoon

(B) El Nino

(C) Kaal Baisakhi

(D) Loo

Q38. The Indian Parliament consists of –

(A) President, Vice-President and Lok Sabha

(B) President, Lok Sabha and State Assemblies

(C) President, Lok Sabha and Rajya Sabha

(D) President, Vice-President and Rajya Sabha

Q39. The Principle of 'Judicial Review' has been taken in from the Indian Constitution which country ?

(A) Germany

(B) France

(C) England

(D) USA
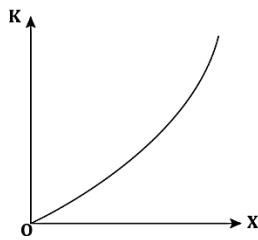
Q40. In which year the National Food for Work Programme was launched ?

(A) 2003

(B) 2004
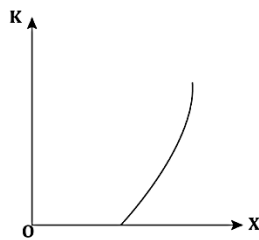
(C) 2001

(D) 2006

Science (20 Marks) Phy. + Chem. + Bio.
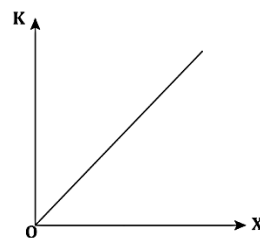
Physics (7)

Q41. A body moves from rest with a constant acceleration. Which one of the following graphs represents the variation of its kinetic energy K with the distance travelled x ?
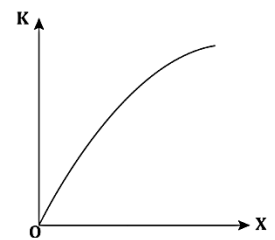

(i)   (ii)   (iii)   (iv)

(A) (i)

(B) (ii)

(C) (iii)

(D) (iv)

Q42. If a person with a spring balance and a body hanging from it goes up and up in an aeroplane, then the reading of the weight of the body as indicated by the spring balance, will

(A) go on increasing

(B) go on decreasing

(C) first increase and then decrease

(D) remain the same

Q43. A body is moving with a uniform accleration covers 200m in the first 2s and 220m in the next 4s. Find the velocity in ms^{-1} after 7s.

(A) 10

(B) 15

(C) 20

(D) 30

Q44. A varying force of 'F' Newton's act on a body of mass 10 kg. The relation between F and t is shown by the graph in figure. What is the change in speed of the object between t = 0 s & t = 10 s ?
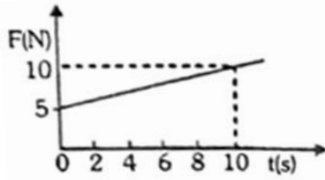
(A) 7.5 ms^{-1}

(B) 5.0 ms^{-1}

(C) 12.5 ms^{-1}

(D) 15.0 ms^{-1}

Q45. A particle is taken to a height 2R above the earth's surface, where R is the radius of the earth. The acceleration due to gravity there is :

(A) 1.08 m/s^2

(B) 4.9 m/s^2

(C) 9.8 m/s^2

(D) 19.6 m/s^2

Q46. If the mass and radius of earth become half and one-fourth of its present values then the value of acceleration due to gravity will become :

(A) 1/8 g

(B) 1/4 g

(C) 4 g

(D) 8 g

Q47. Work done in time t on a body of mass m which is accelerated from rest to speed v in time t_1 as a function of time t is given as

(A) $\frac{1}{2} m \frac{v^2}{t_1^2} t^2$

(B) $\frac{1}{2} \left(\frac{mv}{t_1}\right)^2 t^2$

(C) $m \frac{v}{t_1} t^2$

(D) $\frac{1}{2} m \frac{v}{t_1} t^2$

Chemistry (7)

Q48. The number of elements which are present in the compound ammonium phosphate are –

(A) 2

(B) 3

(C) 4

(D) 5

Q49. Which of the following statements are correct?

I. A pure substance has fixed melting and boiling points.

II. If a liquid is impure, it will boil over a range of temperatures but will freeze at a fixed temperature.

III. If the pressure acting on a liquid is increased, the boiling point will increase.

IV. Orange juice will have a fixed boiling point.

(A) I and III only

(B) I and II only

(C) III and IV only

(D) I, II and IV only

Q50. The ratio of specific charge of proton and an alpha particle is

(A) 1 : 1

(B) 2 : 1

(C) 1 : 4

(D) 1 : 2

Q51. Chlorine reacts with sodium to form the compound NaCl. Chlorine also reacts with phosphorus to form the compound PCl_3. What will be the chemical formula of the compound formed between sodium and phosphorus?

(A) Na_2P_3

(B) Na_3P

(C) NaP

(d) NaP_3

Q52. The solubility of potassium chloride at 20°C is 34.7 g. The density of the solution is 1.3 g mL^{-1}. What is the w/V percentage of potassium chloride in the solution?

(A) 25.76

(B) 32.98

(C) 33.49

(D) 22.56

Q53. When ice is converted into water :

(A) heat is absorbed

(B) heat is released

(C) temperature increases

(D) temperature decreases

Q54. The simplest formula of a compound containing 50% of the element X (At. wt. 20) and 50% of the element Y (At. wt. 10) is:-

(A) XY

(B) X_2Y

(C) XY_2

(D) X_2Y_3

Biology (6)

Q55. Which one of the following plant tissues is formed by permanent tissue?

(A) Apical tissue

(B) Lateral tissue

(C) Intercalary tissue

(D) None of above

Q56. When viewed under a microscope, the colour of the cell wall of an onion peel (after being stained in safranin) is

(A) deep blue

(B) black

(C) green

(D) pinkish-red

Q57. Which one is not a part of nucleus?

(A) Chromatin

(B) Nucleolus

(C) Centrosome

(D) Nucleoplasm

Q58. In chloroplasts, chlorophyll pigment is present in the

(A) Stroma

(B) Thylakoids

(C) Outer membrane

(D) Inner membrane

Q59. The science of improving crop varieties is called

(A) hybridization

(B) selection

(C) plant breeding

(D) introduction

Q60. A pulse crop is grown in the time interval between two cereal crops to compensate for the

(A) loss of phosphate

(B) loss of water

(C) loss of sulphur

(D) loss of nitrogen