IIT ASHRAM BRINGS...

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A QUEST FOR SCIENCE ASPIRANTS !

CLASS 10

SCIENCE APTITUDE TEST

TIME : 3 HOURS **MAX MARK : 400**

INSTRUCTIONS

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

Caution : Class, as given on paper above MUST be correctly marked on the answer OMR sheet before attempting the paper. Wrong Class will give wrong results.

1. This booklet consists of 100 questions. Question paper consists of 4 sections. Marking scheme is given in table below:

Section	Subject	Questions No.	Making Scheme for each questions	
			Correct Answer	Wrong Answer
PART - **I**	Mental Ability	15	4	-1
PART - **II**	Mathematics	40	4	-1
PART - **III**	Physics & Chemistry	30	4	-1
PART - **IV**	Biology	15	4	-1

3. Answers have to be marked on the OMR sheet. The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work.
4. Blank papers, cellular phones, smart watches, log tables, slide rule, calculator and electronic devices, in any form, are not allowed.

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PART - I : MENTAL ABILITY

1. Select the lettered pair that has the same relationship as the original pair of words.
   Cow: Calf
   (a) Dog: Puppy (b) Cat: Cub
   (c) Lion: Kitten (d) Duck: Chicken

2. Select the pair in which the numbers are similarly related as in the pair 19: 361.
   (a) 2:6 (b) 3:27
   (c) 13:169 (d) 5:125

3. Find the missing term in the given series.

G	J	N	S	?	F
H	L	Q	W		L

   (a) X / C (b) Y / B
   (c) Z / D (d) Y / D

4. If A denotes '+', B denotes 'x', C denotes '-', and D denotes '÷', then what will come in place of "?" in the following equation?
   7 A 3 B 24 D 2 = 20 B **?** A 3
   (a) 20 (b) 2
   (c) 7 (d) 14

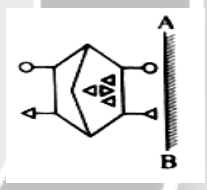
5. There are 7 persons. P's father Q is B's paternal uncle and A's husband M is P's paternal uncle. G is the wife of B and H is the son of B. How is A related to H?
   (a) Grandmother (b) Son
   (c) Father (d) Grandson

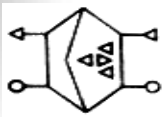
6. In the following question below are given three statements followed by three conclusions based on those statements. Taking the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows the given statements.

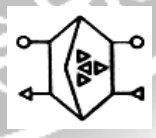
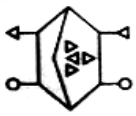
   Statements:
   I. All tigers are dogs.
   II. All dogs are black.
   III. Some blacks are fast.

   Conclusions:
   I. Some dogs are tigers.
   II. Some fast are black.
   III. All tigers are fast.
   (a) Only conclusions I and III follow
   (b) Only conclusion III follows
   (c) Only conclusions I and II follow
   (d) I, II and III follow

7. If a mirror is placed on line AB, then which of the answer figures is the right image of the given figure?



(a)  (b) 

(c)  (d) 

Space for Rough Work

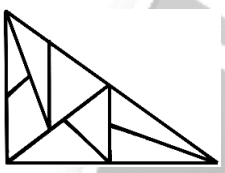
8. Find the missing character from the given alternatives.

23	**15**	**9**	**216**
37	**13**	**7**	**504**
29	**18**	**8**	?

(a) 497 (b) 376
(c) 264 (d) 241

9. In a queue of boys, Raj is 339th from left and Prem is 279th from right. The places of Raj and Prem are interchanged. If the new position of Raj is 485th from left, then the new position of Prem from right is?
(a) 763th (b) 425th
(c) 424th (d) None of these

10. How many triangles are there in the given figure?



(a) Less than 9 (b) Between 10 to 17
(c) 9 (d) More than 17

11. Select the term from among the given options that can replace the question mark (?) in the following series.
A1Z, C3X, E9V, G14T, I98R, ?
(a) K882P (b) K109P
(c) K980P (d) K108P

12. A certain number of people are sitting in a row, facing north. R sits at one of the positions at the right of G. P sits fourth to the left of Y. Only two people sit between R and T. Y sits fourth to the left of G. G sits at the immediate left of T. If no other person is sitting in the row, what is the total number of people seated?
(a) 13 (b) 14
(c) 10 (d) 12

13. Puja left her house and walks a distance of 80 m towards the north, then turns to her right and walks for 120 m. She again turns right and walks for 80 m. At this point, she finally turns to her right and walks for 150 m. How far is she from the starting point and in which direction her house is from her final reached point?
(a) 30 m due east (b) 37 m due east
(c) 30 m due north (d) 30 m due west

14. If
'Q Ω T' means 'Q is the wife of T',
'Q ¥ T' means 'Q is the father of T',
'Q € T' means 'Q is the daughter of T',
'Q = T' means 'Q is the son of T',
then how is A related to F in the following expression?
A = B Ω C ¥ D Ω F
(a) Brother (b) Wife's brother
(c) Son (d) Father-in-law

15. In a certain code language, 'BOOK' is written as 'DRTR' and 'WORM' is written as 'YRWT". How will 'READ' be written in that language?
(a) THGK (b) TIFK
(c) THFK (d) THFL

Space for Rough Work

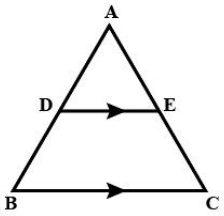
PART - II : MATHEMATICS

1. If $\sqrt{3}\tan\theta = 1$, then the value of $\sin^2\theta - \cos^2\theta$ is

   (a) $-\frac{1}{2}$ (b) $\frac{1}{2}$

   (c) 2 (d) -2

2. In the given figure, DE||BC If AD = 2.4 cm, AB = 8 cm and AC = 12 cm, then AE is equal to



   (a) 1.8 cm (b) 3.6 cm

   (c) 2.6 cm (d) 5.4 cm

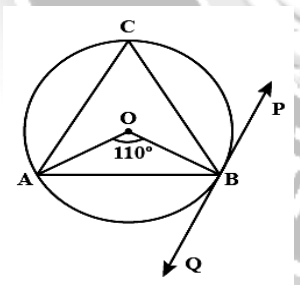
3. A top is the shape of cone over a hemisphere and the radius of the hemisphere is 3.5 cm. If the height of the top is 15.5 cm, then the total area of the top is

   (a) 214.5 cm^2 (b) 536.5 cm^2

   (c) 135 cm^2 (d) 636.2 cm^2

4. In the given figure, AB is a chord of circle, and PQ is a tangent at point B of the circle.

   If $\angle AOB = 110^0$, then $\angle ABQ$ is



   (a) 110° (b) 220°

   (c) 55° (d) 70°

5. The length of the tangent drawn from a point P, which is 8 cm away from the centre of circle of radius 6 cm, is

   (a) $2\sqrt{7}$ cm (b) $4\sqrt{7}$ cm

   (c) $6\sqrt{7}$ cm (d) $7\sqrt{49}$ cm

6. If the n^{th} term of an AP is 3n-8 then its 16th term is

   (a) 400 (b) 80

   (c) 40 (d) 20

7. If the distance between the points (4,p) and (1,0) is 5 units, then the value of p is

   (a) ± 2 (b) ± 6

   (c) ± 4 (d) ± 10

8. In a ΔABC, right angled at B, if base line is AB=12 and BC=5 then the value of cosC is equal to

   (a) $\frac{5}{13}$ (b) $\frac{5}{12}$

   (c) $\frac{12}{13}$ (d) $\frac{3}{5}$

9. In a circle of radius 21cm, an arc subtends an angle of 60° at the centre, then the length of the arc is

   (a) 7 cm (b) 42 cm

   (c) 22 cm (d) 12 cm

10. From a solid cylinder whose height is 12 cm and diameter 10 cm, a conical cavity of same height and same diameter is hollowed out, then the volume of the remaining solid is

    (a) 613.23 cm^3 (b) 512 cm^3

    (c) 642 cm^3 (d) 628.57 cm^3

Space for Rough Work

11. If a dice is thrown once, there are two possible outcomes getting a number greater than 4 as less than equal to 4, then the probability of getting a number greater than 4 is

(a) $\frac{1}{3}$ (b) $\frac{1}{2}$

(c) $\frac{1}{4}$ (d) $\frac{2}{3}$

12. The value of $2\sin^2 30^0 \tan 60^0 - 3\cos^2 60^0$ is

(a) $\frac{\sqrt{3}-\sqrt{2}}{4}$ (b) $\frac{\sqrt{3}\left(2-\sqrt{3}\right)}{2}$

(c) $\frac{\sqrt{3}-1}{2}$ (d) $\frac{\sqrt{3}\left(2-\sqrt{3}\right)}{4}$

13. From a point on the ground, the angles of elevation of the bottom and top of a transmission tower fixed at the top of a 20 m high building are 45° and 60°, respectively. The height of the tower is

(a) 14.64 m (b) 14 m

(c) 12.64 m (d) 11.64 m

14. If $S_n = 2n^2 + 3n$ then find d.

(a) 13 (b) 4

(c) 9 (d) –2

15. The pair of linear equations y = 0 and y = 5 has

(a) One solution (b) Two solutions

(c) Infinitely many solutions

(d) No solution

16. The height of the tower is 50 m and the height of the house is 30 m. From a point middle of the line segment joining them, the angle of elevation of the tower is α and the angle of elevation of the house is β then.

(a) $\alpha = \beta$ (b) $\alpha > \beta$

(c) $\alpha \leq \beta$ (d) $\alpha < \beta$

17. There is a house, with height x opposite to the hill. The height of the hill is h. The angle of elevation of the top of the hill from the bottom of the house is α and the angle of elevation of the top of the house from the bottom of the hill is b then the value of $\frac{h}{x}$ is .....

(a) 1 (b) more than 1

(c) less than 1 (d) None of these

18. For any frequency distribution $Z - M =$ ..... $X (M - \bar{x})$

(a) 1 (b) 2

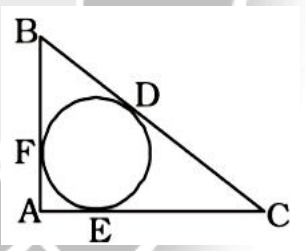
(c) 3 (d) 4

19. If the solution set of the equations px + 3y = p – 3 and 12x + py = p is an infinite set then p = ...

(a) 6 (b) 7

(c) 8 (d) 9

20. In the given figure an incircle DEF is circumscribed by the right angle triangle in which AF = 6 cm and EC = 15 cm. Find the difference between CD and BD.



(a) 1cm

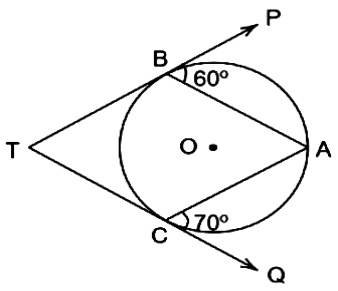
(b) 3cm

(c) 4 cm

(d) can't be determined

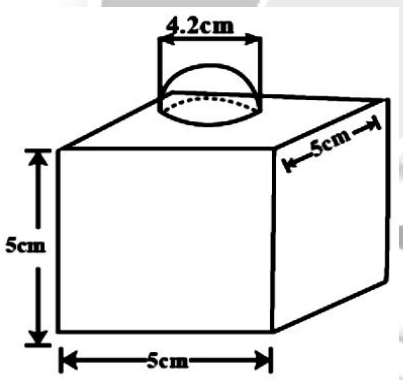
Space for Rough Work

21. In the given figure, TBP and TCQ are tangents to the circle whose centre is O. Also $\angle PBA = 60^0$ and $\angle ACQ = 70^0$. Find the value of $\angle BAC$.



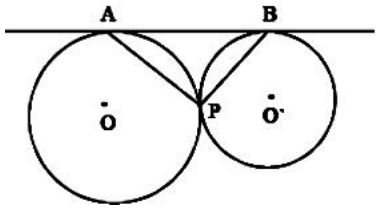
(a) 60^0 (b) 70^0
(c) 50^0 (d) 130^0

22. The decorative block shown in figure is made of two solids, a cube and a hemisphere. The base of the block is a cube with edge 5 cm. and the hemisphere fixed on the top has a diameter of 4.2 cm. The total surface area of the block is.



(a) 150 cm^2 (b) 160.86 cm^2
(c) 162.86 cm^2 (d) 163.86 cm^2

23. In the given figure, two circles tauch each other externally at point P. AB is the direct common tangent of these circles. Find the angle APB.



(a) 60^0 (b) 45^0
(c) 90^0 (d) 30^0

24. Which of the following is not the length of a median in triangle ABC with vertices A(-1,3), B(1,1) and (15, 1) ?

(a) $2\sqrt{6}$ (b) $\sqrt{26}$
(c) $2\sqrt{5}$ (d) $\sqrt{2}$

25. Sum of n terms of the series $\sqrt{2}+\sqrt{8}+\sqrt{18}+\sqrt{32}+$ --------- is

(a) $\frac{n(n+1)}{2}$ (b) 2n (n + 1)
(c) $\frac{n(n+1)}{\sqrt{2}}$ (d) 1

26. The sum of n terms of two arithmetic progressions are in the ratio (3n + 8): (7n + 15) Find the ratio of their 12^{th} terms.

(a) $\frac{9}{4}$ (b) $\frac{4}{9}$
(c) $\frac{16}{7}$ (d) $\frac{7}{16}$

27. A person earns 15% on an investment but losses 10% on another investment. If the ratio of the two investments be 3: 5, then what is the gain or loss on the two investments taken together?

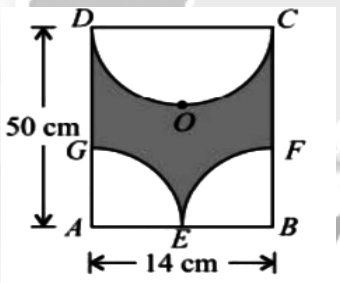
(a) 1.625% loss (b) 13.125% gain
(c) 13.125% loss (d) None of these

Space for Rough Work

28. Which of the following is/are correct?
    (a) Product of two irrational numbers is always an irrational number
    (b) The sum of two irrational numbers is always an irrational number
    (c) Sum of rational and irrational number is always an irrational number.
    (d) None of these

29. Six years hence, a man's age will be three times the age of his son and three years ago he was nine times as old as his son. The present age of the man is
    (a) 28 years (b) 30 years
    (c) 32 years (d) 34 years

30. Find the area of the shaded portion in the given figure, if E is the midpoint of AB, AGE & BEF are quadrants and DOC is a semicircle.



    (a) 154 cm² (b) 416 cm²
    (c) 284 cm² (d) 546 cm²

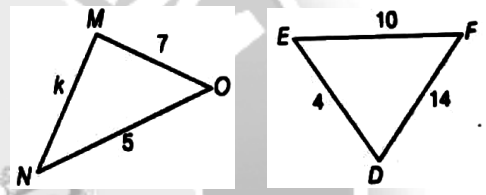
31. Tours of the national capital and the White house begin at 8:30 am from tour agency. Tours for the national capital leave every 15 min. Tours for the White house leave every 20 min. How many minutes after do the tours leave at the same time?
    (a) 30 min (b) 60 min
    (c) 45 min (d) 75 min

32. If one of the zeroes of the polynomial $f(x) = (k^2 + 8)x^2 + 13x + 6k$ is reciprocal of the other, the value of k is
    (a) 4, -2 (b) -4, -2 (c) -4, 2 (d) 4, 2

33. The value of k, for which 2k + 7 , 6k-2 and 8k+4 are 3 consecutive terms of an AP.
    (a) $\frac{15}{2}$ (b) $\frac{13}{2}$ (c) $\frac{17}{2}$ (d) $\frac{11}{2}$

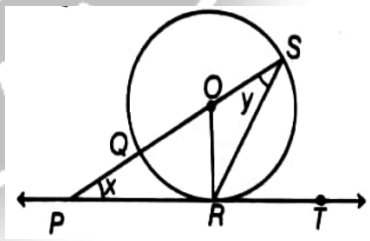
34. If the product of zeroes of the polynomial $f(x)=ax^3-6x^2 + 11x-6$ is 4, then the value of a is
    (a) $-\frac{11}{4}$ (b) $-\frac{3}{2}$ (c) $\frac{11}{4}$ (d) $\frac{3}{2}$

35. If the following pair is similar, then the value of 'k' is



    (a) 4 (b) 8
    (c) 2 (d) 7

36. In the given figure, PT is a tangent of a circle, with centre O, at point R. If diameter SQ is produced, it meets with PT at point P with $\angle SPR = x$ and $\angle QSR = y$, then the value of $x+2y$ is



    (a) 60° (b) 75°
    (c) 45° (d) 90°

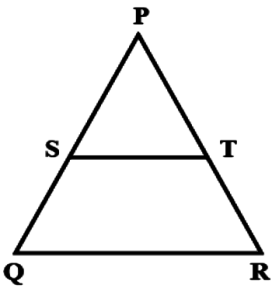
Space for Rough Work

37. In a ΔABC, it is given that AD is the internal bisector of $\angle A$. If BD = 6 cm, DC = 8 cm and AB = 10 cm, then AC is

(a) 11 cm (b) 13.3 cm

(c) 14 cm (d) 10 cm

38. In ΔPQR, $ST \| QR$, $\frac{PS}{SQ} = \frac{3}{5}$ and PR =28 cm ,then PT is



(a) 16.3 cm (b) 11.2 cm

(c) 10.5 cm (d) 7 cm

39. **Assertion (A)** Sum of first 10 even natural number is 120.

Reason (R) If a is the first term, *l* is the last term and d is the common difference of an AP, then n^{th} term from the end is given by *l*-(n-1)d .

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true but Reason (R) is false.

(d) Assertion (A) is false but Reason (R) is true.

40. **Assertion (R)** The denominator of a fraction is 4 more than twice the numerator, when both the numerator and denominator are decreased by 6, then the denominator becomes 12 times the numerator. The fraction will be $\frac{7}{18}$.

Reason (R) The linear equation used are x-2y=4 and 12x-y=66, whose fraction be $\frac{x}{y}$.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true but Reason (R) is false.

(d) Assertion (A) is false but Reason (R) is true.

Space for Rough Work

PART - III : PHYSICS & CHEMISTRY

1. (A) Assertion: 1 Horse power = 746 watts
   (R) Reason: Horse power is unit of electric potential.
   (a) A and R are true and R is the correct explanation of A.
   (b) A and R are true, but R is not the correct explanation of A.
   (c) A is true but R is false.
   (d) Both A and R are false.

2. It takes 20 minutes to boil water in an electric kettle. By change in the length of the coil in the kettle, using the same power supply, water is to be boiled in 14 minutes. Then the change in the length of the coil is _____ of the original length.
   (a) $\frac{7}{10}$th (b) $\frac{10}{7}$th
   (c) $\frac{3}{10}$th (d) $\frac{10}{3}$th

3. A total of 10^{19} electrons flow through a conductor of resistance 20 ohm in one second. Find the potential difference between the terminals of the conductor.
   (a) 32 V (b) 64 V
   (c) 16 V (d) 20 V

4. A light ray is incident on a surface with a glancing angle of 60°. Find the angle of deviation.
   (a) 30° (b) 45°
   (c) 120° (d) 60°

5. An object is placed in front of a plane mirror. Determine the shift in position of the image if the object and the mirror are moved 5 cm each towards each other.
   (a) 5 cm (b) 10 cm
   (c) 20 cm (d) 15 cm

6. Match the statements of Column A with those of Column B.

Column A	Column B
(P) Real image	(p) Convex mirror
(Q) Diminished and virtual image	(q) Plane mirror
(R) Virtual image with magnification one	(r) Concave mirror

   (a) P → r; Q → p; R → q
   (b) P → r; Q → q; R → p
   (c) P → p; Q → r; R → q
   (d) P → q; Q → r; R → p

7. A tree of height 10 m is viewed by a diver under water at a certain distance below the surface. Determine the apparent height of the tree. $\left[\mu_w = \frac{4}{3}\right]$
   (a) 20 m (b) 6.66 m
   (c) $\frac{40}{3}$m (d) 25 m

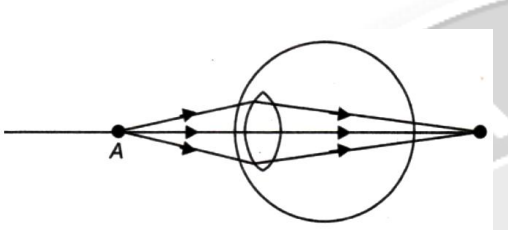
8. The critical angle of a medium A with respect to medium B is 60^0. Determine the velocity of light in B if the velocity of light in A is $2\times10^8 ms^{-1}$.
   (a) $3\times10^8 ms^{-1}$ (b) $\frac{4}{\sqrt{3}}\times10^8 ms^{-1}$
   (c) $\sqrt{\frac{4}{3}}\times10^8 ms^{-1}$ (d) $\frac{4}{3}\times10^8 ms^{-1}$

9. The electric potential at a point P is (-10 V) and that at a point Q is 20 V. Calculate the work done (in J) by the electric force to move a proton slowly from Q to P is.
   (a) 48×10^{-19} (b) 16×10^{-19}
   (c) 24×10^{-18} (d) 12×10^{-1}

Space for Rough Work

10. An old person is unable to see clearly nearby objects as well as distant objects. To correct the vision, what kind of lens will he require?
    (a) Concave lens
    (b) Bifocal lens whose upper portion is concave lens and lower portion is convex lens.
    (c) Convex lens
    (d) Bifocal lens whose upper portion is convex lens and lower portion is concave lens.

11. Observe the given diagram carefully. What could be the causes of this defect?



    (i) The focal length of the eye lens is too long.
    (ii) The eyeball becomes too small.
    (iii) The focal length of the eye lens is too small.
    (iv) The eyeball becomes too long.
    (a) Only (i) and (ii) (b) Only (i) and (iv)
    (c) Only (ii) and (iii) (d) Only (iii) and (iv)

12. Which of the following can correct the refractive defects in human eyes?
    (a) Contact lenses (b) Laser treatment
    (c) Spectacles (d) All of the above

13. The direction of magnetic field pattern produced by a straight wire can be determined with the help of which one of the following rule?
    (a) Maxwell's Right Hand Thumb Rule
    (b) Fleming's Left Hand Rule
    (c) Fleming's Right Hand Rule
    (d) All of these

14. Which one of the following is not safety device used in domestic circuit?
    (a) MCB (b) Fuse
    (c) Earthing (d) Switch

15. When the temperature of a pure metallic conductor is increased, then what happens to its resistance?
    (a) It decreases.
    (b) It increases.
    (c) It may increase or decrease.
    (d) It remains the same.

16. Silver article turns black when kept in the open for a few days due to formation of
    (a) H_2S (b) AgS
    (c) $AgSO_4$ (d) Ag_2S

17. An element X on exposure to moist air turns reddish-brown and a new compound Y is formed. The substance X and Y are
    (a) X = Fe, Y = Fe_2O_3 (b) X = Ag, Y = Ag_2S
    (c) X = Cu, Y = CuO (d) X = Al, Y = Al_2O_3

18. Chlorine is in + 1 oxidation state in
    (a) HCl (b) $HClO_4$
    (c) ICl (d) Cl_2O

19. Which of the following act both as an oxidising as well as reducing agent ?
    (a) H_2O_2 (b) H_2S
    (c) SO_2 (d) HNO_2

20. If a few drops of a concentrated acid accidentally spills over the hand of a student, what should be done?
    (a) wash the hand with saline solution
    (b) wash the hand immediately with plenty of water and apply a paste of sodium hydrogencarbonate

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(c) after washing with plenty of water apply solution of sodium hydroxide on the hand

(d) neutralise the acid with a strong alkali

21. Identify the correct representation of reaction occurring during chloralkali process

(a) $2NaCl(l) + 2H_2O(l) \rightarrow 2NaOH(l) + Cl_2(g) + H_2(g)$

(b) $2NaCl(aq) + 2H_2O(aq) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(g)$

(c) $2NaCl(aq) + 2H_2O(l) \rightarrow 2NaOH(aq) + Cl_2(aq) + H_2(aq)$

(d) $2NaCl\,(aq) + 2H_2O\,(l) \rightarrow 2NaOH\,(aq) + Cl_2(g) + H_2(g)$

22. What is true way to express the concentration of solution?

(a) Normality (b) Molarity

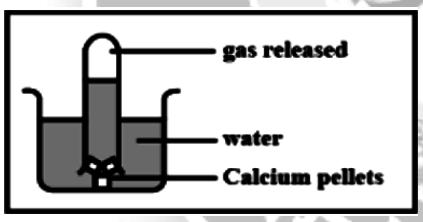
(c) Molality (d) All of given

23. Out of the following, which cannot be obtained by electrolysis of aqueous solution of the salt?

(a) Ag (b) Mg

(c) Cu (d) Cr

24. Observe the given reaction of Calcium with water.



What happens when pellets of calcium are added to the water?

(i) The solution produced turns red litmus into blue.

(ii) The gas released produces a 'pop' sound when tested with a lighted splinter.

(iii) The calcium pellets burn with a blue flame.

(a) (i) and (ii) only (b) (ii) and (ii) only

(c) (i) and (iii) only (d) (i), (ii) and (iii)

25. Pentane has the molecular formula C_5H_{12}. It has

(a) 5 covalent bonds (b) 12 covalent bonds

(c) 16 covalent bonds (d) 17 covalent bonds

26. The name of the compound $CH_3 — CH_2 — CHO$ is

(a) Propanal (b) Propanone

(c) Ethanol (d) Ethanal

27. In C_6H_{14}, the number of possible isomers is-

(a) 3 (b) 4

(c) 5 (d) 6

28. The general formula of cyclic alkanes is-

(a) C_nH_{2n+2} (b) C_nH_{2n-2}

(c) C_nH_{2n-1} (d) C_nH_{2n}

29. Isomers have identical.

(a) Structural formula

(b) Chemical properties

(c) Molecular formula

(d) Physical properties

30. $CH_3-CH_2-OH \xrightarrow{\text{Alkaline } KMnO_4 + \text{Heat}} CH_3-COOH$

In the above given reaction, alkaline KMnO4 acts as

(a) reducing agent (b) oxidising agent

(c) catalyst (d) dehydrating agent

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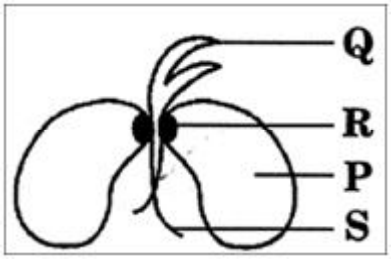
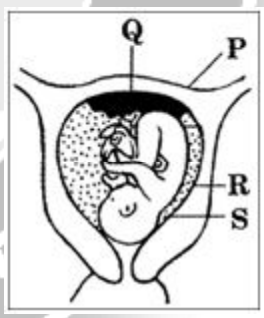
PART - IV : BIOLOGY

1. Lipase acts on
   (a) Amino acids (b) Fats
   (c) Carbohydrates (d) All of these
2. Ram was studing anatomy of young roots of maize, mangolia, pine and money plant. He forgot to label the slides. If he finds only sieve cells without sieve tubes and companion cells, this slide has to be of:
   (a) Pine (b) Money plant
   (c) magnolia (d) Maize.
3. The food is translocated in
   (a) upward direction
   (b) downward direction
   (c) radial direction
   (d) All the direction
4. Hormone used in early ripening of fruit is
   (a) Auxin (b) ABA
   (c) ethylene gas (d) Cytokinin
5. Considering size, which of the following is the most appropriate?
   (a) Bacteria > Viruses > yeast
   (b) Hornwords > Mosses > Liverworts
   (c) Smooth muscle > Straited muscle < Cardiac Muscle
   (d) Platelets < Human erythrocytes < human eosinophils
6. If the sequence of DNA strand is given as GCTAAGTCGAC the complementary strand will be :
   (a) CGATTCAGCTG (b) CGATTCAGCTC
   (c) AGATTCAGCTG (d) ACTGAACAATG
7. If Pancreas stops functioning in the body then the level of _____
   (a) Insulin and glucagon will increase
   (b) Only Insulin will decrease
   (c) Insulin and glucagon will decrease
   (d) Only Glucagon will decrease
8 Which hormone is responsible for secondary sexual character in females?
   (a) Estrogen (b) Progesterone
   (c) Testosterone (d) Prolactine
9. Which of these labelled parts provides food for a baby plant?



   (a) P (b) Q
   (c) R (d) S
10. Observe the given figure.



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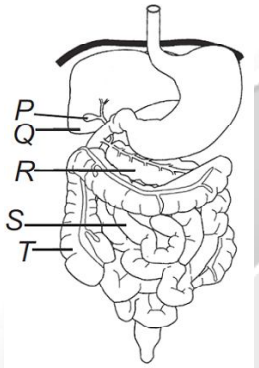
Which of the following labeled structures helps in the exchange of nutrients, oxygenand waste products between the embryo and the mother?

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

11. Refer to the diagram of the human digestive system. What would be the likely consequence of swapping S and T i.e., from the stomach, food will pass through T to S?

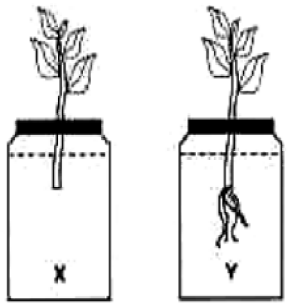


(a) The digestive enzymes would be denatured.
(b) The intestinal contents would be highly alkaline and would damage the wall of T.
(c) The intestinal contents would be too dry and unable to pass through S properly.
(d) Water absorption would be highly reduced.

12. If a person is suffering from hypocalcaemia, which one of the following could be the possible reason?

(a) Absence of parathyroid hormone
(b) Malfunction of pancreas
(c) Pineal gland dysfunction
(d) Decreased level of corticosteroids

13. The cut stem of two identical branches of the same mother plant were inserted in bottles containing liquids X and Y for a week to show the result as seen in the accompanying diagram. The liquid 'X' and 'Y' may be



(a) Water and physiologically balanced solution
(b) Water and weak solution of abscisic acid
(c) Water and weak solution of auxin
(d) Weak salt solution and weak solution of ethylene

14. Which of the following statements about fungi is/are true ?

(i) Some fungi are parasitic
(ii) Some fungi are saprophytic
(iii) Some fungi are mutualistic
(iv) Some fungi are autotrophic

(a) (i) and (ii) only (b) (ii) and (iii) only
(c) Only (i) (d) (i), (ii) and (iii)

15. In amoeba absorption of the digested nutrients occurs in -

(a) cytoplasm
(b) plasma membrane
(c) contractile vacuole
(d) pseudopodia.

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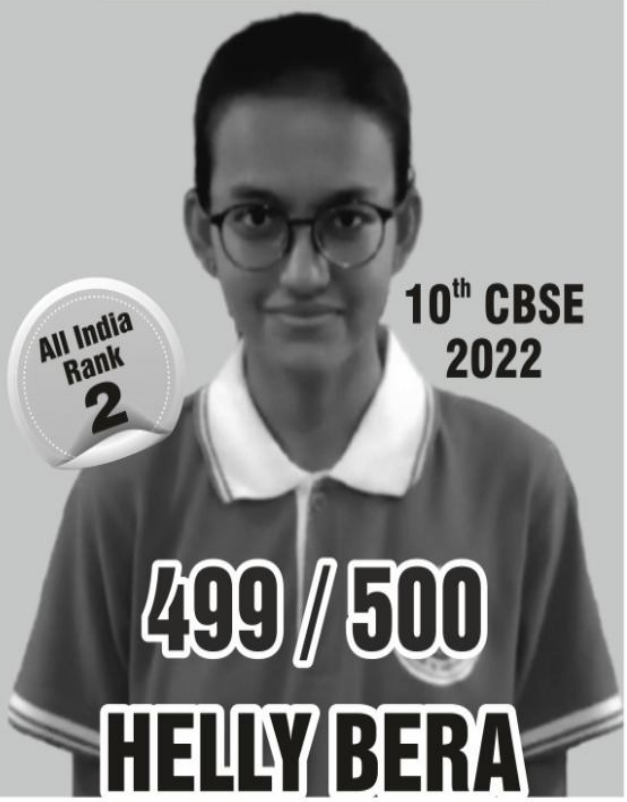

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