

I.Q**Section - I****Straight Objective Type**

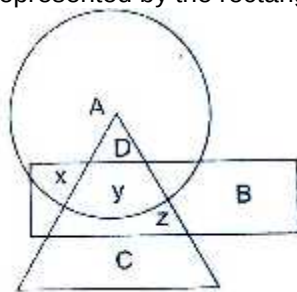
This section contains 30 multiple choice questions numbered 1 to 30. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. There is a certain relation between two given numbers on one side of :: and one number is given on another side of :: while another number is to be found from the given alternatives, having the same relation with this number as the numbers of the given pair bear. Choose the best alternative.
 $5 : 26 :: 8 : ?$
(A) 64 (B) 65 (C) 66 (D) 67
 2. If + means $\times$, $\times$ means $\div$ and $\div$ means +, then—
 $16 \div 4 \times 2 - 5 + 8 = ?$
(A) 18 (B) 10 (C) 14 (D) 12
 3. Complete the series 23, 29, 31, ?, 41, 43
(A) 35 (B) 37 (C) 39 (D) 40
 4. Which one of the alternatives will replace the question-mark (?)
HZF, IWH, KSJ,>NNL, ?
(A) SHM (B) RHN (C) THN (D) RGM
- Directions (5-6): Find the odd-man out.**
5. (A) Explain (B) Instruct (C) Teach (D) Train
 6. If 2554 and 7520 are codes for BEED and GET respectively, how will you code 'HIDE'?
(A) 8745 (B) 7945 (C) 8935 (D) 8945

Space for rough work

Directions (7-8):

In the following diagram, the circle represent college professors, the triangle stands for surgical specialists, and medical specialists are represented by the rectangle. Answer questions based on the diagram.



7. College professors who are also surgical specialists are represented by
 (A) A (B) B (C) C (D) D
8. Surgical specialists who are also medical specialists but not professors, are represented by
 (A) x (B) y (C) z (D) D

Directions (9 - 10):

Study the following information carefully and answer the questions given below it:

Digits in the numbers are to be coded as follows:

Digit	7	3	5	0	2	1	6	4	9	8
Code	N	H	L	T	F	D	R	Q	G	P

Following conditions are to be observed:

- (i) If the first digit is even and the last digit is odd, they are to be coded as \$ and @ respectively.
 (ii) If the first digit is odd and the last digit is even, they are to be coded as # and £ respectively.
 (iii) If 0 is preceded as well as followed by an odd digit, then 0 is to be coded as ↑.
 (iv) If 0 is preceded as well as followed by an even digit, then 0 is to be coded as ↓.
 (v) 0 is not considered as either even or odd.
9. What will be the code for 36250098?
 (A) \$RFLTTG£ (B) #RFLTTG@ (C) #RFLTTG£ (D) \$RFLTTG@
10. What will be the code for 1375490?
 (A) DHNLQGT (B) #HNLQGE (C) DHNLQG# (D) £HNLQG#

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Directions (11 - 12)

Read the information given below and answer the questions that follow:

A * B means A and B are of the same age.

A – B means B is younger than A.

A + B means A is younger than B.

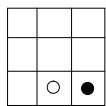
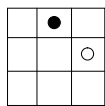
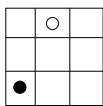
11. Sachin * Madan – Reena means
(A) Reena is the youngest (B) Reena is the oldest.
(C) Madan is younger than Reena (D) None of these
12. $X + Y + Z$ is same as
(A) $Y - X - Z$ (B) $Z - Y - X$ (C) $Z - X - Y$ (D) None of these
13. Five children are sitting in a row. S is sitting next to P but not T. K is sitting next to R who is sitting on the extreme left and T is not sitting next to K. Who are sitting adjacent to S.
(A) K and P (B) R and P (C) only P (D) P and T
14. Number of letters skipped in between adjacent letters in the series is in the order of $1^2, 2^2, 3^2$.
(A) EGLO (B) EGLP (C) RTWZ (D) None of these
15. If 3rd October is Sunday, then how many Thursday are there in the month of December?
(A) 4 (B) 5 (C) can't be determined (D) none of these
16. If NARGRUED is code for GRANDEUR, which word is coded as SERPEVRE?
(A) PERSEVER (B) PRESEVER (C) PRESERVE (D) PERSERVE
17. Read the following information carefully and answer these questions:
In a certain code system
816321 means "The Brown Dog Frightened the Cat".
64851 means "The Frightened Cat ran away".
7621 means "The Cat was Brown".
341 means "The Dog Ran".
- What is the code for "The dog was frightened"?
(A) 5438 (B) 8263 (C) 8731 (D) None of these
18. Introducing a Man, a Woman said, "He is the only son of my mother's mother". How is the woman related to the man?
(A) Mother (B) Aunt (C) Sister (D) Niece

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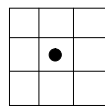
19. If South-East is called East, North-West is called West, South-West is called South and so on, what will North be called?
(A) East (B) North-East (C) North-West (D) South
20. Arrange the given words as they occur in the English Dictionary and choose the correct sequence.
1. Intrinsic 2. Intrude 3. Intricate 4. Introvert 5. Intrigue
(A) 3, 5, 1, 4, 2 (B) 3, 5, 1, 2, 4 (C) 3, 1, 5, 4, 2 (D) 5, 1, 3, 2, 4
21. In each of the following questions, find out how many such pairs of letters are there in the given word each of which has as many letters between them in the word as in the English alphabet.
ADVERTISEMENT
(A) Three (B) Four (C) Five (D) More than five
22. Prashant ranked 9th from the top and 38th from the bottom in a class. How many students are there in the class?
(A) 45 (B) 46 (C) 47 (D) 48
23. Find the missing number
- | | | |
|---|----|----|
| 6 | 9 | 15 |
| 8 | 12 | 20 |
| 4 | 6 | ? |
- (A) 5 (B) 10 (C) 15 (D) 21

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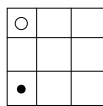
24. Find the figure next to the given figures from the four options (A), (B), (C) and (D)



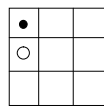
?



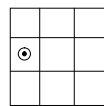
(A)



(B)

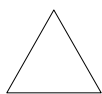


(C)



(D)

25. Find the missing figure from the given four options (A), (B), (C) and (D).



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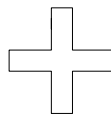


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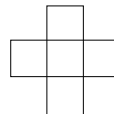
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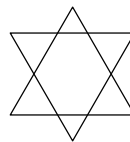
(A)



(B)

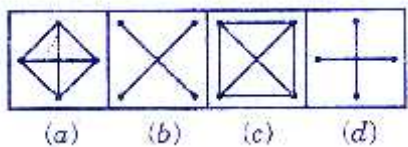
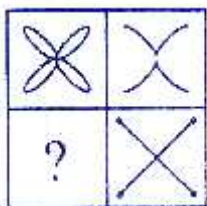


(C)



(D)

26. Find out which of the answer figures (A), (B), (C) and (D) completes the figure matrix?



(a)

(b)

(c)

(d)

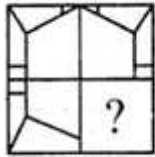
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27. At what time between 5.30 and 6 will the hands of the clock be inclined at 90° ?

- (A) 45 min. past 5 (B) $43\frac{5}{11}$ min. past 5 (C) $43\frac{7}{11}$ min. past 5 (D) 40 min. past 5

Select a figure from amongst the four alternatives, which when placed in the blank space of figure (x) would

28. complete the pattern.



(X)



(A)



(B)

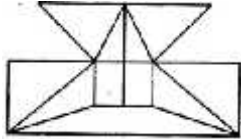


(C)



(D)

29. Find the minimum number of straight lines required to make the given figure.



(A) 16

(B) 17

(C) 18

(D) 19

Directions: (30)

In the following figure there is a problem figure which is followed by four answer figures. One of the answer figures is the water-image of the problem figure. Find the water image.

30.



(A)

(B)

(C)

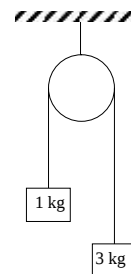
(D)

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Physics**Section - II****Straight Objective Type**

Physics contains 15 multiple choice questions numbered 1 to 15. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. A particle travels with a speed of 18 km/hr, its speed in m/s is
 (A) 5 m/s (B) 50 m/s (C) 64.8 m/s (D) 6.48 m/s
2. A motorist travels from A to B at a speed of 40 km/hr and returns at a speed of km/hr. His average speed will be:
 (A) 40 km/hr (B) 48 km/hr (C) 50 km/hr (D) 60 km/hr
3. Two blocks of masses 2 kg and 1 kg are in contact with each other on a frictionless table. When a horizontal force of 3.0 N is applied to the block of mass 2 kg, the value of the force of contact between the two blocks is
 (A) 4 N (B) 3 N (C) 2 N (D) 1 N
4. A boat travels 50 km east, then 120 km north and finally it comes back to the starting point through the shortest distance. The total time of journey is 3 hours. What is the average velocity in km/hr, over the entire trip?
 (A) 0 (B) 100 (C) 17 (D) 43.33
5. Newton's law of gravitation applies to
 (A) Small bodies only (B) Plants only
 (C) All bodies irrespective of their size (D) For solar system
6. A particle travels 100 metres after starting from rest in 10 seconds. Its acceleration is
 (A) 2 m/s^2 (B) 4 m/s^2 (C) 1 m/s^2 (D) 20 m/s^2
7. The acceleration of block of mass 3 kg is
 (A) $\frac{g}{4} \text{ m/s}^2$ (B) $\frac{g}{2} \text{ m/s}^2$
 (C) $g \text{ m/s}^2$ (D) $\frac{g}{5} \text{ m/s}^2$



Space for rough work

8. A bullet of mass 100 gm is fired from a gun of mass 20 kg with a velocity of 100 m/s. Calculate the recoil velocity of the gun.
(A) 0.2 m/s (B) 0.3 m/s (C) 0.4 m/s (D) 0.5 m/s
9. Two bodies each of mass 0.5 kg are moving in a straight line but opposite in direction with the same velocity of 2 m/s. They collide with each other and stick to each other after collision. What is the common velocity of these bodies after collision?
(A) 0 m/s (B) 2 m/s (C) 1 m/s (D) 5 m/s
10. A bullet of mass 10 g is fired a rifle. The bullet takes 0.003 sec to move through the barrel and leaves with a velocity of 300 m/s. What is the force exerted on the bullet by the rifle?
(A) 3000 N (B) 2000 N (C) 1000 N (D) 500 N
11. A cricket ball of mass 70g moving with a velocity of 0.5 m/s is stopped by player in 0.5 sec. What is the force applied by player to stop the ball?
(A) 0.07 N (B) 0.14 N (C) 0.21 N (D) 0.35 N
12. 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 than the radius of earth, then which of the following is correct?
(A) $d = 2h$ (B) $d = h$ (C) $d = \frac{h}{2}$ (D) $d = \frac{3h}{2}$
13. The time period of an earth satellite in circular orbit is independent of :
(A) the mass of the satellite
(B) radius of its orbit
(C) both the mass of satellite and radius of the orbit
(D) neither the mass of satellite nor the radius of its orbit
14. If g_0 , g_h and g_d be the acceleration due to gravity at earth's surface, at height h and at a depth d respectively, then :
(A) $g_0 > g_h$ and $g_0 > g_d$ (B) $g_0 < g_h$ and $g_0 < g_d$
(C) $g_0 > g_h$ and $g_0 < g_d$ (D) $g_0 < g_h$ and $g_0 > g_d$
15. The height at which the acceleration due to gravity becomes $\frac{g}{9}$ (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) $2R$

Space for rough work

Chemistry

Straight Objective Type

Chemistry contains 15 multiple choice questions numbered 16 to 30. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

16. Which one of the sets of phenomena would increase on raising the temperature?
(A) Diffusion, evaporation, compression of gases
(B) Evaporation, compression of gases, solubility
(C) Evaporation, diffusion, expansion of gases
(D) Evaporation, solubility, diffusion, compression of gases
17. The property of flow is unique to fluids. Which one of the following statements is correct?
(A) Only gases behave like fluids
(B) Gases and solids behave like fluids
(C) Gases and liquids behave like fluids
(D) Only liquids are fluids
18. On converting 25°C, 38°C and 60° to Kelvin scale, the correct sequence of temperature will be
(A) 298 K, 311K and 333 K
(B) 298 K, 300 K, and 338 K
(C) 273 K, 278 K and 543 K
(D) 298 K, 310 K and 338 K
19. CO₂ can be easily liquified and even solidified because
(A) It has weak forces of attraction
(B) It has comparatively more force of attraction than other gases
(C) It has more intermolecular space
(D) It is present in atmosphere.
20. The colour of vapours formed on sublimation of iodine solid is
(A) Purple (violet)
(B) Colourless
(C) Yellow
(D) Orange
21. Zig- Zag movement of the solute particle in a solution is known as
(A) Linear motion
(B) Circular motion
(C) Brownian motion
(D) Curved motion

Space for rough work

22. Which of the following is not matter
(A) Blood (B) Humidity (C) Electron (D) Moon rock
23. 0°C temperature is equal to
(A) 0 K (B) 273 K (C) – 273 K (D) 300 K
24. Which of the following is accompanied by cooling?
(A) Vaporization (B) Evaporation
(C) Condensation (D) None of these
25. Which of the following statements is not correct?
(A) The density of ice is less than the density of water
(B) To convert a temperature on the Kelvin scale to Celsius scale, subtract 273 from the given temperature
(C) To convert a temperature on the Celsius scale to Kelvin scale, add 273 to the given temperature.
(D) Vaporization of a liquid causes cooling
26. What will be the sublimate, when a mixture of sand, lime stone, common salt and iodine is sublimed?
(A) Sand (B) Iodine (C) Sulphur (D) Common salt
27. A mixture of mercury and copper is an example of _____ solution
(A) Solid and solid (B) liquid and solid
(C) Solid and liquid (D) liquid and liquid
28. Which of the following is not a mixture?
(A) Blood (B) Silver coins (C) Saliva (D) Plutonium
29. The pair of liquids which cannot be separated by separating funnel is/are:
(A) alcohol and water (B) petrol and water
(C) mercury and water (D) kerosene and water
30. What is the concentration of a solution in which 4 g of sugar is dissolved in 8 g of water?
(A) 33.3 % (B) 25% (C) 40 % (D) 50 %

Space for rough work

Mathematics

Straight Objective Type

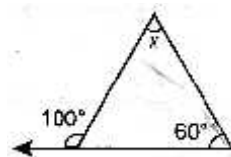
Mathematics contains 15 multiple choice questions numbered 31 to 45. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

31. Each side of an equilateral triangle is 10cm long. The height of the triangle is

- (A) $10\sqrt{3}$ cm (B) $5\sqrt{3}$ cm (C) $10\sqrt{2}$ cm (D) 5 cm

32. Value of x in the figure is

- (A) 80°
(B) 40°
(C) 160°
(D) 20°



33. The points $(-5, 2)$ and $(2, -5)$ lie in the

- (A) Same quadrant (B) II and III quadrant, respectively
(C) II and IV quadrants, respectively (D) IV and II quadrants, respectively

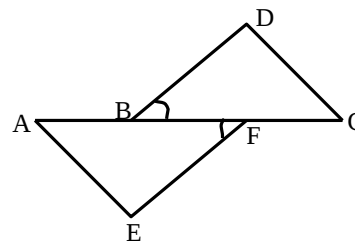
34. On plotting the points $O(0,0)$, $A(3,0)$, $B(3,4)$, $C(0,4)$ and joining OA, AB, BC and CO which of the following figure is obtained?

- (A) Square (B) Rectangle (C) Trapezium (D) Rhombus

35. In the given figure $AB = CF$, $EF = BD$ and $\angle AFE = \angle DBC$. Then

$\triangle AFE$ is congruent to $\triangle CBD$ by which criterion.

- (A) SAS (B) SSS
(C) ASA (D) RHS



36. The least factor by which the number 10584 must be multiplied so that the product may be a cube number is

- (A) 11 (B) 4 (C) 2 (D) 7

Space for rough work

37. If $x = \frac{5}{\sqrt{5} + \sqrt{4}}$; $y = \frac{6}{\sqrt{5} - \sqrt{4}}$; then the value of $x + y$ is

- (A) $11\sqrt{5} - \sqrt{4}$ (B) $11\sqrt{5} + \sqrt{4}$ (C) $\sqrt{5} + \sqrt{4}$ (D) $\sqrt{5} + 11\sqrt{4}$

38. Rational form of $18.\overline{971}$ is

- (A) $\frac{9391}{495}$ (B) $\frac{9291}{495}$ (C) $\frac{9381}{495}$ (D) None of these

39. If $x = \frac{1}{2 - \sqrt{3}}$ then value of $x^3 - 2x^2 - 7x + 5$ is

- (A) 1 (B) 0 (C) 2 (D) 3

40. If a, b, c are distinct and $p(x)$ is a polynomial in x , which leaves remainder a, b, c , on division by $(x - a), (x - b), (x - c)$ respectively, then the remainder on division $p(x)$ by $(x - a)(x - b)(x - c)$ is

- (A) $x + a + b + c$ (B) $a + b + c$ (C) x (D) None of these

41. $\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[5]{32} + \sqrt{225}$ is equal to

- (A) 10 (B) 0 (C) 1 (D) None of these

42. The area of the triangle with two sides 8cm and 11cm and perimeter 32cm

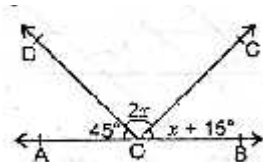
- (A) 8 (B) 16 (C) 4 (D) 2

43. The area of the triangle whose sides are 13cm, 14cm and 15cm

- (A) 85cm^2 (B) 84cm^2 (C) 85cm (D) none of these

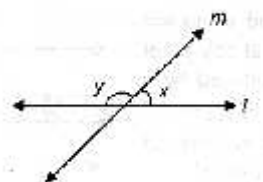
44. In the given figure, value of x is

- (A) 50° (B) 60°
(C) 40° (D) 55°



45. In figure if $x : y = 1 : 4$, then values of x and y are respectively.

- (A) 36° and 144° (B) 18° and 72°
(C) 144° and 36° (D) 72° and 18°



Space for rough work

Biology**Section - III****Straight Objective Type**

Biology contains 45 multiple choice questions numbered 1 to 45. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

1. The main area of various types of activities of a cell is:
(A) Nucleus (B) Plasma membrane (C) Mitochondria (D) Cytoplasm
2. Ranikhet is a disease associated with
(A) Fishes (B) Hens (C) Pigs (D) Honey bees
3. The tissue whose cell wall is impregnated with lignin
(A) Collenchyma (B) Parenchyma (C) Sclerenchyma (D) All the above
4. Mark the incorrect pair:
(A) Blue baby syndrome – nitrate concentration in the drinking water
(B) Minamata disease – mercury contamination
(C) Itai-itai – cadmium
(D) Black lung disease – lead contamination
5. Aleuroplast in a cell store
(A) Starch (B) Oil (C) Protein (D) Nutrients
6. **ASSERTION (A):** Cattle breeds can be improved by super ovulation and embryo transplantation
REASON (R): Super ovulation in high milk yielding cow is induced by hormonal injection
(A) Both A and R are true and R is the correct explanation of A
(B) Both A and R are true but R is not the correct explanation of A
(C) A is true, R is false
(D) Both A and R are false
7. Husk of coconut is made of
(A) Sclerenchymatous tissue (B) Parenchyma (C) Collenchyma (D) Prosenchyma
8. In an algal bloom, the cause of death of other organisms is usually due to:
(A) Toxins (B) Decreased BOD
(C) Decreased sunlight (D) Decreased nutrients
9. The chromosomes become gradually visible with compact action of chromatin during the meiotic stage:
(A) Diplotene (B) Leptotene (C) Zygotene (D) Pachytene
10. In polyculture, two or more than two species of fishes are grown together in the same water body based on their
(A) Size (B) Feeding habits
(C) Reproductive habit (D) Mode of respiration

Space for rough work

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11. Which of the following is living but non-nucleated?
(A) Sieve tube (B) Companion cell
(C) Phloem fibre (D) Phloem parenchyma
12. Which of the following shows highest DDT concentration?
(A) Phytoplankton (B) Sea gull (C) Crab (D) Eel
13. The inner membrane of mitochondria is usually highly convoluted forming a series of infolding known as ?
(A) Thylakoids (B) Lamellae
(C) Cristae (D) Grana
14. Loss of agricultural productivity in India due to pests and diseases
(A) 1% (B) 5% (C) 15% (D) 30%
15. Smooth muscles occur in
(A) Vein (B) Artery (C) Uterus (D) All the above
16. Sulphur dioxide pollution is indicated by
(A) Grasses (B) Mosses (C) Lichens (D) Climbers
17. Important site for formation of glycoproteins and glycolipids is
(A) Vacuole (B) Golgi apparatus (C) Plastid (D) Lysosomes
18. The pesticide useful in the control of aphids, caterpillars, plant bugs and borers is
(A) Aldrin (B) DDT (C) Endosulphan (D) BHC
19. Which one of the following is a simple permanent tissue found in the mesophyll of leaves
(A) Aerenchyma (B) Collenchyma (C) Chlorenchyma (D) Sclerenchyma
20. MIC and Chernobyl tragedies took place where and when?
(A) Bhopal 1984, Ukraine 1990 (B) Bhopal 1984, Ukraine 1988
(C) Bhopal 1984, Ukraine 1986 (D) Bhopal 1986, Ukraine 1988
21. Chromosomes with terminal centromere is called
(A) Telocentric (B) Acrocentric (C) Metacentric (D) Submetacentric
22. The best milk breed in the world is
(A) Chittagong (B) Deoni (C) Holstein-Friesian (D) Sindhi
23. In columnar epithelium , where is nucleus located:
(A) At the base (B) In the middle
(C) At the top (D) No nucleus is present
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24. Country contributing most to the formation of hole in the ozone layer is:
(A) USA (B) Germany (C) Russia (D) Japan
25. Which of the following is the collection of sacks having chlorophyll ?
(A) Stroma (B) Thylakoids (C) outer membrane (D) inner membrane
26. Bulls semen is stored in
(A) Ice (B) Liquid N₂ (C) Liquid CO₂ (D) Liquid O₂
27. Where are osteocytes located?
(A) Entire bone (B) In Lacunae (C) Both A and B (D) None of these
28. The pigments that protects the plants from damage by UV radiation is:
(A) Chlorophyll (B) Xanthophyll (C) Phycocyanin (D) Carotenoids
29. What is the structural element of cell wall?
(A) Matrix (B) Microtubules (C) Cellulose (D) Arabinogalactans
30. Growing two or more crops in definite row pattern is
(A) Mixed farming (B) Mixed cropping (C) Inter cropping (D) Crop rotation
31. Intercalated disc in cardiac muscle provide
(A) Tight junctions (B) Communication junction
(C) Flexible junction (D) Gap junction
32. Carbon monoxide is a pollutant because:
(A) Reacts with O₂ (B) Reacts with haemoglobin
(C) Inhibits glycolysis (D) Inactivates nervous system
33. The number of autosomes in human
(A) 44 (B) 21 pairs
(C) 46 (D) 45
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34. The exotic variety of bee used in apiaries to produce more honey
(A) Indian bee (B) Rock bee (C) Little bee (D) Italian bee
35. The kind of epithelium which forms the inner wall of blood vessels is
(A) Cuboidal epithelium (B) Columnar epithelium
(C) Ciliate columnar epithelium (D) Squamous epithelium
36. If there was no CO₂ in the atmosphere, the earth's temperature would be
(A) Less than the present (B) Same as present
(C) Higher than the present (D) Dependent on O₂ content of air
37. When a plant cell is plasmolysed,
(A) cell become Flaccid (B) Cell become Turgid
(C) Cell retains shape (D) it bursts
38. Which one of the following is a marine fish?
(A) Mrigal (B) Malhi (C) Catla (D) Mackerels
39. The supportive skeletal structures in the human external ears and in the nose tip are the example of
(A) Areolar tissue (B) Bone (C) Cartilage (D) Ligament
40. Biosphere Reserves are established to
(A) Protect the ecosystem (B) Protect animals (C) Protect plants (D) All the above
41. The part of the microscope that you look through also called as eye piece is
(A) ocular lens (B) arm (C) objective lens (D) condenser lens
42. Broilers are maintained for getting
(A) Milk (B) Egg (C) Meat (D) Leather
43. The connective tissue that connects muscle to bone is called
(A) Tendon (B) Ligament
(C) loose connective tissue (D) Adipose tissue
44. The life supporting gases such as O₂, CO₂ and N₂ are concentrated in
(A) Troposphere (B) Exosphere (C) Ionosphere (D) Stratosphere
45. Cell theory is not applicable for
(A) Bacteria (B) Fungus (C) Algae (D) Viruses
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