



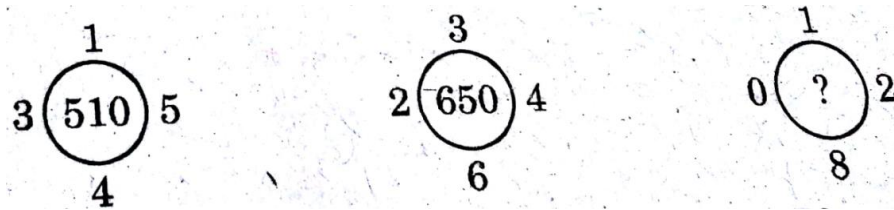
<b>CLASS-X</b>	<b>AARAMBH</b>	<b>DATE: 02-10-19</b>
<b>Max. Time: 120 min</b>		<b>Max marks: 320</b>

**Instructions:**

- i. The test paper consists of **80** multiple choice questions numbered from **1 to 80**, each question followed by four alternatives 1, 2, 3 and 4.
- ii. Mental Ability 1 to 20, Mathematics 21 to 35, Physics 36 to 50 and Chemistry 51 to 65, Biology 66 to 80.
- iii. Each question has only one correct option.
- iv. (a) Each correct answer carries **+4 Marks**.  
(b) For each wrong answer **1 mark** will be **deducted**.

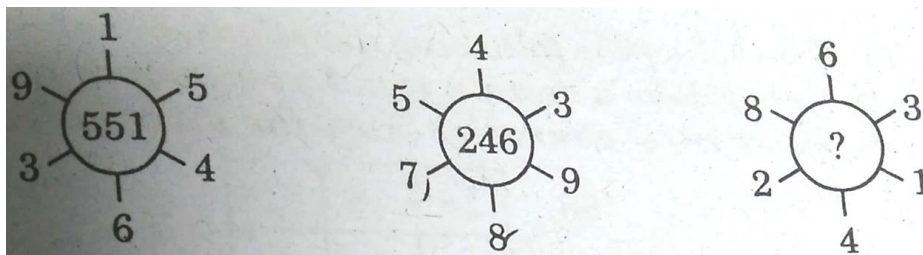
**MAT (Q.NO.1 TO 20)**

1.



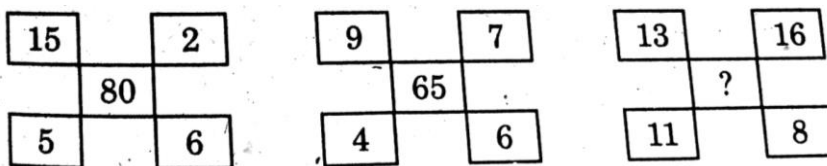
- 1) 610      2) 660      3) 670      4) 690

2.



- 1) 262      2) 622      3) 631      4) 824

3.



- 1) 35      2) 48      3) 72      4) 120

**Directions (Questions No-4 to 8): Study the following information carefully and answer the given questions: Four players A, B,C and D are holding 4 cards each. Each of them has an Ace, a King, a Queen and a Jack. All of them have all the suits (spades, hearts, clubs and diamonds).**

I. A has Ace of spades and Queen of diamonds.

II. B has ace of clubs and King of diamonds.

III. C has Queen of clubs and king of spades.

IV. D has Jack of clubs.

**4. Ace of diamonds is with**

1) A                              2) B                              3) C                              4) D

**5. Jack of hearts is with**

1) A                              2) B                              3) C                              4) D

**6. Queen of spades is with**

1) A                              2) B                              3) C                              4) D

**7. C has which of the following with him?**

1) Ace of hearts              2) Jack of spades 3) King of hearts 4) Queen of spades

**8. D has which of the following with him?**

1) Ace of hearts              2) Queen of hearts 3) King of hearts 4) King of clubs

**Read the following information carefully and answer the question given below: There are six children playing football, namely A, B, C, D, E and F. A and E are brothers. F is the sister of E. C is the only son of A's uncle. B and D are the daughters of the brother of C's father.**

**9. How is C related to F?**

1) Cousin                      2) Brother                      3) Son                      4) Uncle

**10. If it was Saturday on 17<sup>th</sup> December, 2002 what was the day on 22<sup>nd</sup> December, 2004?**

1) Monday                      2) Tuesday                      3) Wednesday 4) Sunday

**11. Kailash remembers that his brother Deepak's birthday falls after 20<sup>th</sup> May but before 28<sup>th</sup> May, while Geeta remembers that Deepak's birthday falls before 22<sup>nd</sup> May but after 12<sup>th</sup> May. On what date Deepak's birthday falls?**

1) 20<sup>th</sup> May                      2) 21<sup>st</sup> May  
3) 22<sup>nd</sup> May                      4) Cannot be determined

**12. A clock is started at noon. By 10 minutes past 5, the hour hand has turned through:**

1)  $145^{\circ}$                       2)  $150^{\circ}$                       3)  $155^{\circ}$                       4)  $160^{\circ}$

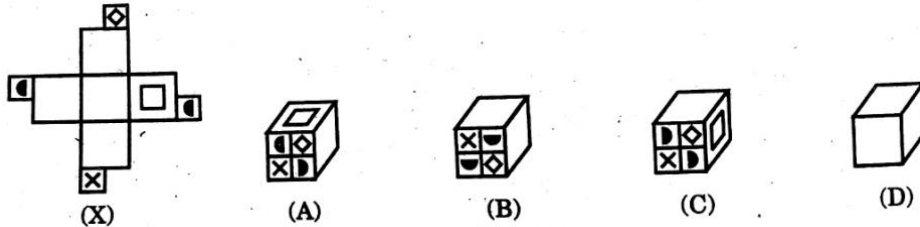
**13. A watch which gains 5 seconds in 3 minutes was set right at 7 a.m. In the afternoon of the same day, when the watch indicated quarter past 4o'clock, the true time is:**

1)  $59\frac{7}{12}$  min.past 3                      2) 4 p.m.  
3)  $58\frac{7}{11}$  min.past 3                      4)  $2\frac{3}{11}$  min.past 4

14. If  $\div$  means  $+$ ,  $-$  means  $\div$ ,  $\times$  means  $-$  and  $+$  means  $\times$ , then  $\frac{(36 \times 4) - 8 \times 4}{4 + 8 \times 2 + 16 \div 1} = ?$

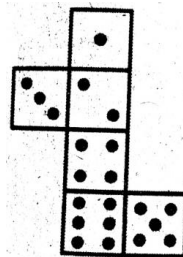
- 1) 0                                      2) 8                                      3) 12                                      4) 16

15. Directions : The sheet of paper shown in the figure (X) Choose from amongst the alternatives the boxes that are similar to the box that will be formed.



- 1) A, B and C only                                      2) B and C only  
 3) A, C and D only                                      4) B, C and D only

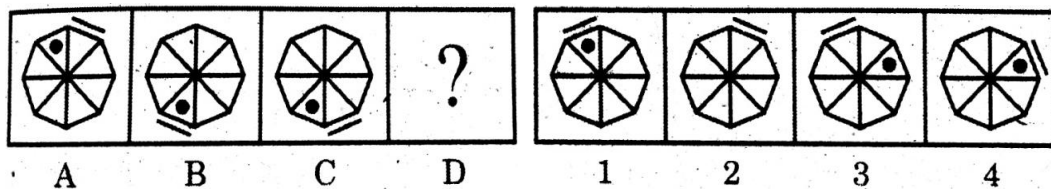
16. When the following figure is folded to form a cube, how many dots would lie opposite the face bearing five dots ?



- 1) 1                                      2) 2                                      3) 3                                      4) 4

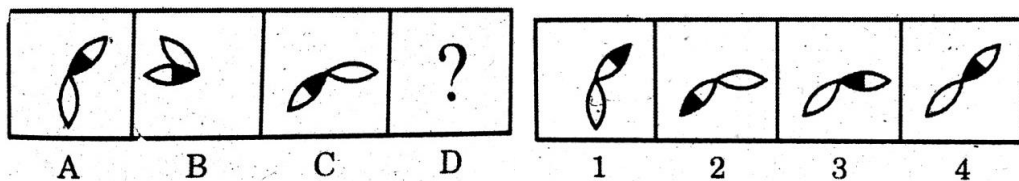
**FIGURE ANALOGY(17-18)**

17.



- 1) 1                                      2) 2                                      3) 3                                      4) 4

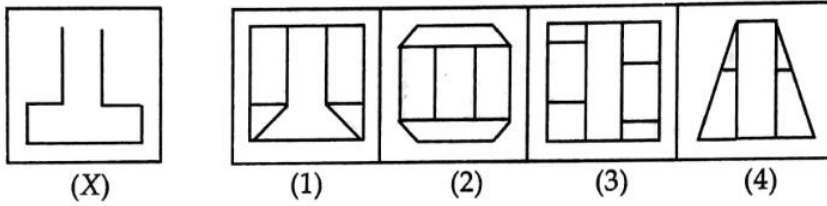
18.



- 1) 1                                      2) 2                                      3) 3                                      4) 4

**Directions (Q. No:19): Embedded Figure:**

19.



- 1) 1                                      2) 2                                      3) 3                                      4) 4

20. How many triangles and parallelograms are there in the following figure?



- 1) 21, 17                                      2) 19, 13                                      3) 21, 15                                      4) 19, 17

**MATHEMATICS (Q.NO.21 TO 35)**

21. In a triangle ABC, D is the midpoint of BC and  $AD > BC/2$ . Then A is

- 1)  $<90^\circ$                                       2)  $<120^\circ$                                       3)  $<135^\circ$                                       4)  $<60^\circ$

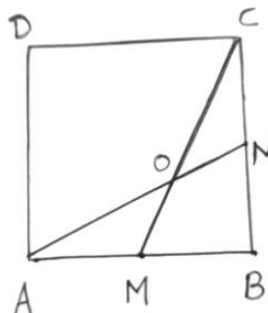
22. If one angle of a triangle is equal to the sum of the other two angles, then the triangle is

- 1) an isosceles triangle                                      2) an obtuse triangle  
3) an equilateral triangle                                      4) a right triangle

23. The median of triangle divides it into two

- 1) triangles of equal area                                      2) congruent triangles  
3) right angled triangles                                      4) isosceles triangles

24. In a square ABCD, M is midpoint of AB, N is midpoint of BC, AN and CM intersect at 'O'. The ratio of ar (AOCD) and ar (ABCD) is



- 1) 2:3                                      2)  $\sqrt{3}:2$                                       3)  $\sqrt{3}-1:2$                                       4) 3:4

25. If  $a, b, c$  are real numbers such that  $a + \left(\frac{1}{b}\right) = \frac{7}{3}; b + \left(\frac{1}{c}\right) = 4; c + \left(\frac{1}{a}\right) = 1$ , then  $abc =$
- 1) 0                                      2) 1                                      3) 2                                      4)  $\frac{5}{3}$
26. Triangle ABC has  $AB = 9$  and  $BC:AC = 40:41$ . The largest area that this triangle can have is \_\_\_\_\_
- 1) 525                                      2) 676                                      3) 729                                      4) 820
27. A diagonal of a rectangle is inclined to one side of the rectangle at  $25^\circ$ . The acute angle between the diagonals in
- 1)  $55^\circ$                                       2)  $50^\circ$                                       3)  $40^\circ$                                       4)  $25^\circ$
28. The largest number which divides 70 and 125 leaving remainder 5 and 8 respectively is
- 1) 11                                      2) 13                                      3) 17                                      4) None
29. If  $f(x) = x^3 + ax + b$  is divisible by  $(x-1)^2$ , then the remainder obtained when  $f(x)$  is divided by  $x+2$  is
- 1) 1                                      2) 0                                      3) 3                                      4) -1
30. If  $ax + by + c = 0$  and  $px + qy + r = 0$  are inconsistent lines then .....
- 1)  $\frac{a}{p} = \frac{b}{q} \neq \frac{c}{r}$                                       2)  $\frac{a}{p} \neq \frac{b}{q}$                                       3)  $\frac{a}{p} = \frac{b}{q} = \frac{c}{r}$                                       4)  $\frac{a}{c} = \frac{r}{q}$
31.  $\triangle ABC \sim \triangle PQR$ ; If  $AB=6; BC=4; AC=8$  and  $PR=6$  then  $PQ+QR=$
- 1) 8                                      2) 10                                      3) 7.5                                      4) 9
32. Two circles of radii 3cm and 5cm touch each other externally. Distance between their centres is
- 1) 2cm                                      2) 8 cm                                      3) 34 cm                                      4) 16 cm
33. The ratio of two cylinders are in the ratio 2:3 & the ratio of their heights is 5:4. Ratio of their curved surface areas is \_\_\_\_\_
- 1) 3:5                                      2) 5:6                                      3) 2:3                                      4) 4:9
34. If  $\sin 3\theta = \cos(\theta - 6)$  find  $\theta = ?$
- 1)  $30^\circ$                                       2)  $24^\circ$                                       3)  $36^\circ$                                       4)  $12^\circ$
35. A number 'x' is chosen at random from the numbers -3,-2,-1,0,1,2,3 the probability that  $|x| < 2$  is ....
- 1)  $\frac{5}{7}$                                       2)  $\frac{2}{7}$                                       3)  $\frac{3}{7}$                                       4)  $\frac{1}{7}$

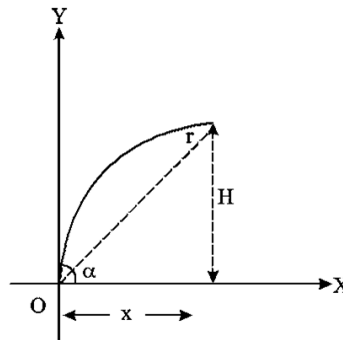
**PHYSICS (Q.NO.36 TO 50)**

36. Length of a hollow tube is 5 m, its outer diameter is 10 cm and thickness of its wall is 5 mm. If resistivity of the material of the tube is  $1.7 \times 10^{-8} \Omega \times m$  then resistance of tube will be
- 1)  $5.6 \times 10^{-5} \Omega$       2)  $2 \times 10^{-5} \Omega$       3)  $4 \times 10^{-5} \Omega$       4)  $3 \times 10^{-5} \Omega$
37. Two wires of the same material have lengths 6 cm and 10 cm and radii 0.5 mm and 1.5 mm respectively. Then the ratio of their resistance is
- 1)  $\frac{13}{5}$       2)  $\frac{27}{5}$       3)  $\frac{27}{7}$       4)  $\frac{13}{9}$
38. The material which obey ohm's law are called \_\_\_\_\_ materials.
- 1) ohmic      2) Non-ohmic      3) voltaic      4) None
39. The intensity of magnetic field of a solenoid can be increased by
- 1) increasing the number of turns in the solenoid  
2) Increasing the voltage  
3) Decreasing voltage  
4) None
40. Two circular coils have diameters 10cm and 20cm with same number of turns. The ratio of the magnetic field induction produced at the centre of the coils when connected in series is
- 1) 1:2      2) 2:1      3) 4:1      4) 1:4
41. A device which converts direct electric current into mechanical energy is called
- 1) Electric fan      2) Electric motor  
3) Electric bulb      4) Electric generator
42. A person travelled a distance  $\pi r$  along the circumference of a circle of radius R. displacement of the person is
- 1) R      2) 2R      3)  $2\pi r$       4) Zero
43. An example of a body moving with constant speed but still accelerating is
- 1) A body moving with constant speed on a straight road  
2) A body moving in a helical path with constant speed  
3) A body moving with constant speed in a circular path  
4) A body moving with constant speed on a straight railway track
44. When a spaceship is two earth radii distant from the centre of the earth its gravitational acceleration is:
- 1)  $19.6 \text{ ms}^{-2}$       2)  $9.8 \text{ ms}^{-2}$       3)  $4.9 \text{ ms}^{-2}$       4)  $2.45 \text{ ms}^{-2}$

45. A mass  $m$  extends a vertical helical spring of spring constant  $k$  by  $x$  m at the surface of earth. Extension in spring by the same mass at height  $h$  metre above the surface of earth is

- 1)  $\frac{GMm}{k(R+h)}$       2)  $\frac{GMm}{kR^2}$       3)  $\frac{(R+h)^2}{R^2}x$       4)  $\frac{R^2}{(R+h)^2}x$

46. A particle of mass 'm' is projected at an angle to the horizontal with an initial velocity  $u$ . Find the work done by gravity during the time it reaches the highest point.



- 1)  $W = -\frac{1}{2}mu^2 \cos^2(\alpha)$       2)  $W = -\frac{1}{2}mu^2 \tan^2(\alpha)$   
 3)  $W = -\frac{1}{2}mu^2 \cot^2(\alpha)$       4)  $W = -\frac{1}{2}mu^2 \sin^2(\alpha)$

47. Under the action of force 2kg body moves such that its position 'x' varies as a function of time  $t$  given by  $x = \frac{t^3}{3}$ ,  $x$  is in metre and  $t$  in second. Calculate the work done by the force in first two seconds.

- 1) 8 J      2) 16 J      3) 24 J      4) 36 J

48. Children under the age of 5 can hear upto

- 1) 25 Hz      2) 25k Hz      3) 20 Hz      4) 25 kHz

49. Reverberation of sound is used in

- 1) Stethoscope      2) Trumpets  
 3) Megaphone      4) All of these

50. The strength of force is expressed by?

- 1) weight      2) mass  
 3) magnitude      4) longitudinal force

**CHEMISTRY (Q.NO.51 TO 65)**

51. No. of neutrons present in  ${}_{15}^{31}\text{P}$
- 1) 15                      2) 31                      3) 16                      4) 20
52. A 100 watt bulb emits monochromatic light of wave length 400nm calculate the no. of photons emitted per second by the bulb
- 1)  $2.012 \times 10^{20} \text{S}^{-1}$     2)  $20.12 \times 10^{20} \text{S}^{-1}$     3)  $2.012 \times 10^{19} \text{S}^{-1}$     4)  $2.012 \times 10^{21} \text{S}^{-1}$
53. The density of the nucleus is of the order
- 1)  $2.3 \times 10^{17} \text{kg/m}^3$     2)  $2.3 \times 10^{15} \text{kg/m}^3$     3)  $2.3 \times 10^{13} \text{kg/m}^3$     4)  $2.3 \times 10^{11} \text{kg/m}^3$
54. Which of the following statements about the reaction below are incorrect ?
- $$2\text{PbO} + \text{C}(\text{s}) \rightarrow 2\text{Pb}(\text{s}) + \text{CO}_2(\text{g})$$
- i) Lead is getting reduced                      ii) Carbon dioxide is getting oxidized  
iii) Carbon is getting oxidised                      iv) Lead oxide is getting reduced
- 1) (i) and (ii)                      2) (i) and (iii)                      3) (i),(ii) and (iii)                      4) (iii) and (iv)
55. \_\_\_\_\_ is the no. of water molecules contained in a drop of water weighing 9 grams
- 1)  $6.023 \times 10^{23}$                       2)  $3 \times 10^{23}$                       3)  $1.5 \times 10^{23}$                       4)  $0.5 \times 10^{23}$
56. Weight of  $\text{H}_2$  left when 14 g of  $\text{N}_2$  is allowed to react with 67.2 lit of  $\text{H}_2$  at STP is
- 1) 2 g                      2) 4 g                      3) 3 g                      4) 10 g
57. An acid present in Solid state is
- 1)  $\text{HCl}$                       2)  $\text{H}_3\text{PO}_4$                       3)  $\text{H}_2\text{SO}_4$                       4)  $\text{HNO}_3$
58. A basic gas extremely soluble in water
- 1)  $\text{HCl}$                       2)  $\text{SO}_2$                       3)  $\text{NH}_3$                       4)  $\text{NaOH}$
59. Which one of the following oxides gives pink colour with phenolphthalein indicator in aqueous solution?
- 1)  $\text{N}_2\text{O}$                       2)  $\text{NO}$                       3)  $\text{CaO}$                       4)  $\text{CO}_2$
60. The value of Rydberg constant is :
- 1)  $109\,677 \text{ cm}^{-1}$                       2)  $3.289 \times 10^{15} \text{ sec}^{-1}$                       3)  $109668 \text{ m}^{-1}$                       4) 0.0012
61. In the absence of Pauli's exclusion principle the electronic configuration of Li is
- 1)  $1s^3$                       2)  $1s^2 2s^1$                       3)  $1s^2 sp^1$                       4)  $1s^1 2s^1 2p^1$



62. The angular momentum of an electron in an orbit is given as :

- 1)  $L = n(h/2\pi)$       2)  $(kh/\pi)$       3)  $mvr = (kh/2\pi)$       4)  $L = m(h/2\pi)$

63. The extraction of a metal from its ore involves

- 1) Concentration or dressing      2) extraction of crude metal  
3) Refining of the metal      4) all the above

64. By which of the following reactions is blister copper obtained

- 1)  $Cu_2S + FeS \rightarrow 2Cu + FeS_2$       2)  $Cu^{+2} + Fe \rightarrow Fe^{+2} + Cu$   
3)  $Cu_2S + FeO \rightarrow 2Cu + FeO$       4)  $Cu_2S + 2Cu_2O \rightarrow 6Cu + SO_2$

65. Which is used to remove the impurity like  $SiO_2$ ?

- 1) CaO      2)  $CO_2$       3) CO      4)  $NO_2$

### BIOLOGY (Q.NO.66 TO 80)

66. Which among the following have open circulatory system?

- (i) Arthropoda      (ii) Mollusca      (iii) Annelida      (iv) Coelenterata  
1) (i) and (ii)      2) (iii) and (iv)  
3) (i) and (iii)      4) (ii) and (iv)

67. Match the Column-A with Column-B

#### Column-A

- 1) Muscular coordination  
2) Surrounded by Meninges  
3) Wilting of Leaves  
4) Change in the shape of muscle cell  
5) Abscisic Acid

#### Column-B

- i) Proteins  
ii) Brain & spinal Cord  
iii) Cerebellum  
iv) Cytokinins  
1) A-iii; b-ii; c-v; d-i      2) A-v; b-i; c-ii; d-iii  
3) A-ii; b-i; c-iii; d-iv      4) A-ii; b-i; c-iv; d-iii

68. Common indicator organism of water pollution is

- 1) Leishmania      2) Eichhornia crassipex  
3) Escherichia coli      4) Entamoeba histolytica

69. AIDS cannot be transmitted by

- 1) Sexual contact      2) Hugs      3) Breast feeding      4) Blood transfusion

**70. Steps during the process of photosynthesis are as follows: Arrange them in order**

a) Reduction of carbon dioxide to carbohydrates.

b) Splitting of water molecules into  $O_2$  &  $H_2$ .

c) Conversion of light energy to chemical energy.

d) Absorption of light energy by chlorophyll.

1)  $d \rightarrow c \rightarrow b \rightarrow a$     2)  $c \rightarrow d \rightarrow b \rightarrow a$     3)  $a \rightarrow b \rightarrow c \rightarrow d$     4)  $a \rightarrow c \rightarrow d \rightarrow b$

**71. Pancreatic juice contains these enzymes.**

1) Trypsin, Ptyalin

2) Lipase, Pepsin

3) Trypsin, Pepsin

4) Trypsin Chymotrypsin

**72. Infectious agent**

**Disease**

1) Virus - \_\_\_\_\_(1)\_\_\_\_\_, influenza, dengue fever, AIDS

2) Bacteria - Typhoid fever, cholera, tuberculosis, \_\_\_\_\_(2)\_\_\_\_\_

3) Protozoan - Malaria, \_\_\_\_\_(3)\_\_\_\_\_

4) Worms - Worm infections, \_\_\_\_\_(4)\_\_\_\_\_

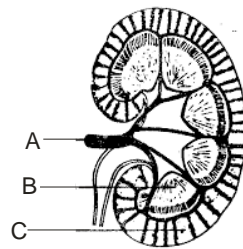
1) 1-Kala-Azar, 2-Elephantiasis, 3-Peptic Ulcer, 4-Common Cold

2) 1-Elephantiasis, 2- Peptic Ulcer, 3- Common Cold, 4-Kala-Azar.

3) 1- Common Cold, 2-Kala-Azar, 3- Peptic Ulcer, 4- Elephantiasis.

4) 1- Common Cold, 2- Peptic Ulcer, 3- Kala-Azar, 4- Elephantiasis.

**73. Identify A B C**



1) A=Renal artery, B=Pyramid of medulla, C=Cortex

2) A=Renal arteriole, B=Pyramid of medulla, C=Cortex

3) A=Renal artery, B=Pyramid of cortex, C=Medulla

4) A=Renal arteriole, B=Pyramid of cortex, C=Medulla

**74. Which one of the following is true about urethra?**

1) It is tube that takes urine from urinary bladder to outside.

2) Opening of urethra is separate in females

3) The opening of urethra is in common with the reproductive tract in males

4) All the above

75. Which of the following depicts the process of respiration?

- 1) Glucose (in mitochondria)  $\rightarrow$  pyruvate (in cytoplasm)  $\rightarrow$   $\text{CO}_2 + \text{H}_2\text{O} + \text{energy}$
- 2) Glucose (in cytoplasm)  $\rightarrow$  pyruvate + energy (in mitochondria)  $\rightarrow$   $\text{CO}_2 + \text{H}_2\text{O} + \text{energy}$
- 3) Glucose (in cytoplasm)  $\rightarrow$  pyruvate + energy (in mitochondria)  $\rightarrow$   $\text{CO}_2 + \text{H}_2\text{O}$
- 4) Glucose (in Mitochondria)  $\rightarrow$  pyruvate + energy (in mitochondria)  $\rightarrow$   $\text{CO}_2 + \text{H}_2\text{O} + \text{energy}$

76. In which of the following of the human heart the blood is low in oxygen ?

- 1) Right atrium
- 2) Left ventricle
- 3) Left atrium
- 4) Pulmonary vein

77. Photosynthesis in an hydrilla plant was measured by counting the number of  $\text{O}_2$  bubbles coming out of the cut end of the plant. What will happen to  $\text{O}_2$  production if you use a pipe and blow air from your mouth into the water present in the beaker?

- 1) Air from mouth contains  $\text{CO}_2$  which is being added to the plant. Hence there is a decrease in  $\text{O}_2$  production.
- 2) Air from mouth contains  $\text{CO}_2$  which is utilized in photosynthesis. Hence there is an increase in  $\text{O}_2$  production.
- 3) Bacteria from mouth will infect plant. Hence reduction in  $\text{O}_2$  production.
- 4) Water is already in contact with air. Hence air from mouth will have no effect

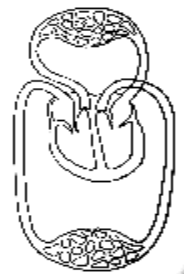
78. Match the Following:

- | A                 | B  |
|-------------------|--|
| i) Auxin          | A) Closing of stomata  |
| ii) Gibberellins  | B) Breaks seed dormancy  |
| iii) Cytokinins   | C) In presence of auxin, promotes cell enlargement and differentiation |
| iv) Abscisic acid | D) Regulates Tropisms  |
- 1) i-D, ii-C, iii-B, iv-A
  - 2) i-B ,ii-C ,iii-D, iv-A
  - 3) i-D ,ii-C ,iii-A ,iv-B
  - 4) i-D, ii-A, iii-B, iv-C

79. The condition in which the amount of free sugar in the blood and the urine is abnormally large is

- 1) Diabetes
- 2) Jaundice
- 3) Malaria
- 4) Cholera

80.



Identify the diagram and in which organisms is it observed

- 1) Double circuit circulation, cold blooded animals
- 2) Single circuit circulation, cold blooded animals
- 3) Double circuit circulation, warm blooded animals
- 4) Single circuit circulation, warm blooded animals