### Read the following and answer any four questions from (i) to (v)

Aditya decided to complete his Physics Project. He purchased three resistors 5  $\Omega$ , 10  $\Omega$  and 30  $\Omega$  from the shop. Later he purchased a 6 V battery, switch (which works as key) and an ammeter to complete his circuit as shown below:



(i) Find the current through 5  $\Omega$ . (a) 1.2 A (b) 1.5 A (c) 1 A (d) 2 A

Current through  $5\Omega$ 

$$I_1 = \frac{V}{R_1} = \frac{6}{5} = 1.2 \text{ A}$$



(ii) Find the current through  $10 \Omega$ . (a) 0.6 A (b) 0.2 A (c) 1 A (d) 0.5 A

Current through 10  $\Omega$ 

$$I_2 = \frac{V}{R_2} = \frac{6}{10} = 0.6 \text{ A}.$$

(iii) Find the current through  $30 \Omega$ . (a) 0.6 A (b) 0.2 A (c) 1 A

Current through 30  $\Omega$ 

$$I_3 = \frac{V}{R_3} = \frac{6}{30} = 0.2 \text{ A}.$$



(iv) Find the total current in the circuit.
(a) 1.2 A
(b) 1.5 A
(c) 1 A

(d) 2 A

The total current through the circuit is

$$I = I_1 + I_2 + I_3$$
  
= 1.2 + 0.6 + 0.2 = 2 A



$$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$
$$= \frac{1}{5} + \frac{1}{10} + \frac{1}{30}$$
$$= \frac{6+3+1}{30} = \frac{10}{30} = \frac{1}{3}$$

 $\therefore$  R<sub>p</sub> = 3  $\Omega$ 

$$5 \Omega$$

$$5 \Omega$$

$$10 \Omega$$

$$30 \Omega$$

$$30 \Omega$$

$$HHH$$

$$(\bullet)$$

$$A +$$

$$6 V$$

$$K$$

## Read the following and answer any four questions from (i) to (v) $\left( v \right)$

Aditya decided to complete his Physics Project. He purchased three resistors 4  $\Omega$ , 8  $\Omega$  and 8  $\Omega$  from the shop. Later he purchased a 8 V battery, switch (which works as key) and two ammeters to complete his circuit as shown below:



(i) Find the effective resistance of two 8 resistors in the combination

(a) 2  $\Omega$  (b) 4  $\Omega$  (c) 3  $\Omega$  (d) 5  $\Omega$  <sup>8 V</sup> 8 × 8 64

$$R_{\rm p} = \frac{6 \times 6}{8 + 8} = \frac{64}{16} = 4\Omega$$

(ii) Find the current flowing through the circuit. (a) 1.2 A (b) 1.5 A (c) 1 A (d) 2 A V = IR

$$8 = I(4+4) \implies I = 1A$$

(iii) Find the potential difference across 4  $\Omega$  resistance. (a) 2 V (b) 3 V (c) 4 V (d) 5 V

Potential difference across  $4\Omega$  resistor = IR

 $= 1 \times 4 = 4$  volt





(v) Find the difference in ammeter readings.
(a) 1 (b) 2 (c) 3 (d) No difference

There will be no difference in ammeter readings as the ammeters are connected in series.

### Read the following and answer any four questions from (i) to (v)

For the male gamete to be able to combine with the female gamete, it is necessary that first the pollen grains from the anther of stamen should be carried to the stigma of carpel. The transfer of pollen grains from the anther of a stamen to the stigma of a carpel is called pollination. Thus, pollination is said to take place when pollen grains are carried from the anther to the stigma of the flower. The internal parts for pollination of a flower is shown below with labelled P, Q, R and S.



(i) The correct labeling of the internal part 'P' for pollination of a flower is(a) Stigma (b)Filament (c) Sepal (d) Ovary

## Ans: (a) Stigma

(ii) The correct labeling of the internal part 'Q' for pollination of a flower is(a) Stigma (b)Filament (c) Sepal (d) Ovary

## Ans: (b)Filament

(iii) The correct labeling of the internal part 'R' for pollination of a flower is(a) Stigma (b)Filament (c) Sepal (d) Ovary

Ans: (c) Sepal



(iv) Which is the male reproductive organ of the plant?(a) Stigma (b)Stamen (c) Carpel (d) Ovary

#### Ans: (b)Stamen

(v) Which is the female reproductive organ of the plant?(a) Stigma (b)Stamen (c) Carpel (d) Ovary

Ans: (c) Carpel



## Read the following and answer any four questions from (i) to $\left(v\right)$

The human heart is a muscular organ made up of cardiac muscles. It is a fourchambered organ to prevent intermixing of oxygenated and de-oxygenated blood. A thick wall muscle called septum that separates the two sides left and right of the heart. Look at the picture.



(i) The upper two chambers and lower two chambers are called :

- (a) Ventricles and auricles respectively
- (c) Ventricles and valves respectively

(b) Auricles and ventricles respectively(d) Arteries and veins respectively



(iii) Pulmonary vein brings :

(a) oxygenated blood from the lungs to the heart

(b) de-oxygenated blood from the heart to the lungs

(c) oxygenated blood from the heart to the lungs

(d) de-oxygenated blood from the lungs to the heart

# Ans: (a) oxygenated blood from the lungs to the heart

(iv) Tricuspid valve is found between :

(a) right auricle and right ventricle(c) right auricle and left ventricle

(b) left auricle and left ventricle

(d) left auricle and right ventricle

## Ans: (a) right auricle and right ventricle

(v) The de-oxygenated blood from the body organs first enters : (a) into right atrium of the heart through vena cava. (b) into left atrium of the heart through vena cava. (c) into right ventricle of the heart through vena cava. Superior Aorta vena cava (d) into right atrium of the heart through aorta. Pulmonary artery Pulmonary vein Ans: (a) into right atrium of the heart through vena cave Left atrium Mitral Right atrium valve Aortic valve Pulmonary Left valve ventricle Right ventricle Tricuspid valve Inferior vena cava Pericardium

#### Read the following and answer any four questions from (i) to (v) $\left( v \right)$

An overhead projector (OHP), like a film or slide projector; uses light to project an enlarged image on a screen. In the OHP, the source of the image is a page-sized sheet of transparent plastic film (also known as foils) with the image to be projected either printed or handwritten/drawn. These are placed on the glass surface of the projector, which has a light source below it and a projecting mirror and lens assembly above it as shown in the figure.



(i) Based on the diagram shown, what kind of lens is used to make the overhead projector?(a) concave lenses (b) convex lenses (c) bifocal lenses (d) flat lenses

#### Ans: (b) convex lenses

- (ii) The image obtained will be erect and real. How?
- (a) The image when passed through the lens was erect and was directly obtained on the screen.
- (b) The image when passed through the lens was inverted and then it gets reflected on the mirror to be obtained on the screen.
- (c) The screen used automatically makes the image erect and real.
- (d) Both (b) and (c)

Ans: (b) The image when passed through the lens was inverted and then it gets reflected on the mirror to be obtained on the screen.

(iii) Why is concave mirror used and not convex mirror?

- (a) because concave mirror can give real image.
- (b) because convex mirror can give real image.
- (c) because concave mirror cannot give real image.
- (d) because convex mirror cannot give virtual image.

## Ans: (a) because concave mirror can give real image.

(iv) If the radius of curvature of concave mirror is 12 cm. Then, the focal length will be :
(a) 12 cm
(b) 6 cm
(c) -24 cm
(d) -6 cm

We know that f = R/2 = 12/2 = 6 cm But the sign of focal length of concave mirror is negative. Therefore f = -6 cm (v) The power of a convex lens is \_\_\_\_\_ and that of a concave lens is \_\_\_\_\_\_
(a) positive, negative (b) positive, positive
(c) negative, positive (d) negative, negative

Ans: (a) positive, negative