NEW STANDARD ACADEMY

Marks: 80

Date : 12-08-24 **CLASS : 09TH** **Time: 3 HRS**

PHYSICS

1. How does the force of gravitation between two objects change when the distance between them is reduced to half?
2. Gravitational force acts on all objects in proportion to their masses. Why, then, a heavy object does not fall faster than a light object?
3. What is the magnitude of the gravitational force between the earth and a 1 kg object on its surface. (Mass of the earth is 6×10^{24} kg and radius of the earth is 6.4×10^{6} m)
4. The Earth and the Moon are attracted to each other by gravitational force. Does the earth attract the Moon with a force that is greater or smaller or the same as the force with which the Moon attracts the Earth? Why?
5. What happens to the force between two objects if:
   i) The mass of one object is doubled.
   ii) The masses of both objects are doubled.
6. What is the acceleration of free fall?
7. Gravitational force on the surface of the moon in only 1/6 as strong as gravitational force on the earth. What is the weight in newton of a 10 kg object on the moon and on the earth?
8. A ball is thrown vertically upward with a velocity of 49m/s. Calculate:
   i) The maximum height to which it rises.
   ii) the total time it takes to return to the surface of earth.
9. Two person having mass 50 kg each ,kg each, are standing such that the centre of gravity are 1m apart. Calculate the force of gravitation and also calculate the force of gravity on each.(Take $G=6.67\times10^{-11}$ Nm^2kg^{-2}, mass of earth $M = 6\times10^{24}$kg), Radius of earth $R = 6.4\times10^{6}$m
10. What is the gravitational attraction between a 70 kg boy and a 60 kg girl who are 3 meters apart?

CHEMISTRY

1. A solution contains 40 gram of common salt in 320 gram of water. Calculate the concentration in terms of mass by mass percentage of the solution.
2. Calculate the mass of solute tpo be dissovlved in water so that the total volume of the solution is 750 mL and mass by volume percentage is 3.5%
3. 250 mL of a liquid are mixed with 1.5L of another liquid. What is the volume per cent of the solute in solution?
4. How much water should be mixed with 12 mL methanol so as to give a 12%(V/V) Solution of methanol?
5. 50 mL of aqueous solution of ethanol contains 12.5 mL of ethanol. Calulate the concentration (V/V) of solution.
6. Alloys such as brass and steel can not be separated into their constituents by physical methods. Even then they are called mixtures, why?
7. Write four characterstics of Solution ?
8. Define solute and solvent with examples.
9. What are the characteristics of pure and impure substances? Explain with examples.
10. What are homogeneous and heterogeneous solutions? Explain with examples.

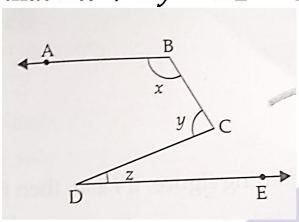
BIOLOGY

1. Define diffusion
2. What is endosmosis?
3. What is Exosmosis?
4. Define:(i) Hypertonic solution
   (ii) Hypotonic solution
   (iii) Isotonic solution
5. What is active transport?`
6. Why does a cell shrinks down?
7. What happens when RBCs are placed in hypotonic solution?
8. Differentiate between active and passive transport.
9. What is function of cell wall?

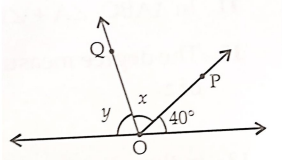
10. Differentiate between primary cell wall and secondary cell wall.

MATHS

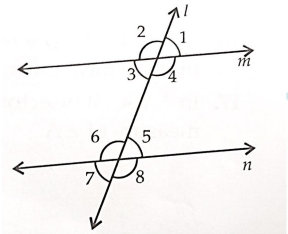
1. In the figure given below ,AB|| DE. Show that $\angle x + \angle y - \angle z = 180°$.



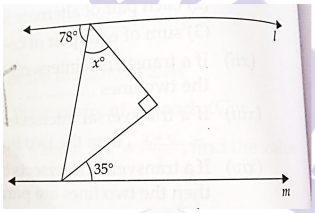
2. 3. In the adjoining figure, rays OP and OQ stand on a line. If x : y = 2: 3, then find the values of x and y.



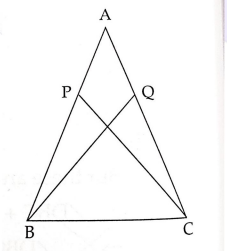
3. In the adjoining figure, if m||n, then find $\angle 4 + \angle 7$.



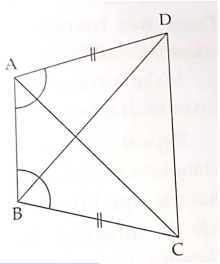
4. In the adjoining figure, if l || m then the value of x is



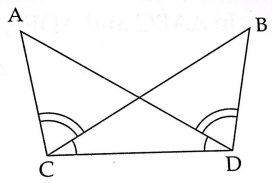
5. In the adjoining figure, AB = AC and AP= AQ. Prove that
(i) $\Delta APC \cong \Delta AQB$
(ii) $CP = BQ$
(iii) $\angle APC = \angle AQB$



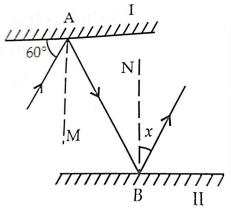
6. In the adjoining figure,ABCD is a quadrilateral in which AD= BC and $\angle DAB = \angle CBA$. *Prove that*
(i) $\Delta ABD \cong \Delta BAC$
(ii) BD= AC
(iii) $\angle ABD = \angle BAC$.



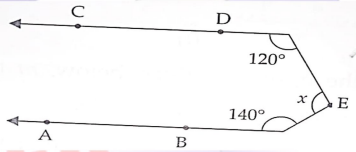
7. In the adjoining figure, $\angle BCD = \angle ADC$ and $\angle BCA = \angle ADB$. *show that.*
(i) $\Delta ACD \cong \Delta BDC$
(ii) BC=AD
(iii) $\angle A = \angle B$



8. In the adjoining figure, two plane mirrors I and II are placed parallel to each other. AM and BN are perpendiculars to the mirrors I and II respectively. If an incident ray strikes the mirror I at A and the reflected ray strikes the mirror II at B, then the value of x is



9. In the figure given below AB||CD. Find the value of x



10. In the adjoining quadrilateral,AC=AD and AB bisects $\angle A$ *Show that* Δ ABC$\cong$ ΔABD. What can you say about BC and BD?