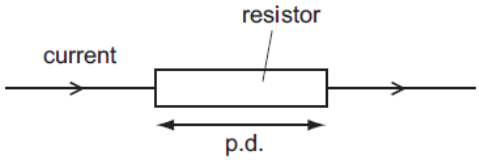
PHYSICS

01. In a hydroelectric power station, the water in the reservoir flows through the dam and turns the turbine which in turn runs the generator to produce electricity. Which of the following indicates the energy conversion taking place?
    A. Kinetic Energy to Potential Energy to Mechanical Energy to Electrical Energy.
    B. Mechanical Energy to Potential Energy to Kinetic Energy to Electrical Energy.
    C. Potential Energy to Mechanical Energy to Kinetic Energy to Electrical Energy.
    D. Potential Energy to Kinetic Energy to Mechanical energy to Electrical Energy.

02. Sound travels by wave motion. Which property of waves causes echoes?
    A. refraction B. scattering C. reflection D. dispersion

03. A current flows through a resistor when there is a potential difference across its ends. In an experiment, the potential difference (p.d.) and the resistance of the resistor can both be changed. Which row shows two changes that will increase the current in the resistor?



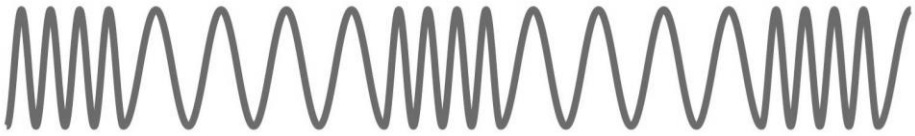
	p.d.	**resistance**
A	decrease p.d.	decrease resistance
B	decrease p.d.	increase resistance
C	increase p.d.	decrease resistance
D	increase p.d.	increase resistance

04. What is the nature of the image produced by an object kept in front of a convex mirror?
    A. Erect, diminished and virtual image.
    B. Inverted, enlarged and real image
    C. Inverted, diminished and real image.
    D. Erect, enlarged and real image.

05. Two balls A and B, of same mass ‘m’, fall from the top of a building. Ball A is dropped down while Ball B is thrown down from the same starting point at the same time. Which of the two balls will reach the ground first and with what acceleration?

	Time Taken	**Ball A’s acceleration**	**Ball B’s acceleration**
A.	Both will reach at the same time	Acceleration (A) = g	Acceleration (B) > g
B.	Both will reach at the same time	Acceleration (A) = g	Acceleration (B) = g
C.	Ball A will reach before Ball B	Acceleration (A) = g	Acceleration (A) > g
D.	Ball B will reach before Ball A	Acceleration (A) = g	Acceleration (B) = g

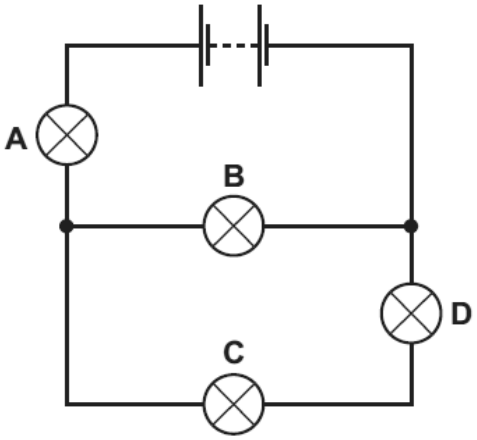
06. The diagram below shows a sound wave. What can you tell about this wave?



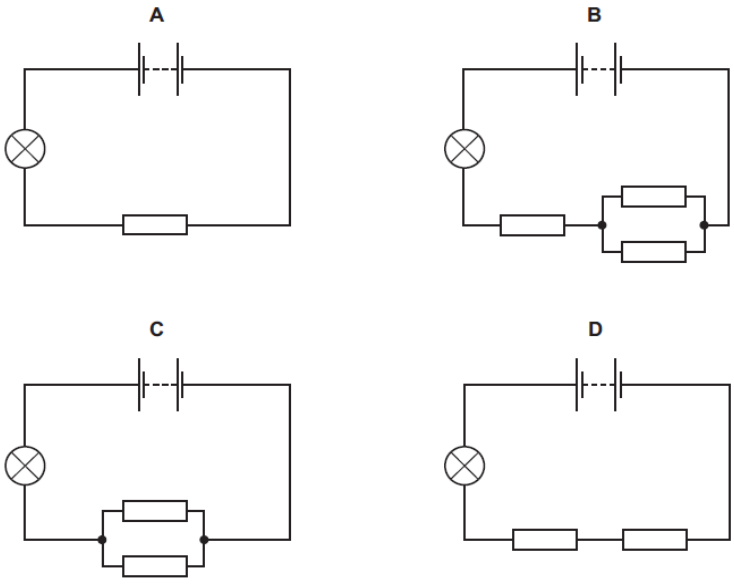
I. The sound wave is of varying amplitude.
II. The sound wave is of varying frequency.
III. The sound wave is of varying wavelength.

A. I only B. I and II only C. II & III only D. I & III only

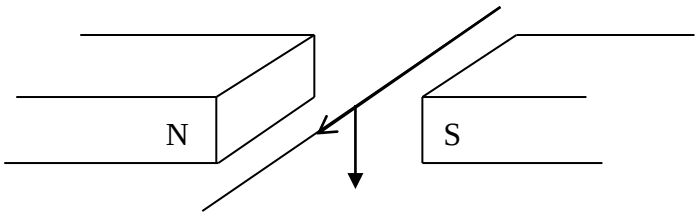
07. The circuit shows a battery and four lamps. All the lamps are lit. One lamp fails and all the lamps go out. Which lamp, A, B, C or D failed?



08. A lamp is connected in four circuits in turn, each using identical batteries. The resistors are all identical. In which circuit will the lamp be brightest?



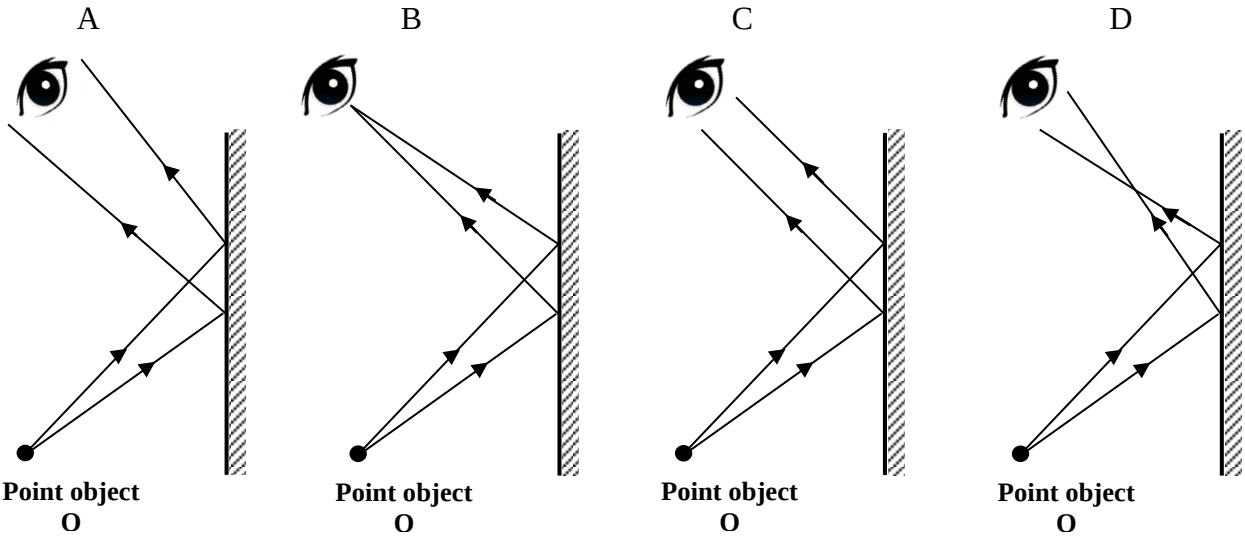
09. A student carries out an experiment to see the effect of a magnetic field on a wire carrying a current. The wire moves downwards as shown.



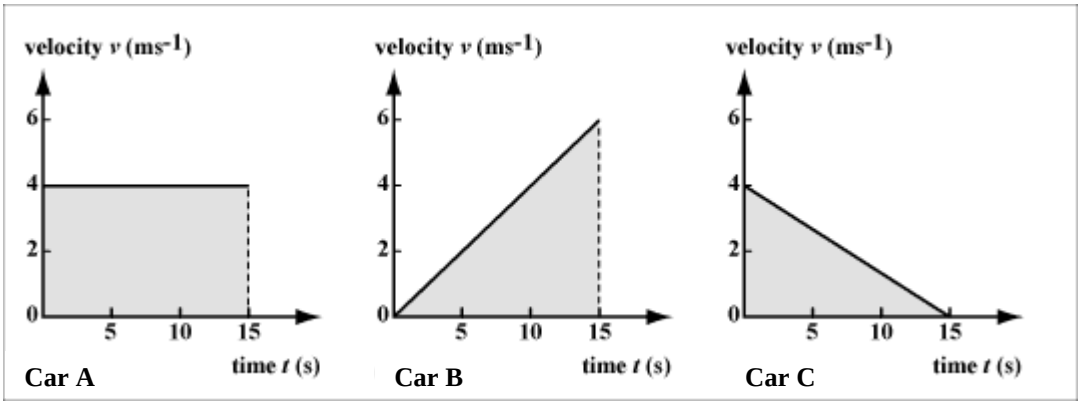
What should the student do to make the wire move upwards?

A. change the direction of the current
B. move the poles of the magnet closer together
C. send a smaller current through the wire
D. use a stronger magnet

10. An eye views an object O by reflection in a plane mirror. Which is the correct ray diagram?



11. Three cars travelling in a straight line are observed and the velocity-time graphs of each car are shown below. What is the distance travelled by each of the car and what is their acceleration?

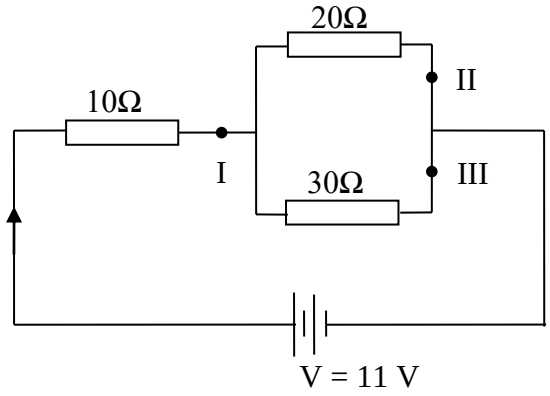


	Car A	Car B	Car C
A.	d = 60 m, a = 0.26 m/s^2	d = 45 m, a = 0 m/s^2	d = 30 m, a = 0 m/s^2
B.	d = 60 m, a = 0 m/s^2	d = 45 m, a = 0.4 m/s^2	d = 30 m, a = 0.26 m/s^2
C.	d = 60 m, a = 0 m/s^2	d = 90 m, a = 0.4 m/s^2	d = 60 m, a = 0.26 m/s^2
D.	d = 30 m, a = 0 m/s^2	d = 90 m, a = 2.5 m/s^2	d = 30 m, a = 3.75 m/s^2

12. A trolley of mass 100 kg is moving with a speed of 2.5 ms^{-1}. A decelerating force of 125 N is applied to the trolley for 0.8 s in the opposite direction to the trolleys' motion. What is the trolleys' new velocity after the application of the force?

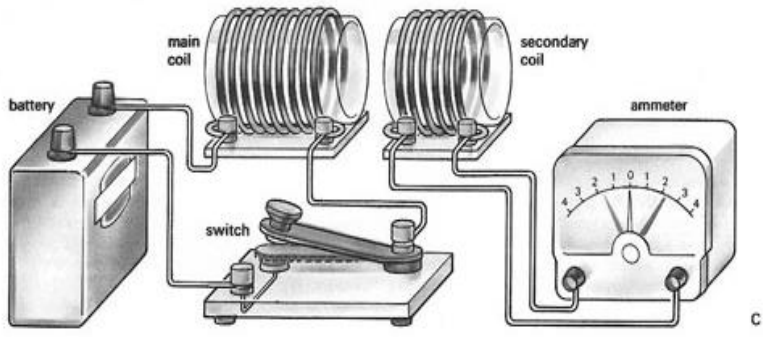
A. 1.0 ms^{-1} B. 1.5 ms^{-1} C. 2.0 ms^{-1} D. 2.8 ms^{-1}

13. Given below is an electrical circuit. What is the current at points I, II and III in the circuit?



	Current in I	Current in II	Current in III
A.	0.50 A	0.55 A	0.37 A
B.	0.50 A	0.20 A	0.30 A
C.	0.50 A	0.25 A	0.25 A
D.	0.50 A	0.30 A	0.20 A

14. The circuit below is based on Faraday's experiment of Electromagnetic Induction. Study the circuit. When the switch is turned on, what will happen to the pointer of the ammeter?



A. The ammeter will show constant deflection to one side indicating steady current.
B. The ammeter will momentarily show deflection to one side before coming back to zero.
C. The ammeter will show continuous alternating deflection on both sides.
D. The ammeter will not show any deflection.

15. An electric appliance of power 1500 Watts runs for 8 hours every day. What is the electrical energy consumed and the cost of energy consumed for 30 days, if the cost per unit is Rs. 4.00?

A. Rs. 1440 B. Rs. 1550 C. Rs. 180 D. Rs. 900