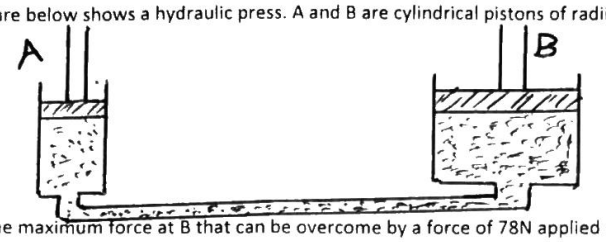
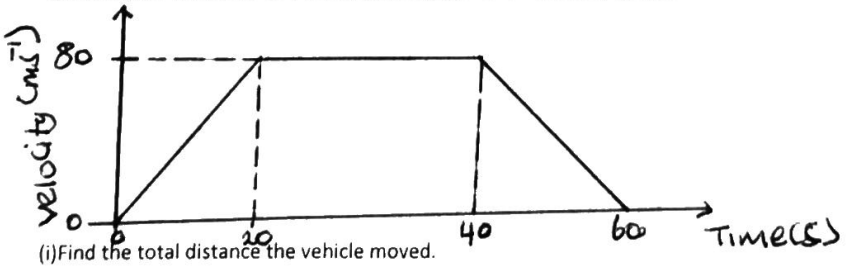
SMASK

SENIOR THREE PHYSICS PACKAGE 2020

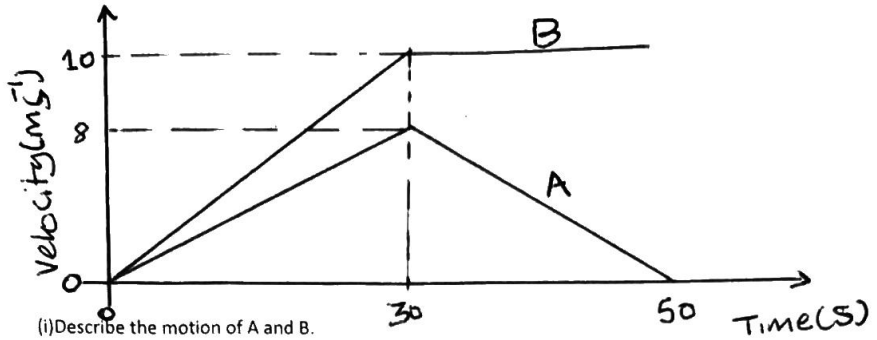
1. (a) (i)State Pascal's principle.
   (ii)Give three instances where Pascal's principle is applied.
   (iii) Describe an experiment to show that pressure in liquid increases with depth.
   (iv) Describe how a manometer is used to measure gas pressure.
   (b) When two microscopic glass slides are pressed together with water film between them, it's very difficult to pull them apart. Explain this observation.
   (c) A barometer reads 76cmHg and 73.8cmHg at the bottom and top of a mountain respectively. If the density of air is 1.25Kg/m3 and that of mercury is 13600Kg/m3, find the height of the mountain.
2. (a) (i) Define pressure.
   (ii) Explain what happens when an inflated balloon is released in air.
   (b) The figure below shows a hydraulic press. A and B are cylindrical pistons of radii 2cm and 4cm respectively.



   Calculate the maximum force at B that can be overcome by a force of 78N applied at A
   (c) Describe with the aid of a diagram how a force pump works.
   (d) List any four daily life applications of atmospheric pressure.
3. (a) What is meant by;
   (i) Magnetic saturation.
   (ii) Magnetic screening.
   (b) (i)Describe the domain theory of magnetism.
   (ii) Use the domain theory to explain demagnetisation.
   (c) Draw magnetic field lines due to
   (i) A bar magnet placed horizontally with its axis in the magnetic meridian and its north pole pointing south.
   (ii) A bar of un magnetised iron placed along the axis of the earth's magnetic field.
   (d)(i) State the disadvantage(s) of using iron fillings to determine the magnetic field pattern around a bar magnet.
   (ii)List any four uses of artificial magnets.
   (iii)Distinguish between angle of dip and angle of declination.
4. (a)Define the following.
   (i)Hard magnetic material.
   (ii)Soft magnetic material.
   (b)(i) Describe the electrical method of magnetising a steel bar.
   (ii)State any two ways of demagnetising a bar magnet.
   (c) Sketch the magnetic field pattern a round a bar magnet with its south pole pointing north in the earth's field.
   (d) (i)What are ferromagnetic materials?
   (ii)Give any two examples of ferromagnetic materials.
5. (a)(i)State Newton's laws of motion.
   (ii)Explain what happens to a person seated in a vehicle when it is suddenly brought to rest.
   (b)The figure below shows a velocity time graph for a vehicle in motion.



   (i)Find the total distance the vehicle moved.
   (ii)Calculate the acceleration.
   (iii)Determine the deceleration.
6. (a)The graph in the figure below represents variation of velocity with time of two athletes A and B.



(i)Describe the motion of A and B.

(ii) What are the distances covered by both athletes in the 50s?

(b) A stone of mass 100g is thrown vertically upwards with a force of 50N. what is its initial acceleration? [g=10m/s2].

(d) A small steel ball is allowed to fall vertically and centrally down a tall cylinder filled with oil.

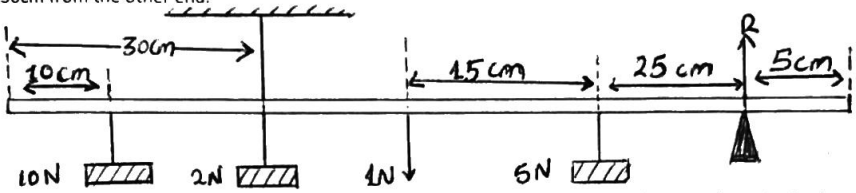
(i)Sketch the velocity time graph for its motion.

(ii)Describe the shape of the graph.

7. (a)(i) State the principle of moments.

(ii) What conditions are necessary for a body to be in mechanical equilibrium??

(b) A uniform metre rule of weight 1N is pivoted on a wedge 5cm away from one end and suspended by a string 30cm from the other end.



If the metre rule is in equilibrium when weights of 10N, 2N and 5N are attached to it as shown in the figure above.

Calculate;

(i) the tension in the string.

(ii) Normal reaction, R, at the wedge.

(c)(i) Distinguish between static and dynamic friction.

(ii) Describe with the aid of a diagram an experiment to determine coefficient of static friction between two surfaces in contact.

(iii)State any two factors that affect friction.

8. (a)Define the following terms as applied in heat transfer.

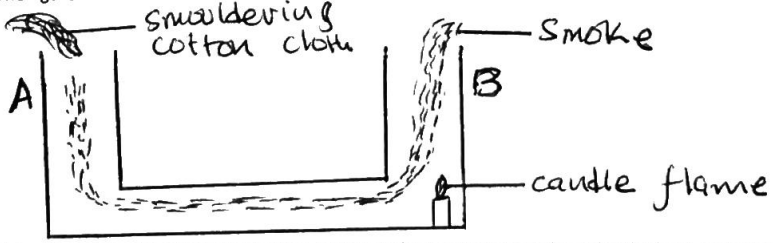
(i)Radiation.

(ii)Convection.

(iii)Conduction.

(b)(i) Describe the occurrence of land breeze.

(ii)The figure below is used to demonstrate convection in air.



Explain why smoke from the smouldering cotton cloth is seen to enter through cylinder A and come out through B.