



S.4 PHYSICS HOLIDAY WORK

AUGUST 2014

- 1.(a) Draw a diagram to show the structure of a simple cell.
- (b) Explain the process conduction of charge in a simple cell.
- (c) Give two advantages of an alkaline cell over a lead acid cell.
- (d) Briefly explain how an accumulator can be recharged .
- (e) State one advantage lead acid cells have over alkaline cells.
- 2.(a) Define *internal resistance and electromotive force* of a cell.
- (ii) Describe an experiment to determine the internal resistance and the electromotive force of a cell.
- (b)

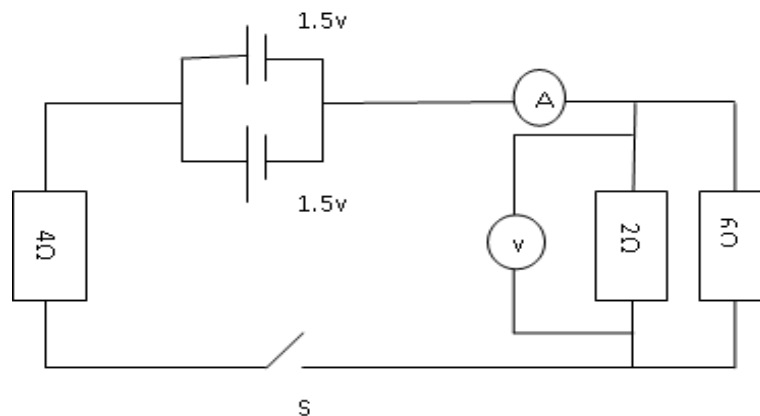


Figure 1

Figure 1 above shows two cells ,each of internal resistance 1Ω connected to a circuit which includes a 6Ω , 2Ω and 4Ω resistor. What is the reading of the ammeter and voltmeter when the switch S is closed?

- 3.(a) What do you understand by *background radiation* as applied to radioactivity?
- (b) State three safety precautions to be observed when using radioactive sources.
- (c) Describe briefly two uses of radioactive sources.
- (d) In an experiment to find the half life of radioactive iodine, the count rate falls from 200counts per second to 25counts per second in 75 minutes. What is its half life?
- 4.(a) Define the terms
- (i) thermionic emission
- (ii) photoelectric emission
- (b) Draw a diagram of a thermionic diode and label its parts .Explain how it works.
- (c)(i) Explain why an X-ray tube is evacuated.
- (ii) What do you understand by **hard** and **soft** X –rays.
- (ii) Give two applications of x-rays.
- 5.(a) Define radiation.
- (b) How can radiant energy from a hot body be detected?
- (c) Draw a vacuum flask and label its parts.
- (d) Describe an experiment to show that mercury is a better conductor of heat than water.