6. Avoid sharing contaminated equipments and clothing; Abstinence; protected sex; Being fai
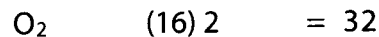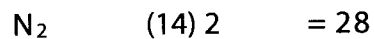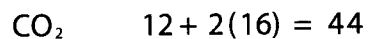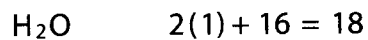   to uninfected partner. (any two) (2 m

7. Completely cure the disease;
   Prevent resistance to the medicine;
   Prevent overdoes/organ damage/death;
   Avoid weakening of immune system; (any two) (2 m

8. (a) Parenchyma/ sclerenchyma/
      Xylem/ collenchyma;/ (any correct two) (1 n

   (b) Knee joint/elbow joint; (1 n

9. (a)

Nervous system	Endocrine system
- message as electrical impulses	- message in form of chemicals
- Transmitted within nerves	- transmitted in blood
- Rapid	- slow
- Effects specific	- Effects generalised/diffused;

   (any two correctly contrasted) (2 m

   (b) (i) pinna: collect sound waves/direct sound waves into the external auditory (
       (1 n

       (ii) ossicles: Amplify sound vibrations/transmit sound vibrations to the inner ea
       (1 n

10. (a) Relay/connect/intermediate neurone; (1 ;

    (b) Presence of many dendrites from the cell body in all directions/has no myelin shea
        (1 n

SECTION B

CHEMISTRY: (33 marks)

11.
           R.F.M
   H_2O $2(1) + 16 = 18$
   CO_2 $12 + 2(16) = 44$
   N_2 $(14)2 = 28$ or
   O_2 $(16)2 = 32$
   NH_3 $14 + 3(1) = 17$
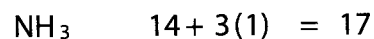
   CO_2 will difuse with slowest rate (1)
   Since it has the largest molecular mass (44g) ($\frac{1}{2}$)   (2 mar

12. H_2O $2(1) + 16 = 18$
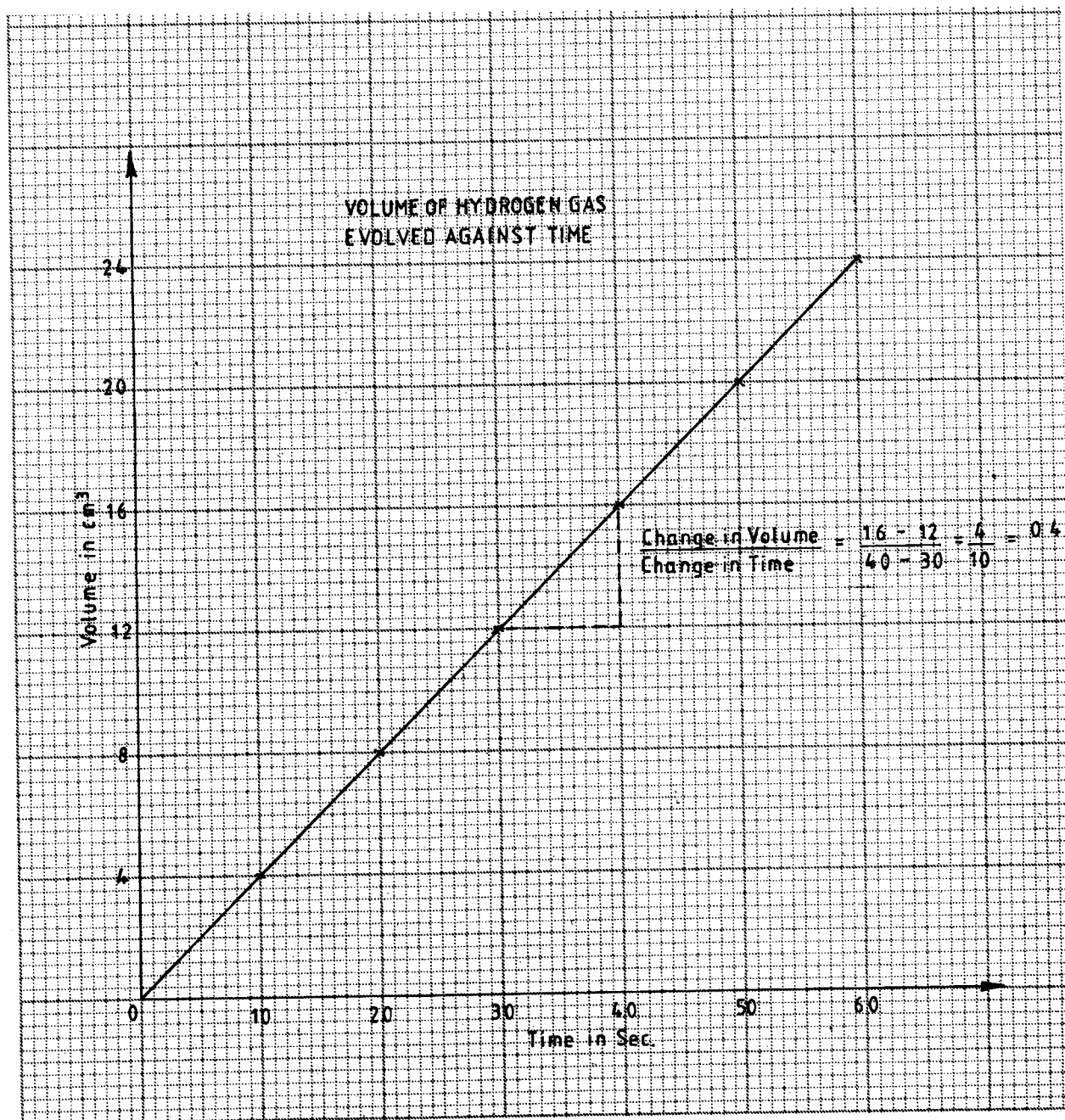
   Hatoms has 2 moles in 18g ($\frac{1}{2}$)

           x moles in 3.6g

$2\# \ 3.6 = 18x$

$x = \dfrac{2 \ \# \ 3.6}{18} = 0.4$ moles of H atoms.

(2 marks)

13. (a) Fermentation is a process in which cane sugar substances is converted into ethanol and carbon (IV) oxide (1) in absence of oxygen. (1)

(b) Distillation. (1)

(c) Fuel, solvent, pharmaceutical, Chromatography, cosmetics. (1)   (4 marks)
- Preparation of Esters, Ethene, Ethanoic
- As an antiseptic   (Any one)

14. (a) Plotting (1)
scale (1)
curve (1)   (If graph is inverted maximum 2)

(b) $0.4cm^3$ per second (1)   (4 marks)

VOLUME OF HYDROGEN GAS EVOLVED AGAINST TIME

VOLUME OF HYDROGEN GAS
EVOLVED AGAINST TIME

$$\frac{\text{Change in Volume}}{\text{Change in Time}} = \frac{16 - 12}{40 - 30} = \frac{4}{10} = 0.4$$

Volume in cm³ (y-axis)

Time in Sec. (x-axis)

15. (a) Cracking Hydrocarbons/electrolysis of acidulated water/electrolysis of Brine.
Water gas   (any one)   (1 mark)

(b) Increasing pressure increases yield of ammonia. (1)
4 volumes of reactants against 2 volumes of products; hence increase in pressure
raises the volumes of products. (1)

(c) Manufacture of nitric(V) acid explosives, nylon & plastics. (any one) (1).
(4 marks

16. (a) Aluminium is a reactive metal. (1)

    (b) N is made from carbon electrodes which react with oxygen evolved, forming CO_2, (1)
    Hence requires to be replaced regularly.
    (c) Lower the melting point of bauxite. (1)
    (d) It has a low density (1) and a good conductor of electricity.(1)

    (5 marks)

17. (a) Is a solution that contains one mole of a substance per litre. (1)

    (b) 6.24g of $CuSO_4.5H_2O$ contains $\frac{6.24}{249.5}$ = 0.025 moles

    $250cm^3$ of solution contains 0.025 mole

    $1000 cm^3$ contains $\frac{1000}{250}$ # 0.025

      = 4 # 0.025

      = 0.1 moles

    Molarity of the solution is 0.1M   (3 marks)

18. (a) A endothermic reaction. $\frac{1}{2}$
    heat is absorbed. $\frac{1}{2}$

    B exothermic reaction $\frac{1}{2}$
    heat is evolved.

    (b) It does not support burning (1)
    It is denser than air (1)

    (c) biogas is clean, (no smoke); firewood produce more smoke. (any 1)
    conservation of forest.
    heat value of biogas is high.
    No residue in biogas after burning while in firewood ash remains.   (5 marks)

19. Under the same conditions of temperature and pressure, the rate of diffusion of a gas is inversely proportional to the square root of its density. (1)   (1 mark)

20. (a) Upward displacement of air or downward delivery.(1)

    (b) Chlorine is denser than air.

    (c) Water treatment/treatment of sewerage.
    Manufacture of PVC.
    $CFCs/CCI_4/CHCI_3$.   any two √ 1 mark
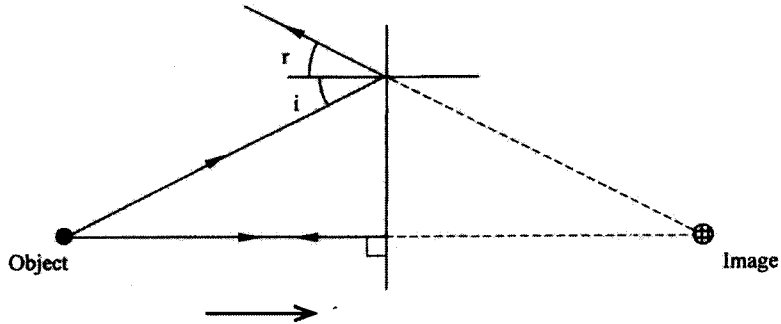   As a bleaching agent.   (3 marks)
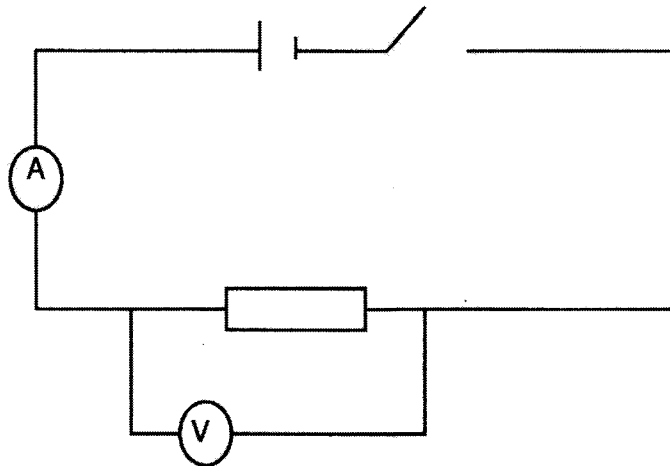
21.   (a)
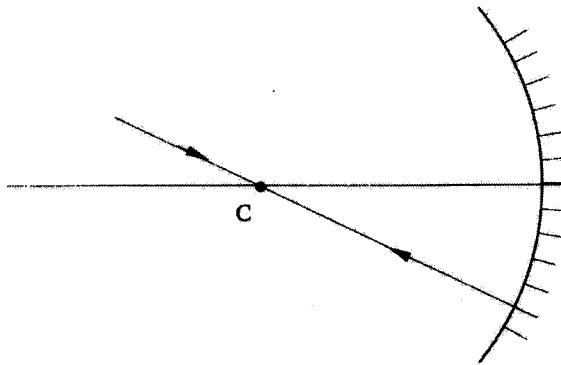
(1 mark)

22.

(1 mark)

23.   On rubbing electrons leave the cloth and accumulate on the plastic ruler.   (1 mark)
The ruler becomes negatively charged while the cloth is left with a net positive charge.

24.   (1 mark)
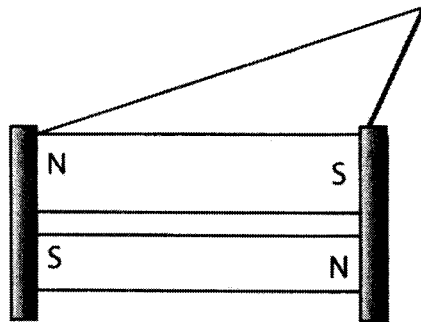
25.   (1 mark)

26.   (a)   a = 10cm   (1 mark)

    (b) λ = 20cm   (1 mark)

27.   Distance = speed x time   (1 mark)
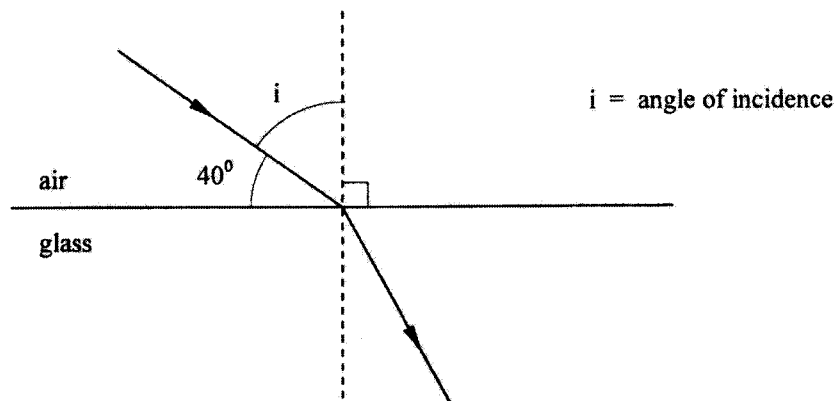
$$= 340 \times \frac{0.4}{2}$$

    (1 mark)

    = 68m

28.   I = 0.35A   (1 mark)

29.   (a)   (1 mark)

373

(b)

$$n = \frac{\sin i}{\sin r}$$
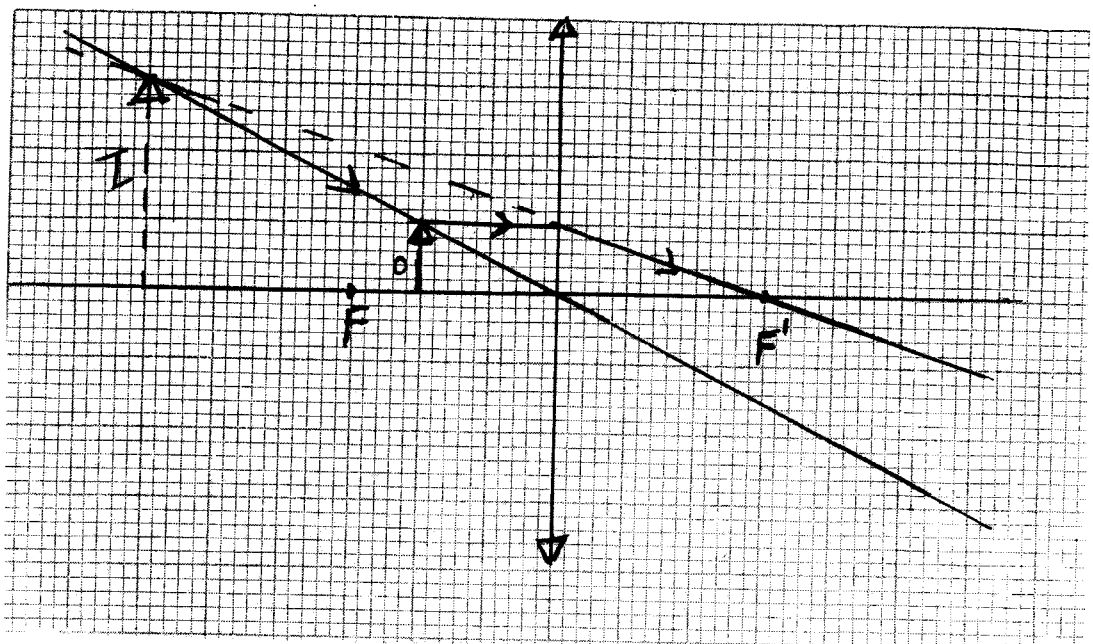
$$1.5 = \frac{\sin (90 - 40)^0}{\sin r}$$ (1 mark)

$$\sin r = \frac{\sin 50}{1.5} = \frac{0.766}{1.5} = 0.5106$$

$$r \simeq 30.71^0$$ (1 mark)

30.

31.

$$P = VI$$

$$= \frac{V^2}{R};$$
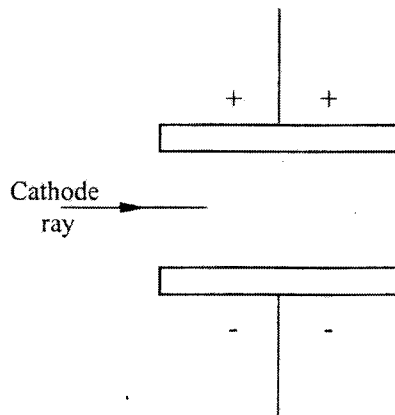
$$= \frac{240 \times 240}{20};$$

$$= 2880 \text{ watts}$$

32. (a) to minimize collisions between cathode rays and air molecules;
to minimise reduction of KE of the cathode rays;
to reduce ionization of air molecules.

(b)

Cathode
ray →

33. higher frequency x - rays are produced more penetrating x-rays/hard x-rays/Higher energy/
x-rays/High quality x-rays.

34. - used in treatment of cancer;
- used to sterilize medical equipment;
- used in detecting abnormal tissue in people.   (any two 1 mark each)   (2 marks)

35. (a) conduction in semiconductors is by electrons and holes while in conductors it is
by electrons.
conductivity of a semiconductor increases with increase in temperature while that
of a conductor decreases with increase in temperature.   (any 1 correct) (1 mark)

(b)
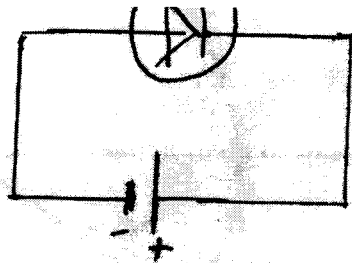
36. From the graph,
Mass at t = 0 is 80g;
time when mass is 40g; is 2.25 minutes.
∴ half life period is 2.25 minutes;

or 1 mark for reading off values of mass reducing by half .

1 mark for the time taken for mass to reduce to half the original.