**LANJET CLUSTER EXAMINATION**

**232/2**

**PHYSICS PAPER 2**

**DECEMBER 2020**

**MARKING SCHEME**

**SECTION A**

1. Parabolic reflectors do not form a caustic curve;
   * The filaments can be arranged so as to have parallel beams to help see far and a set of others to enable see near / directed downwards ;

***Any one (1 mrk)***

1. This causes buckling of the plates as this is short circuiting;

3. A will have positive charge while B negative; when charged rod is brought near A positive charges are attracted towards it while the negative charges are repelled to B

On separation while strip is near A, B goes with negative charge and A remains with the positive;

4. E = IR + Ir ***Formula of substitution give 1 mark***

3.0 = I x 3.5 + I x 0.5;

∴ I = 0.75A ;

1. Vs = Ns

Vp Np

Vs = 1 ;

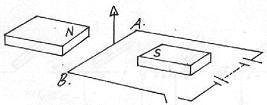
1. 10

∴ Vs = 25V;

Now VLm = 4/5 x 25 ;

= 20 V;

Force ;



NB force (arrow) must touch the wire / conductor

7. W – V2 t;

R

= 2402 x 4 x 60 ;

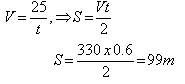
480

= 28,800J;

8.



9.



10. Introduction of controlled amounts of impurities into the lattice of a pure semi-conductor in order to

Enhance its electrical conductivity;

11. Radio waves; Infrared; x –rays and Gamma rays

Decreasing wavelength

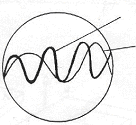
12. Magnetism is easily induced in them; the dipoles of the

Keepers form a closed loop with those in the magnets

Hence protecting the magnets from being demagnetized;

13.

Time base doubled



Original wave form

**SECTION B**

14.(a) **(1 mark)**

**Where no current is flowing through/ where there is voltage drop a cross the source is equal to e.m.f**

b)

**2.0**

**Potential**

**Difference (Pd)**

**V**

**1.0**

**0.5 1.0 Current I A**

(i) E= V + Ir

(ii) **Gradient (R) 1.475 – 1.05 = 0.425 = 0.53125 Ώ**

**0.8- 0 0.8 (2 marks)**

(b) **From the graph current flowing when pd is 0.70 is 60.MA**

**Pd across R = 6.0 – 0.7 = 5.3v**

**R = 5.3 V 36mA**

**= 147Ω (3 marks)**

(c) **Parallel circuit 1/30 + 1/20 = 5/60 or 60/50**

**R = 12 Ω**

**Total resistance = 10 + 12 = 22Ω (2 marks)**

(ii) l = V/R = 2.1/22 = 0.095A **(1 mark)**

(iii) Reading of the voltmeter

**V = lR = 10 x 2.1**

**22**  **= 0.95 (2 marks)**

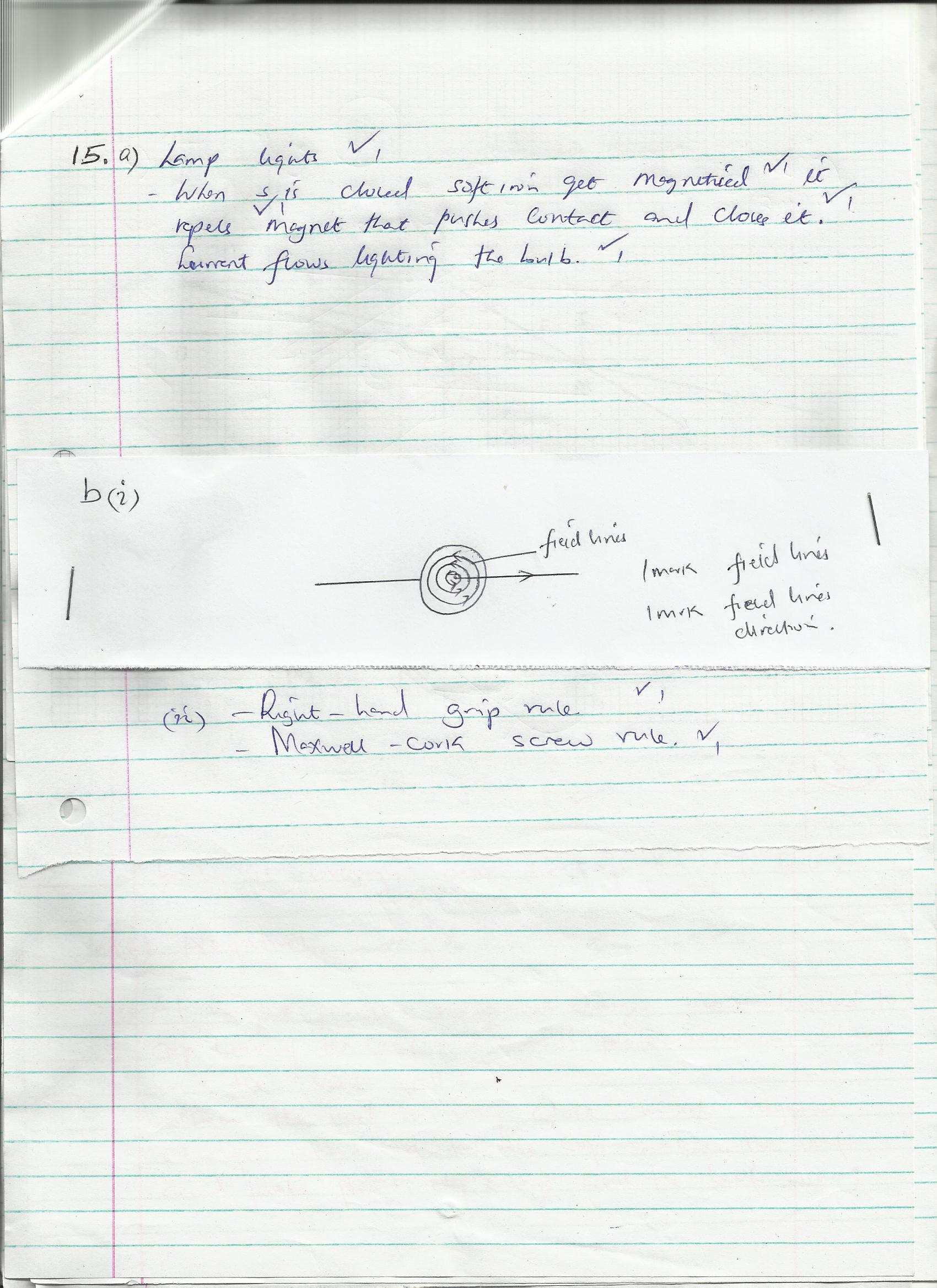
**15**.(a)

Lamp lights

When s is closed soft iron get magnetized it repels magnet that pushes contact and closes it.

Current flows lighting the bulb.

(b) (i)



(ii)

Right hand grip rule

Maxwell – cork screw rule

;

iii)

* Electric bells
* Magnectic locks
* Loudspeakers
* Relays
* Motors and generators

**16.** a) i) A – Grid✓1

B – Electron gun✓1

ii) C – Vertical deflection of beam of electrons✓1

D – Horizontal deflection of beam of electrons✓1

iii) By thermionic emission or heating the filament✓1

iv) To prevent ionization of electrons as they move to the anode✓1

b) i) E = ev✓1

E = 1.6 x 10-19 x 80000✓1

= 1.28 x 10-14 J✓1

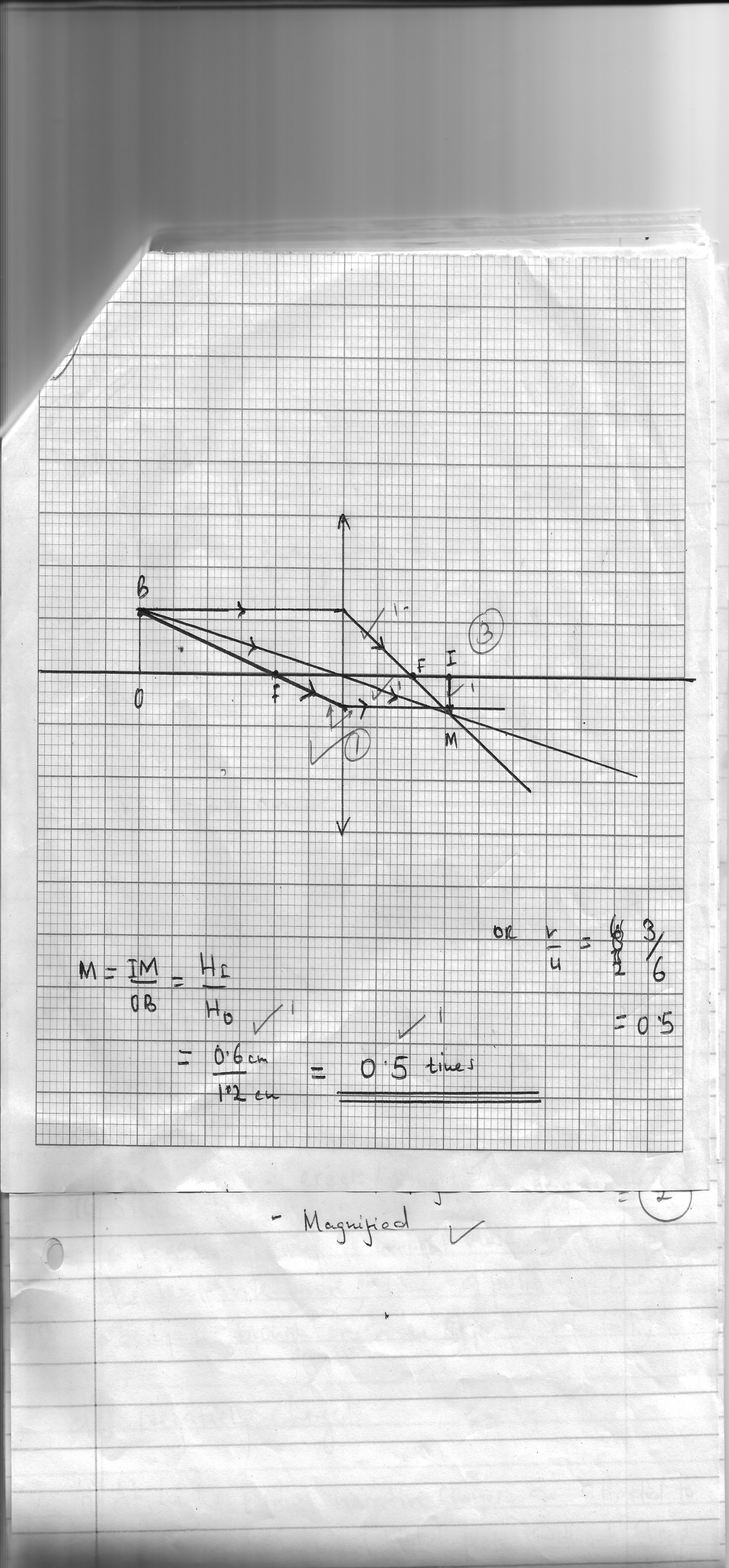
ii) ½ mv2 = 1.28 x 10-14✓1

v2 =

v = ✓1

v = 2.23 x 108 ms✓1

**17. (a) GRAPH**

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(b) (i)

(ii)

Hand lens / magnifying glass

(iii)

* Image formed is
* Virtual
* Erect/upright
* Magnified

18. (a)

The direction of the induced current is always as to oppose the change producing it.

**(b)**

X carbon brush

Y split ring

**(c)**

Speed of rotation

Number of turn of the coil

Strength of the magnet

**(d)**

IS = 13.5

VS = 480

Vp = 240

Ƹ = 80%

P=IV

= 13.5 x 48 = 64.8 watts