

Duration: 1 hours

- Qns 1
- (i) What is function of Aquadag Coating in the CRT?
 - (ii) What is multimeter.
 - (iii) What is Q-meter.
 - (iv) Draw block diagram of RF signal Generator.
 - (v) Draw block diagram of AF signal Generator

(1x5) marks

Qns 2 Explain the principle of AC and DC current measurement by multimeter.

(4) marks

Qns 3 Write short note on Cathode Ray Tube.

(4) marks

Qns 4 Find multiplying factor of shunt of 250Ω used with galvanometer of 1000Ω resistance.

Ans (2) marks.

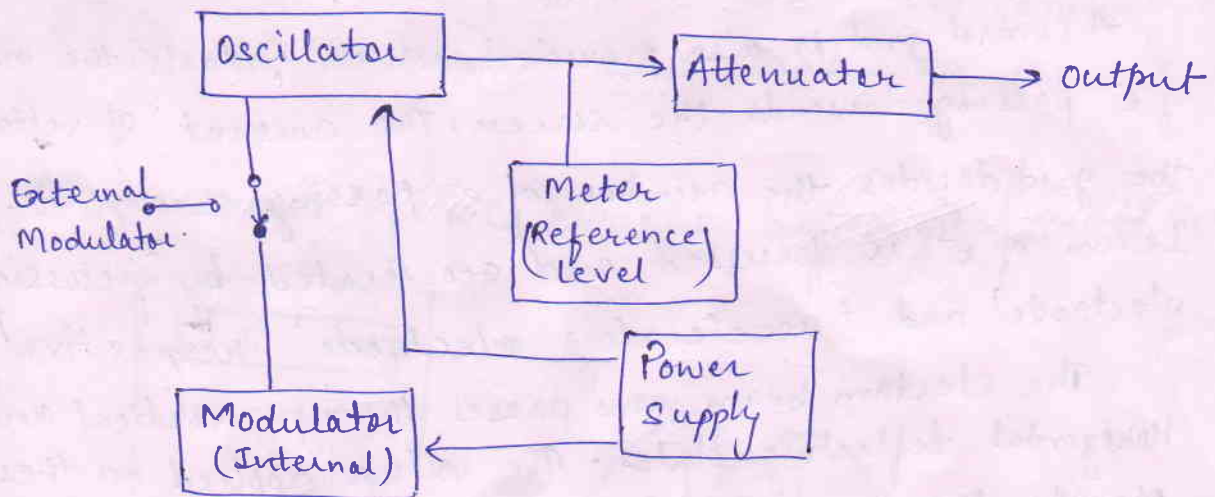
Solution of EL 209

Ans 1 (i) CRT में Aquadag coating का काम secondary emission electron को collect करने में होता है। Aquadag coating एक graphite का aqueous solution होता है।

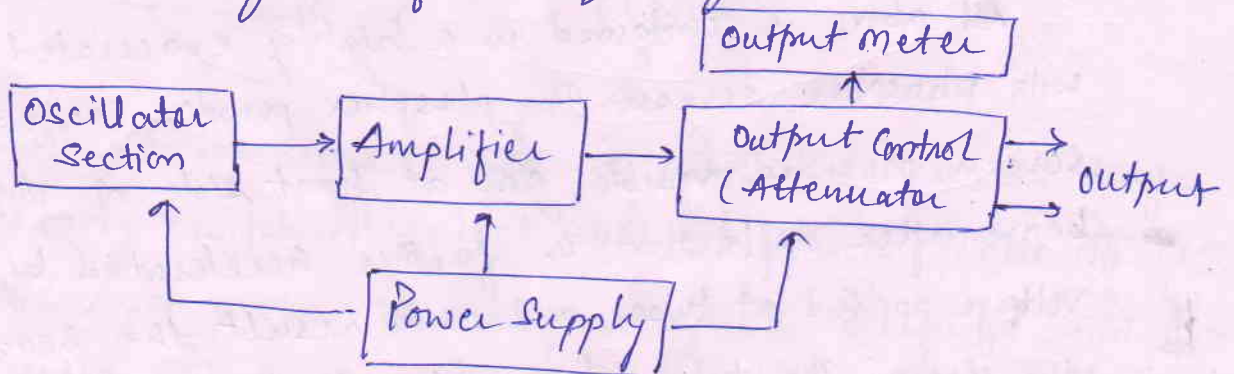
(ii) जिस instrument के द्वारा Q factor of coils and capacitor को measured किया जा सके। उस instrument को Q-meter कहते हैं।

(iii) Q-meter is an instrument designed to measure Q factor of coils and capacitors.

(iv) Block Diagram of RF signal generator



(v) Block Diagram of AF signal generator



Ans 4. Given that $R_{sh} = 250\Omega$
 $R_m = 1000\Omega$

Such

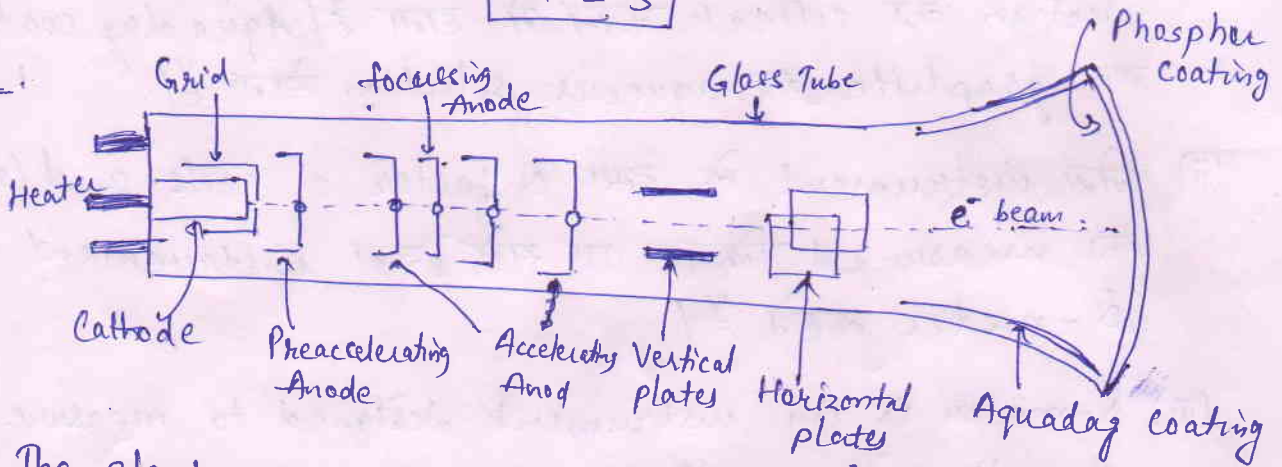
Such

Multiplying factor

$$m = 1 + \frac{R_m}{R_{sh}}$$
$$= 1 + \frac{1000}{250}$$

$$m = 5$$

Ans 3



The electron gun contains a cathode which is heated indirectly by a filament; this results in the emission of e^- from the cathode surface.

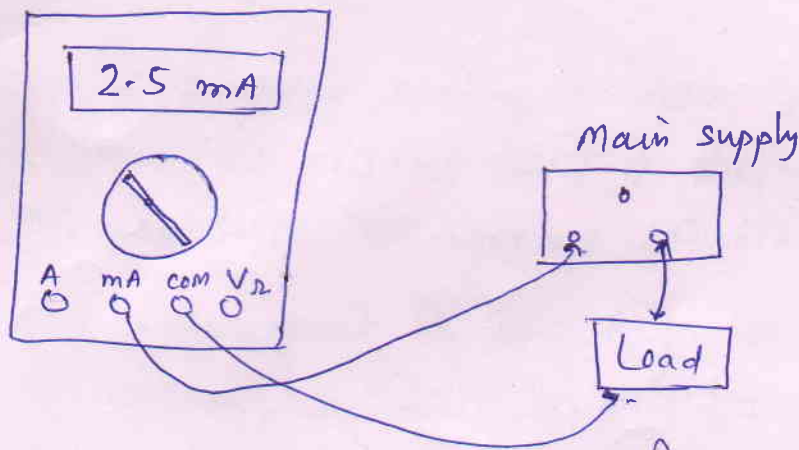
A control grid is also provided which controls the number of e^- passing towards the screen. The amount of voltage on the grid decides the number of e^- passing through it. This beam of e^- is focussed and accelerated by 'focussing electrode' and 'accelerating electrode' respectively.

The electron beam now passes through vertical and horizontal deflecting plates. The voltage applied on these plates provides the beam necessary vertical & horizontal deflection respectively.

All above is contained in a highly evacuated glass tube with phosphor screen. The phosphor powder coated on the screen provides visible glow at front side of the tube. The beam after deflection is further accelerated by a very high voltage applied at tube and as a result the beam strikes on the screen. The tube does not get charged by high voltage, for this the portion from its neck onwards is coated inside with conducting material called 'Aquadag' coating.

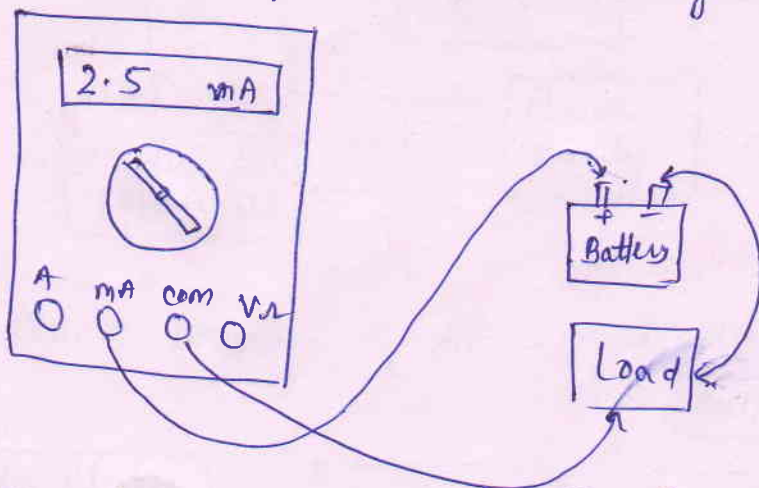
Surek

Ans 2 Measurement of AC current by digital multimeter



AC current measured करने के लिए AC current range को rotary switch से select करते हैं। Black probe को com से ~~connect~~ और red probe को ampere jack से fixed करते हैं। Red probe को main supply से और Black probe को load से connect करते हैं जिससे पथ complete होता है। तो यह AC current LCD display पर show हो जाता है।

Measurement of DC current by digital multimeter



DC current measured करने के लिए DC current range को rotary switch से select करते हैं। Black probe को com से और red probe को ampere jack से fixed करते हैं। Red probe को battery के positive terminal से और Black probe को load से connect करते हैं जिससे पथ complete हो जाता है। तो यह DC current LCD display पर show हो जाता है।