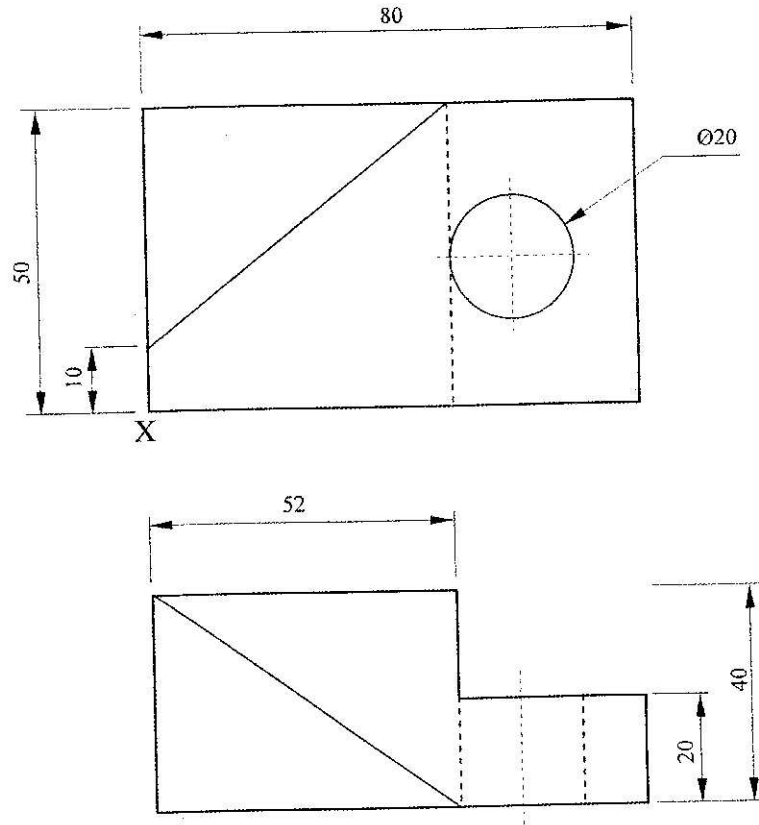


**SECTION B (48 marks)**

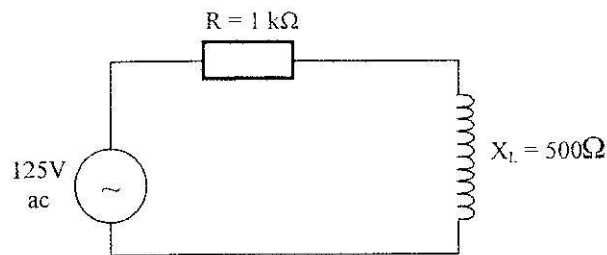
*Answer any four questions from this section.*

- 11 Figure 2 shows two views of a block drawn in first angle projection. On the grid paper provided, draw an isometric view of the block taking point X as the lowest point. (12 marks)



**Figure 2**

- 12 Figure 3 shows an R - L circuit.



**Figure 3**

Calculate:

- (a) circuit impedance;
- (b) circuit current;
- (c) voltage drop across the inductor;
- (d) apparent voltage;
- (e) true power;
- (f) power factor. (12 marks)

13 (a) Name **two** types of controlling devices used in measuring instruments. (2 marks)

(b) State **three** advantages of permanent magnet moving coil instrument over moving iron instrument. (3 marks)

(c) A meter movement has resistance of a  $2\Omega$  full scale deflection current of  $200\text{mA}$ .

(i) Calculate the value of the resistor to enable it to measure:

I voltage upto 10 volts

II current upto 10 amperes

(ii) Draw the circuit diagram in each case. (7 marks)

14 (a) Draw a labelled circuit diagram of a capacitor-start induction motor. (3 marks)

(b) With the aid of a labelled circuit diagram, explain the operation of a buzzer. (9 marks)

15 Figure 4 shows a resistive circuit.

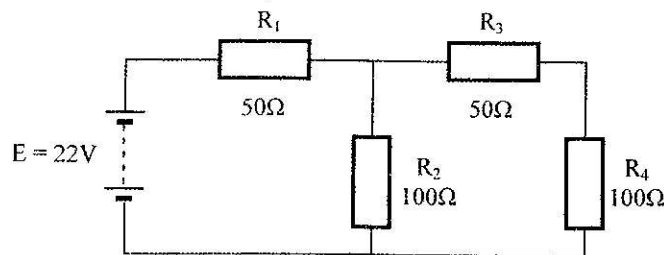


Figure 4

- Calculate:
- (a) the total resistance of the circuit.
  - (b) the voltage drop across  $R_4$ . (12 marks)