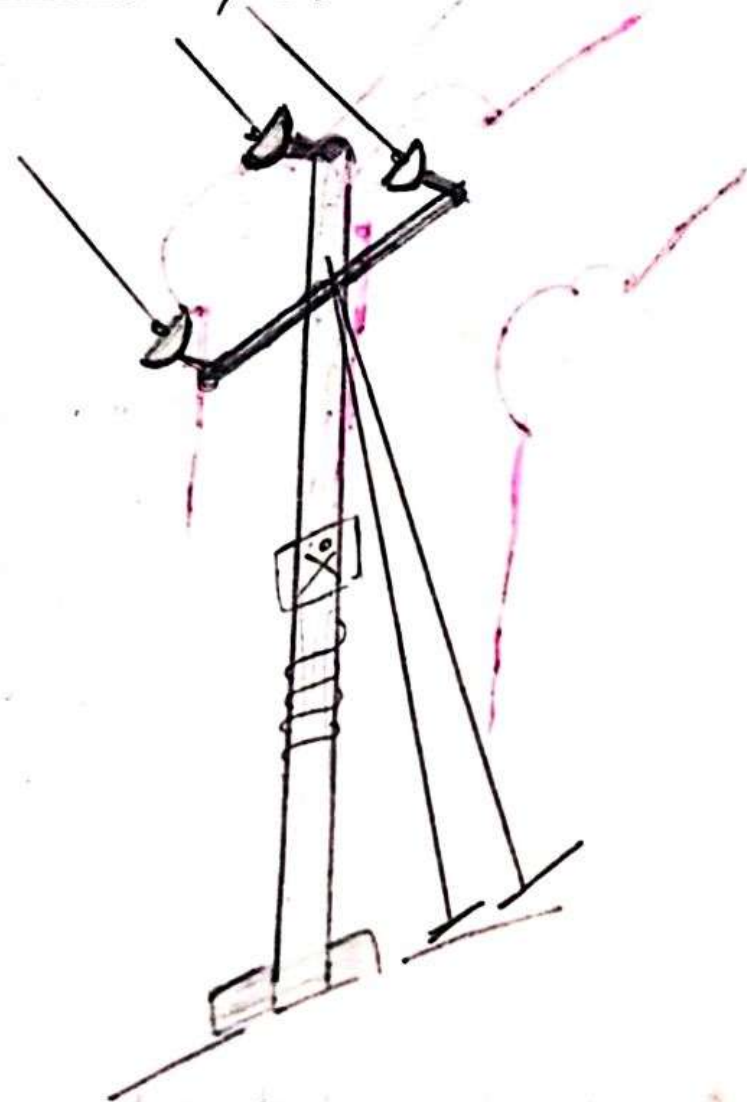


(X) Extra Material Required for last Pole:-



material :-

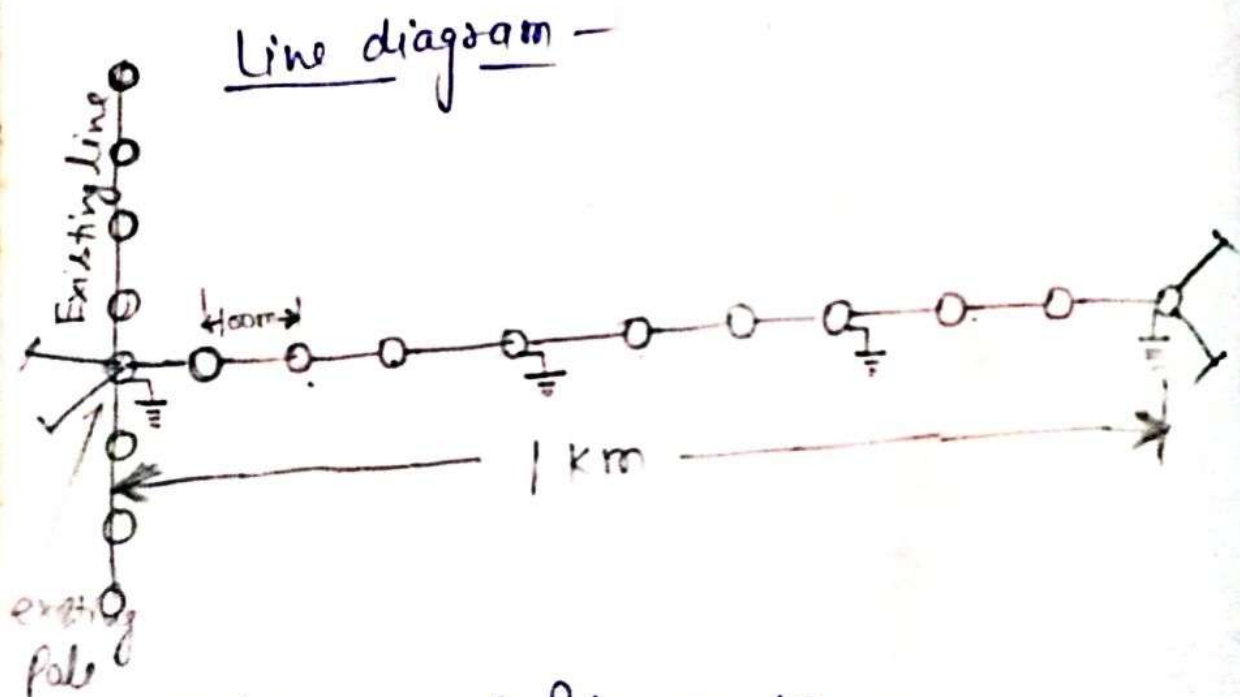
- \* Pole foundation — 1 no.
- \* Stay Complete — 2 no.
- \* Disc Insulator — 3 no.

## Examples

(38)

Ques (1):- 100 KVA के Load को वहन करने के लिए 1 km लम्बी 11 KV, overhead line का निर्माण करो. जबकि उक्त लाइन को किसी 11 KV, 3- $\phi$ , 50 Hz से जोड़ा जाना है। तथा वह लाइन बगल से होकर गुजर रही है। Single line diagram भी बनाओ।

Solutions-



\* Total no of Pole = 10.

\* Current required for line =  $\frac{100 \text{ KVA}}{\sqrt{3} \times 11 \text{ KV}}$   
if  $\cos\phi = 1$

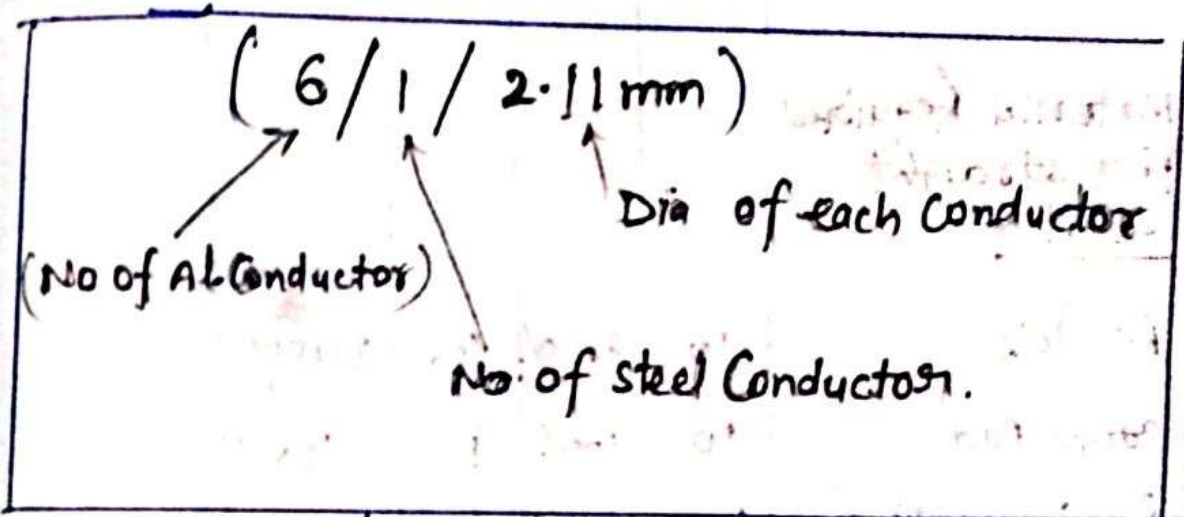
$$\Rightarrow \boxed{\text{Current} = 5.24 \text{ A}}$$

Taking Safety Factor,

$$\text{Then ; Current} = 1.5 \times 5.24 = \boxed{7.86 \text{ A}}$$

∴ Minimum Size of ACSR Conductor = 115A Capacity.

∴ ACSR Conductor = (6/1/2.11 mm) will be taken.



Length of line Conductor =  $3 \times (1000) + 1\% \text{ Sag}$   
 $= 3030 \text{ m.}$   
 and Length of 8 SWG GI earth conductor =  $(1000 + (1\% \text{ Sag}))$   
 $= 1010 \text{ m.}$

REQUIRED MATERIAL FOR LINE

INSTALLATION :-

S.N.	Name of Material	Quantity	Rate	Unit	Cost	Remark
1.	<u>Material For existing Pole:-</u>					
(i)	Pole Foundation	1	500/-	each	500/-	
(ii)	Stay Complete	2	800/-	each	1600/-	
(iii)	M.S. channel (100x50x10mmx 1.5m)	1	200/-	each	200/-	
(iv)	D clamp	1	50/-	each	50/-	
(v)	11 KV Pin Insulator	2	300/-	each	600/-	

SN	Name of Material	Quant.	Rate	Unit	Cost	Remark
(vi)	11 KV Disc Insulator	3	500/-	Each	1500/-	
(vii)	Jumper wire	6m.	15/-	/m.	90/-	
(viii)	Binding wire	1/2 kg	100/kg	Per kg	50/-	

2. Material Required For straight route:-

*	Rcc Pole	10	3000/-	/Each	30000/-	
*	Stone pad	10	100/-	/Each	1000/-	
*	Pole Foundation	10	500/-	/Each	5000/-	
*	M.S. channel (100x50x10mmx1.5m)	10	200/-	each	2000/-	
*	D clamp	10	50/-	each	500/-	
*	9 bolt	10	20/-	each	200/-	
*	11 KV Pin Insulator	30	300/-	each	9000/-	
*	Binding wire	5 kg	100/-	Per kg	500/-	
*	Phase Plate	10	100/-	each	1000/-	
*	Danger board	10	100/-	each	1000/-	
*	Barbed wire	20 kg	200/-	Per kg	4000/-	
3.	ACSR Conductor (6/1/2.11 mm).	3030m	15 Re	Per m	45450/-	$3 \times 10000 + 15$ $= 30000 + 2000$ $= 30300$

SN	Name	Quant.	Rate	Unit	Cost	Remark
4	Earth wire. G.I. - 8SWG.	1010m or 101kg	100/-	per kg	10100/-	1500m x 5kg = 1010m ∴ 10m = 1kg ∴ 101kg
5	Earthing Complete	4	1000/-	each	4000/-	

Total Material Cost = ₹118340/-

\* Labour charge = 10% of Material = ₹11834/-

\* Contingencies (आकस्मिक व्यय) = 5% of (Material + Labour Charge) = 5% of (118340 + 11834) = ₹6509/-

\* Over head charge = 10% of (Material + Labour Charge) = ₹13117/-

\* Supervision charge = 10% of (Mat + Lab. + Cont. + OH) = ₹14980/-

Total Cost For Installation:  
Material Cost + Labour + Contingencies + over head + Supervision charge = ₹164780/-  
And