**2\_1.**

**PROGRAM:**

clc; clear all;

disp('CALCULATION OF LINE PERFORMANCE OF SHORT TRANSMISSION LINE'); P=input('ENTER THE POWER DELIVERED IN W');

V=input('ENTER THE RECEIVING VOLTAGE in kv'); V\_r = V\*10"3/((3)" (1/2));

PF=input('ENTER THE POWER FACTOR');

R=input('ENTER THE Resistance of each conductor'); L=input('ENTER THE Inductance of each conductor'); Z\_ph = R + U\*L) ;

l\_r = P / (3 \* V\_r\*PF); sin1 = sin(acos(PF)); V\_r\_vector = V\_r;

l\_vector = l\_r\*(PF-(j\*sin1));

V\_s\_phase = V\_r\_vector + (l\_vector\*Z\_ph); V\_s\_phase\_magnitude= abs(V\_s\_phase) V\_s\_line = 1.732\*V\_s\_phase\_magnitude;

Regulation1 =((V\_s\_phase\_magnitude - V\_r) I V\_r)\*100; Line\_losses = 3\*I\_r\*l\_r\*R;

Efficiency1 = (P/ (P+Line\_losses)) \*100; disp('Efficiency1');

disp(Efficiency1);

## OUTPUT:

CALCULATION OF LINE PERFORMANCE OF SHORT TRANSMISSION LINE ENTER THE POWER DELIVERED IN W5000000

ENTER THE RECEIVING VOLTAGE in kv11 ENTER THE POWER FACTOR0.85

ENTER THE Resistance of each conductor2 ENTER THE Inductance of each conductor4

V\_s\_phase\_magnitude =

7 .5611e+03

Efficiency1 89.7354

# *2\_2.*

## PROGRAM:

clc; clear all;

disp('CALCULATION FOR MEDIUM LINE NOMINAL T');

P=input('ENTER THE POWER DELIVERED IN W'); V=input('ENTER THE RECEIVING VOLTAGE in kv'); V\_r = V\*10"3/1.732;

PF=input('ENTER THE POWER FACTOR');

R=input('ENTER THE Resistance of each conductor'); L=input('ENTER THE Inductance of each conductor'); Y=input('ENTER THE Admittance of each conductor'); Z\_ph = R + U\*L) ;

Y1 =j\* Y;

l\_r = P / (1.732\*V\*1000\*PF);

disp('IR'); disp(l\_r);

A= 1+ (Z\_ph\*Y1)/2; D=A;

disp('A,D=');

disp(A); C=Y1;

disp('C='); disp(C);

B=Z\_ph\*(1+ (Z\_ph\*Y1)/4); disp('B=');

disp(B);

sin1 = sin(acos(PF)); V\_r\_vector = V\_r;

l\_vector = l\_r\*(PF-(j\*sin1)); disp(I\_vector);

V\_s\_phase = (A\*(V\_r\_vector))+ (B\*(l\_vector)); V\_s\_phase\_magnitude = abs(V\_s\_phase); V\_s\_line = 1.732\*V\_s\_phase\_m agnitude; disp('V\_s\_phase\_magnitude'); disp(V\_s\_phase\_magnitude);

A1 = abs(A);

Regulation1 =(((V\_s\_phase\_magnitude/A1) - V\_r) / V\_r)\*100; disp('Regulation');

disp(Regulation1);

## OUTPUT:

CALCULATION FOR MEDIUM LINE NOMINAL T ENTER THE POWER DELIVERED IN W35\*101'(6) ENTER THE RECEIVING VOLTAGE in kv132 ENTER THE POWER FACTOR0.8

ENTER THE Resistance of each conductor20 ENTER THE Inductance of each conductor50

ENTER THE Admittance of each conductor315\*101'(-6) IR 191.3622

A,D=0.9921 + 0.0031i C=0.0000e+00 + 3.1500e-04i B=19.8425 +49.8346i 1.5309e+02 - 1.1482e+02i

V\_s\_phase\_magnitude 8.4557e+04 Regulation 11.8290

# *2\_3.*

## PROGRAM:

clc; clear all; clc; clear all;

disp('CALCULATION FOR MEDIUM LINE NOMINAL Pl'); P=input('ENTER THE POWER DELIVERED IN W'); V=input('ENTER THE RECEIVING VOLTAGE in kv');

V\_r = V\*10"3/1.732;

PF=input('ENTER THE POWER FACTOR');

R=input('ENTER THE Resistance of each conductor'); L=input('ENTER THE Inductance of each conductor'); Y=input('ENTER THE Admittance of each conductor'); Z\_ph = R + U\*L) ;

Y1 =j \*Y;

l\_r = P / (1.732\*V\*1000\*PF);

disp('IR'); disp(l\_r);

A= 1+ (Z\_ph\*Y1)/2; D=A;

disp('A,D='); disp(A); B=Z\_ph; disp('B='); disp(B);

C=Y1\*(1+ ((Z\_ph\*Y1)/4));

disp('C='); disp(C);

sin1 = sin(acos(PF)); V\_r\_vector = V\_r;

l\_vector = l\_r\*(PF-U\*sin1)) ; disp(I \_ vector) ;

V\_s\_phase = (A\*(V\_r\_vector))+ (B\*(l\_vector)); V\_s\_phase\_magnitude = abs(V\_s\_phase); V\_s\_line = 1.732\*V\_s\_phase\_m agnitude; disp('V\_s\_phase\_magnitude'); disp(V\_s\_phase\_magnitude);

disp('sending end current IS'); IC2 = (V\_s\_phase\*Y1)/2;

IC1 = (V\_r\_vector\*Y1)/2; IL= l\_vector + IC1;

IS= IL+ IC2;

disp(IS); IS1=abs(IS);

disp('sending end PF'); THETA1=(angle(V \_s\_phase)); THETA2=(angle(IS)); THETAS=THETA1 - THET A2; SENDINGPF= cos(THETAS); disp('SENDINGPF'); disp(SENDINGPF);

RS=V\_r\_vector\*conj(I\_vector); disp('RS');

disp(RS); RP=real(RS); disp('RP'); disp(RP); RQ=imag(RS);

disp('RQ'); disp(RQ);

SS=V\_s\_phase\*conj(IS); disp('SS');

disp(SS); SP=real(SS); disp('SP'); disp(SP); SQ=imag(SS); disp('SQ'); disp(SQ); disp('efficiency');

sendingp=3\*V\_s\_phase\_magnitude\*IS1\*SENDINGPF; disp('sendingp');

disp(sendingp);

eff=(P/(sendingp))\*100; disp('efficiency:'); disp(eff);

## OUTPUT:

CALCULATION FOR MEDIUM LINE NOMINAL Pl ENTER THE POWER DELIVERED IN W45e+6 ENTER THE RECEIVING VOLTAGE in kv220 ENTER THE POWER FACTOR0.85

ENTER THE Resistance of each conductor30 ENTER THE Inductance of each conductor145 ENTER THE Admittance of each conductor930e-6 IR 138.9386

A,D=

0.9326 + 0.0140i

B=

3 .0000e+01 + 1.4500e+02 i

C=

-6.4868e-06 + 8.9865e-04i 1.1810e+02 - 7.3190e+01i

V\_s\_phase\_magnitude 1.3366e+05

sending end current IS 1.1033e+02 + 4.7539e+01i

sending end PF

SENDINGPF 0.9606

RS

1.5001e+07 + 9.2967e+06i RP

1.5001e+07 RQ

9.2967e+06

ss

1.5425e+07 - 4.4616e+06i SP

1.5425e+07 SQ

-4.4616e+06

effic iency sendingp

4.6276e+07

effic iency : 97 .2430

# *2 \_4.*

## PROGRAM:

clc; clear all;

R=input('Resistance :'); L=input('lnductance:');

P = input('ENTER RECEIVING END LOAD IN W :'); VRL=input('ENTER RECEIVEING END VOLTAGE :'); Pf=input('ENTER THE RECEIVING END LOAD POWER FACTOR :'); Z= R+j\*L;

y=input('ENTER THE Admittance of each conductor'); gm=sqrt(z\*y);

zc=sqrt(z/y); zb=sqrt(y/z); A = cosh(gm);

B=zc\*sinh(gm); C=zb\*sinh(gm); D=A;

VRP=VRL\*1000/(sqrt(3));

l\_r = P / (1.732\*VRL\*1000\*Pf); Vs=(VRP\*A)+ {l\_r\*B); ls=(VRP\*C)+{l\_r\*D);

disp('ls'); disp(ls); disp('Vs'); disp(Vs);

totalpower=3\*conj(ls)\*Vs; disp('totalpower'); disp(totalpower);

p=real(totalpower); efficiency=(P /p)\*100 ; disp('efficiency'); disp(efficiency);

## OUTPUT:

Resistance :34.73

Inductance :196.96

ENTER RECEIVING END LOAD IN W :100e+6 ENTER RECEIVEING END VOLTAGE :220

ENTER THE RECEIVING END LOAD POWER FACTOR :0.8

ENTER THE Admittance of each conductor1.3e-3\*j Is

2.8570e+02 + 1.6526e+02i

Vs

1.2153e+05 + 6.4719e+04i

totalpower

1.3625e+08 - 4.7786e+06i

effic iency 73.3953