[Time: Three Hours]

[Marks:80]

Please check whether you have got the right question paper.

N.B: 1. Question No.1 is compulsory.

2. **Attempt** any **Three** questions out of remaining **five** questions.

3. Assume suitable data if necessary and justify the same

Q 1.   Answer the following questions.

A) Explain Skin effect with diagram.   05

B) Prove that PU impedance of transformer can be made same reffered to both   05
winding by selecting proper voltage bases on either sides.   .

C) Explain typical AC system with single line diagram.   05

D) Compare overhead and underground system.   05

Q 2 a)   Explain effect on line capacitance. Also explain method of images.   10

Q 2 b)   A 200 Km long 3-Phase overhead line has resistance of 48.7 Ω/Phase, inductive   10
reactance of 80.20 Ω/phase and capacitance of 8.42nF/Km. It supplies a load of
13.5MW at a voltage of 88KV and power factor 0.9 lagging. Using nominal T circuit ,
find the sending end voltage , current, regulation and power angle.

Q 3 a)   What is String efficiency and explain the methods of improving String efficiency?   10

Q 3 b)   A 3-phase 132 KV, 100Km, 50 Hz single circuit line has horizontal spacing with 3.5m   10
between adjacent conductors. The conductor diameter is 1.2 cm. Find the line
capacitance/ phase and charging current /phase.

Q 4 a)   Derive mathematical expression for capacitance of single core cable.   10

Q 4 b)   Synchronous Generator :- 20 MVA ,11 KV, X"= 0.15PU   10
Synchronous Motor 1 :- 10 MVA, 11KV, X"= 0.15PU
Synchronous Motor 2 :- 10 MVA, 11KV, X"= 0.15PU
Synchronous Motor 3 :- 10 MVA, 11KV, X"= 0.15PU
Transformer T1:- 25 MVA, 12.5 Δ/132Y KV, X=j0.1 PU
Transformer T1:- 20 MVA, 132Y/11 Δ KV, X=j0.1 PU.

Draw Impedance diagram for the system choose base voltage of 132 KV for the
transmission line and base voltampere of 20 MVA. Transmission line reactance =
200+j500Ω.

1
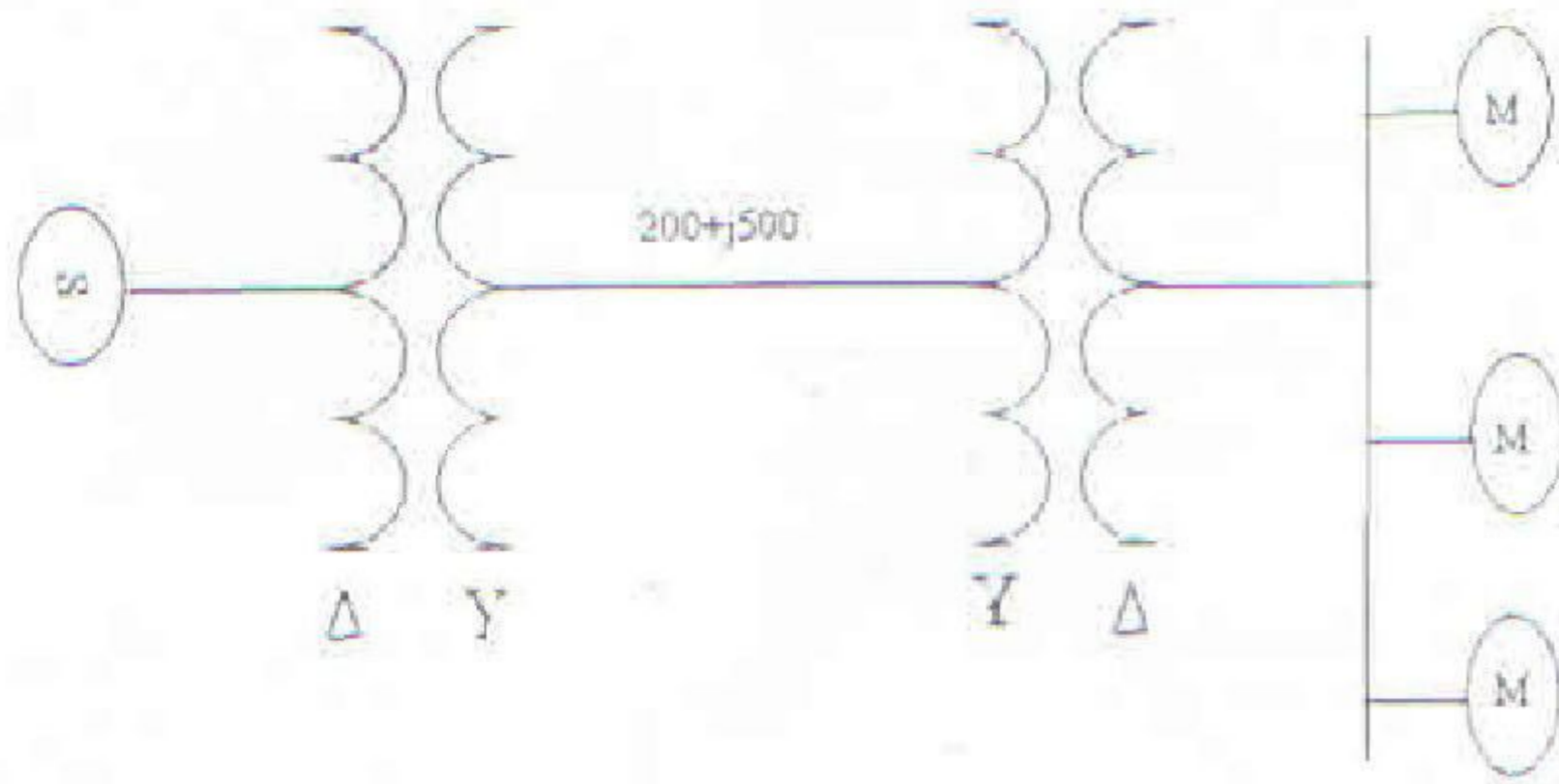
| Q 5 a) | Explain different method of neutral grounding.. | 10 |
| Q 5 b) | An overhead line over a river crossing is supported by two tower 50 m and 80 m above water level. The horizontal span is 300 m . If the weight of conductor is 8.28 N/m and the tension in the conductor is 1920 N. Find the height of midpoint of the line above water level | 10 |

Q6)	Solve any Two	
a)	Explain grading of cables and its types.	10
b)	Explain power flow through transmission line.	10
c)	Derive expression for capacitance of 3-Phase line with equilateral spacing.	10

....