

12. (a) With necessary vector diagrams, discuss about transformer on no-load and loaded conditions. (16)

Or

- (b) (i) Draw the Equivalent circuit of a transformer with all its notations. (8)
- (ii) Write a note on open circuit test on transformer. (8)
13. (a) (i) Explain about the construction and working operation of three phase induction motor. (8)
- (ii) Draw the equivalent circuit and performance calculation of three phase induction motor. (8)

Or

- (b) (i) Explain about principle and operation of single phase induction motor. (8)
- (ii) A 3-phase 400V, star connected induction motor has a star connected rotor with a stator to rotor turn ratio of 6.5. The rotor resistance and standstill reactance per phase are 0.05Ω and 0.250Ω respectively. What should be the value of external resistance per phase to be inserted in the rotor circuit to obtain maximum torque at starting and what will be the rotor starting current with this resistance? (8)
14. (a) Derive the mechanical power flow within the synchronous motor. (16)

Or

- (b) Explain the different torques of a synchronous motor. (16)
15. (a) (i) Explain with a neat diagram, a typical 66/11 KV sub-station. (10)
- (ii) Compare the merits and demerits of underground system versus overhead system. (6)

Or

- (b) (i) What is electric power supply system? Draw a single line diagram of a typical a.c power supply scheme. (8)
- (ii) Discuss the merits and demerits of EMVAC transmission system. (8)