R15 Code No: 124AB JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD B.Tech II Year II Semester Examinations, May - 2017 **ELECTRICAL MACHINES - II** (Electrical and Electronics Engineering) Max. Marks: 75 Time: 3 Hours **Note:** This question paper contains two parts A and B. Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions. PART- A (25 Marks) Explain the need of finding Voltage regulation of a transformer. 1.a) Explain the significance of Voltage transformation Ratio (K) of a transformer. [3] b) Distinguish between Power and Distribution transformers. c) [2] What are hysteresis and eddy current losses and how can we reduce them? [3] d) e) Explain the importance of Polarity test in transformer. [2] What is the advantage of V - V connection? f) [3] List the applications of three phase induction motor. [2] h) Briefly explain the phenomena of Crawling in Induction motor. [3] How come the large rating Induction motors can be started? [2] i) Explain in brief the different methods of Speed control of Induction motors. [3] j) **PART-B** (50 Marks) Derive the emf equation of a transformer. Draw and explain the total equivalent circuit of the transformer referred to Primary. [5+5]OR Draw the no-load and ON-load phasor diagrams for lagging p.f of 1-φ 3.a) Transformer. A 4400 V, 50 Hz transformer has a hysteresis loss of 1250 W, eddy current loss of b) 2050 W and full load copper/loss of 4000 W. If the transformer is supplied at 6600V, 75 Hz. What will be the losses? Assume that the full - load current remains the same. Explain the necessity of performing the O.C and S.C tests of a single phase 4.a) transformer. A single – phase 200 KVA transformer has an efficiency of 95 % on full – load at b) 0.8 power factor and on half load at 0.8 power factor. Find: i) Iron loss / ii) Full—load copper loss.

Explain the load sharing by two transformers if they have unequal voltage ratios.

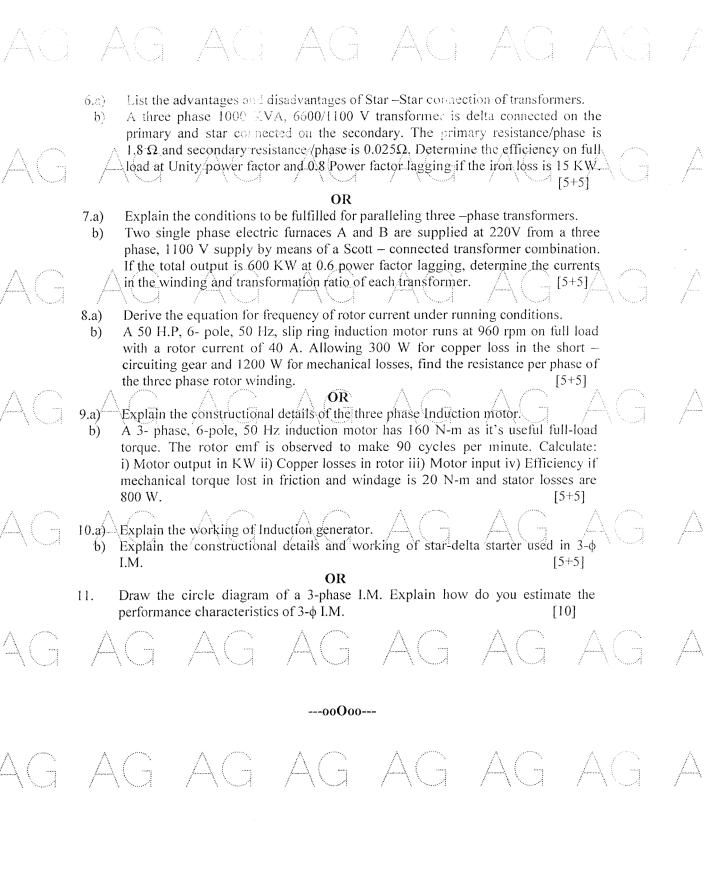
The maximum efficiency of a 500 KVA, 3300/500 V, 50 Hz single phase

transformer is 97 % and occurs at 3/4 full load, unity power factor. If the impedance is 10 %, calculate the regulation at full load; power factor is 0.8

5.a)

b)

lagging.



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