PARUL UNIVERSITY FACULTY OF ENGINEERING & TECHNOLOGY B.Tech. Winter 2019 - 20 Examination

Semester: 5 Date: 13/12/2019 Subject Odi: 03110306 Time: 10::03am to 1:00pm Totructions: 1. All questions are compulsory. 2. Figures to the right indicate full marks. 3. Make suitable assumptions wherever necessary. 4. Shart new question on new page. (15) 2. Objective Type Questions - (Each of one mark) (15) 1. A transformer ore is laminated to reduce losses (15) 2. A step-up transformer wills voltage to the secondary. (15) 3. Any motor may become hot when subjected to	B.Tech. Winter 2019 - 20 Examination	
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		5 ode: 03110306 ame: Electrical Machines and Power Utilization ns: stions are compulsory. to the right indicate full marks. itiable assumptions wherever necessary. w question on new page. ctive Type Questions - (Each of one mark) A transformer core is laminated to reduce losses A step-up transformer wills voltage to the secondary. Any motor may become hot when subjected to The transformer ratings are usually expressed in terms of No-load test on a transformer is carried out to determine Mole data transformer will have maximum efficiency at a load such that While conducting short-circuit test on a transformer the following side is (a) High voltage side (b) Low voltage side (c) Primary side (d) Secondary side Which of the following does not change in an ordinary transformer? (a) Frequency (b) Voltage (c) Current (d) Any of the above The value of flux involved m the e.m.f. equation of a transformer is (a) average value (b) r.m.s. value (c) maximum value (d) instantaneous

Q.2 Answer the following questions. (Attempt any three)

- A) Enlist different speed control methods of DC Series motor. Explain Field and armature control method with necessary diagram.
- B) What is Transformer? Explain the construction and working principle of transformer?
- **C)** Which are the applications of Induction motors? Briefly describe the construction and working of 3- phase induction motor.
- **D**) Explain the direct load test for determination of voltage regulation and efficiency of transformer with necessary diagram.
- Q.3 A) List out the methods to improve the power factor of the induction motor and explain with (07) necessary diagram Also state the disadvantages of low power factor.
 - **B**) Explain the double field revolving theory with reference to single phase induction motor. (08)

OR

B) What are the applications of transformer? Derive an emf equation for transformer with usual (08) notation.

Q.4 A) Which are the methods of three phase power measurement? Explain each method with diagram (07) and necessary mathematical expressions and phasor diagram.

OR

A) Define voltage regulation of a transformer. Describe the method to find out voltage regulation of a (07) transformer using open circuit and short circuit tests.

B) Discuss the power flow diagram of a DC machine explain the internal characteristic of a DC shunt (08) generator with classification of DC machines.