BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BE
BRANCH: EEE

SEMESTER: V
SESSION : MO/2019

SUBJECT : EE5203 ELECTRICAL MACHINEES II

TIME: 1.5 HOURS

FULL MARKS: 25

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

Q1 (a) Explain the meaning of breadth factor and pitch factor and find their expression.   [2]
     (b) Calculate the distribution factor for a single phase alternator having 6 slots/pole when all [3]
         slots are wound and when only four adjacent slots per pole are wound.

Q2 (a) Discuss the advantage of stationary armature in case of alternator.   [2]
     (b) Describe the general feature of ac armature winding.   [3]

Q3 (a) Discuss short circuit ratio.   [2]
     (b) Describe the difference between construction and working of alternator used in [3]
         hydroelectric plants and steam plants with neat diagram.

Q4 (a) Discuss the drawback of synchronous impedance method for obtaining voltage regulation. [2]
     (b) A 3 phase, 10 kva, 400v,50 Hz star connected alternator supplies the rated load of 0.8 pf [3]
         lagging. If the armature resistance is 0.5 ohm/ph and synchronous reactance is 10ohm/ph
         Find voltage regulation and power angle.

Q5 (a) Derive the expression for power output of a cylindrical rotor alternator.   [2]
     (b) Explain slip test.   [3]

Q6 (a) Explain the effect of change in input power of an alternator when alternator is connected [2]
         to infinite bus system.
     (b) Two 3 phase star connected alternator 1 and 2 supplies a total load of 18 mva at 0.7 [3]
         lagging pf at a line voltage of 6.6 kv. The two alternator are rated at 10 mva, 6.6 kv. The
         machine 1 is operating on full load at 0.8 lagging pf. Find current supplied by machine 2
         and operating pf of machine 2.

:::::: **19/09/2019** ::::::E