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

CLASS: MTECH **SEMESTER : I**
BRANCH: EEE **SESSION : MO/18**

SUBJECT: EE531 ADVANCED POWER SYSTEM ANALYSIS

TIME: 3 HRS. **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Mention the final mathematical equation only to represent i) the different ways for representing load, ii) nominal and off-nominal Transformer iii) Generator [5]

Q.1(b) Derive the proper equation and circuit to represent zero sequence impedance of star-star transformer where both neutrals are grounded. [5]

Q.2(a) Apply N-R method and explain the solution process to obtain the updating of state vectors of load buses. [5]

Q.2(b) By mentioning the problem faced sometimes in power system analysis with conventional inversion technique, choose and demonstrate the alternative technique for inversion with one example. [5]

Q.3(a) Describe the process of applying series load flow technique for the solution of Load Flow. [5]

Q.3(b) With one example, evaluate the characteristic of harmonics in power system. [5]

Q.4(a) The zbus of a two system is given as below [5]
Zbus = [j0.7166 j0.609; j0.609 j0.731]. A line having impedance of j1.25 connected between bus 1 and ground is open. Evaluate the modified zbus or the line opening.

Q.4(b) Prove that Positive and negative sequence circuits in parallel for line to line fault and the same circuits will be in series along with zero sequence in case of single line to ground fault. [5]

Q.5(a) Define contingency analysis and evaluate the expression of change in current in any line when two other line are outaged simultaneously. [5]

Q.5(b) Explain the least squares method for power system state estimation. [5]

:::::03/12/2018:::::M