

# DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,

LONERE – RAIGAD – 402 103

Summer Semester Examination, May 2018

Branch: M. Tech. (Electrical Power Systems / Electrical Engineering)

Semester: II

Subject with Subject Code: ADVANCE POWER SYSTEM PROTECTION  
[MTEE202/MTEPS202]

Marks: 60

Date: 16 / 05 / 2018

Time: 3 Hrs.

## Instructions to the Students:

1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part/parameter noticed to be missing, you may appropriately assume it and should mention it clearly.
5. Right side figure indicates the Marks carried by the questions.

- Q.1** Draw and explain the basic construction of static relay along with advantages. [12]
- Q.2** Solve the following questions. (Any One) [12]
- (a) Explain the terms Transfer or Replica Impedance and Mixing transformers of circuits related with the static relays in details.
  - (b) Prove the duality between the phase and amplitude comparator for Two input signals.
- Q.3** Attempt the following questions. (Any Two) [12]
- (a) What are the different types of phase comparator and explain the direct or block-spike phase comparator.
  - (b) Explain in detail the Hall effect device as a vector product phase comparator.
  - (c) Draw the block diagram and explain the instantaneous measuring relays for voltage and current and give the application of the over and under voltage relays.
- Q.4** Solve the following questions.
- (a) What do you understand by duo-bias Transformer differential protection? Explain it in detail. [06]
  - (b) Explain the harmonic restraint percentage differential relays for transformer protection. [06]
- Q.5** Answer the following questions.
- (a) Draw a schematic diagram, operating characteristic and explain the working of a static mho relay using an amplitude comparator. [06]
  - (b) Explain the effects of power swings on the performance of the distance relay. [06]
- Q.6** Answer the following questions.
- (a) Discuss the on line digital computer application for the protection of the transmission line. [06]
  - (b) Draw and explain the micro-processors based overcurrent relay for phase and earth faults. [06]

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