



Remarks: No. of pages: 1 No. of questions: 4
Allowed Tables and Charts: (None)

Answer all the following Questions [50 Marks]

Question (1) [12.5 Marks]

- (a) Explain the estimation of the parameters of 3-phase induction motor from the no-load and locked- rotor tests. [6 Marks]
- (b) Discuss the effect of introducing additional rotor resistance in a 3-phase induction motor as evident from your experimental results. [2.5 Marks]
- (c) State the conditions which should be fulfilled before connecting an alternator in parallel with others. [4 Marks]

Question (2) [12.5 Marks]

- (a) Explain an experiment to find the potential distribution over a four units suspension insulator? [4.5 Marks]
- (b) Draw a solar cell, module and generator and explain an experiment to find the characteristics of a photovoltaic for different solar radiation. [4 Marks]
- (c) Explain an experiment to show the effect of shunt compensation on transmission line. [4 Marks]

Question (3) [12.5 Marks]

- (a) Draw a graph showing the response of a second order system to a unit step showing the effects of damping ratio on the rise up time, settling time over shoot, fast and slow response performance. [6.5 Marks]
- (b) Draw graphs showing the effects of Zeros on the root locus for the following systems,
i) A system with one Zeros and two poles
ii) A system with two Zeros and three poles [6 Marks]

Question (4) [12.5 Marks]

- (a) Sketch the output voltage waveforms and explain an experiment to examine atypical unijunction transistor pulse generator. [6.5 Marks]
- (b) Sketch the power circuit and the output voltage waveform of:
i) A bulk chopper.
ii) A PWM inverter. [6 Marks]

GOOD LUCK