

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,  
LONERE – RAIGAD – 402 103  
Winter Semester Examination – December – 2019**

**Branch: M.Tech. (Specialization) EPS**

**Subject:- Power System Modeling (MTEPS101/ MTEE101 )**

**Date:- 10 /12/2019**

**Semester: I**

**Marks: 60**

**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 or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

- |  | (Marks) |
|--|---------|
| Q.1. Explain the underlying principle behind the park's transformation. Write the equations for synchronous generation in d-q-o forms. | (12)    |
| Q.2. a) What is need for power system modeling?  | (6)     |
| b) Explain modeling of phase shifting transformer  | (6)     |
| Q.3. a) State & Explain Synchronous machine connected to an infinite bus.  | (6)     |
| b) Explain model required for steady state analysis of syn. Machine.   | (6)     |
| Q.4. a) Explain basic principle of Excitation systems of syn. Machine.   | (6)     |
| b) Explain types of excitation system with neat labeled block diagrams.  | (6)     |
| Q.5. a) Explain Modeling of excitation systems.  | (6)     |
| b) Explain modeling of self excited dc exciter.  | (6)     |
| Q.6. a) Explain load modeling parameters acquisition methods.  | (6)     |
| b) Explain Modeling of static V-AR compensators.   | (6)     |

**Paper End**



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**LONERE – RAIGAD – 402 103**  
**Winter Semester Examination – Dec – 2019**

**Branch: M.Tech. EPS**  
**Subject:- Power System Dynamics and control (MTEPS201 )**  
**Date:- 11/12/2019**

**Semester: II**  
**Marks: 60**  
**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.
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**(Marks)**

**Q.1. Explain Classical Methods of Synchronous Generator Connected To Infinite Bus System model. (12)**

**Q.2. Attempt any two of the following (12)**

- a) Explain applications of Routh-Hurwitz criterion.
- b) State & Explain analysis of synchronizing and damping torque of machine .
- c) Explain of dynamics of load and SVC.

**Q.3. Attempt any two of the following (12)**

- a) Explain step of PSS design and give any design application.
- b) Explain Basic concepts of control signals in PSS.
- c) Explain Future trends of PSS.

**Q.4. Attempt any two of the following (12)**

- a) State & Explain Statespace representation.
- b) Explain Effect of field flux variation on system stability.
- c) Explain Rotor angle stability.

**Q.5. Attempt any two of the following**

**(12)**

- a) Draw & Explain Simple thyristor excitation system.
- b) Explain Analysis of effect of AVR on synchronizing and damping components.
- c) Explain Block diagram of PSS with description.

**Q.6. Attempt any two of the following**

**(12)**

- a) Explain Digital Stabilizer – Excitation control design.
- b) Explain Exciter gain – Phase lead compensation.
- d) Explain Stabilizing signal washout stabilizer gain.

**Paper End**

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**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE –  
RAIGAD -402 103**

**Winter Semester Examination – December - 2019**

**Branch: M.Tech Electrical (Electrical Power System)**

**Sem.:- I**

**Subject:- Advanced Power Electronics (MTEPS103/MTEE102)**

**Marks: 60**

**Date:- 12/12/2019**

**Time:- 3 Hr.**

**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 or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

- |  | <b>(Marks)</b> |
|--|----------------|
| <b>Q.1.</b>  | <b>(12)</b>    |
| (a) State and Explain turn ON methods of SCR   |                |
| (b) Explain switching characteristics of IGBT with voltage and current waveform.                                 |                |
| <b>Q.2.</b>  | <b>(12)</b>    |
| (a) Explain in detail the operation of dual converter without circulating current.                               |                |
| (b) Explain three phase semi converter with R.L.F load   |                |
| <b>Q.3.</b>  | <b>(12)</b>    |
| (a) Explain the operation buck-boost converter. List the advantages and disadvantages of this type of converter. |                |
| (b) Write a short note on class D chopper.   |                |
| <b>Q.4.</b>  | <b>(12)</b>    |
| (a) Draw and Explain 180 degree mode operation of three phase inverter.  |                |
| (b) Write a short note on Harmonic reduction for inverter.   |                |
| <b>Q.5.</b>  | <b>(12)</b>    |
| (a) Write short notes on ZVS Multi-resonant Converter.   |                |
| (b) Describe the series resonant inverters with unidirectional switches in briefly.                              |                |
| <b>Q.6.</b>  | <b>(12)</b>    |
| (a) Write short note on use of Power Electronics in HVDC transmission.   |                |
| (b) What is the maximum power point tracking? Explain it with block diagram?                                     |                |

Paper End



**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,  
LONERE – RAIGAD – 402 103**

**Winter End Semester Examination – December 2019**

**Branch: M.Tech.**    *EPS*

**Semester: I**

**Subject:- Advance Power System Protection (MTEPS202/MTEE202)**    **Marks: 60**

**Date:- 13/12/2019**

**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.
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	(Marks)
<b>Q.1.</b> Explain the basic construction of static relays.	(12)
<b>Q.2.</b> What are phase comparators? Explain block spike phase comparator.	(12)
<b>Q.3.</b> Define and explain MHO relay sampling comparator.	(12)
<b>Q.4</b> Explain basic principle of digital computer relaying.	(12)
<b>Q.5.</b> Explain effect of power swing on the performance of distance relays.	(12)
<b>Q.6.</b> What is a switched distance schemes	(12)

**Paper End**





**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,  
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**Winter Semester Examination – Dec – 2019**

**Branch: M.Tech. (Electrical Power System)**

**Semester:II**

**Subject:- SMART GRID DESIGN AND ANALYSIS MTEPS203B Marks:60**

**Date:- 16/12/2019**

**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 or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

- |  | <b>(Marks)</b> |
|--|----------------|
| Q.1. A) What is the need of Smart Grid and Explain neatly with detailed reasons?                         | (6)            |
| B) Distinguish between Conventional Grid and Smart Grid.   | (6)            |
| Q.2. A) Explain in detail about the Architecture of the Smart Grid.                                      | (6)            |
| B) Elaborate Functions of Smart Grid Components  | (6)            |
| Q.3. A) Draw the Structure PMU neatly and explain in detail about the functions of PMU.                  | (6)            |
| B) Write down the Applications of PMU.   | (6)            |
| Q.4. A) Elaborate challenges to load flow in smart grid and weaknesses of the present load flow methods. | (6)            |
| B) How Load flow for smart grid can be design? Explain in detail.  | (6)            |
| Q.5. A) Discuss Voltage Stability Assessment Techniques.   | (6)            |
| B) Discuss Energy management in smart grid.  | (6)            |
| Q.6. A) Explain about Plug-in Hybrid Electric Vehicle technology.  | (6)            |
| B) Explain about the case studies regarding the Energy Storage systems.                                  | (6)            |

**Paper End**



**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,  
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**Winter Semester Examination – Dec 2019**

**Branch: M. Tech. (Electrical Engineering)**

**Semester: I**

**Subject: Renewable Energy Systems (MTEPS102/MTEE104B)**

**Date: 17/12/2019**

**Marks: 60**

**Time: 3Hrs.**

**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 or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

**Q.1. Solve any one of the following. (12)**

- a. Explain in details Concept of Clean Development Mechanism (COM) and Prototype Carbon Funds (PCF)
- b. Classify the Energy resources (Conventional and nonconventional) and explain the concept of Energy and its environmental impacts.

**Q.2. What is Biomass? Explain the resources of biomass. Explain the ocean-thermal energy conversion systems. (12)**

**Q.3. Explain different types of forces on the blades of a wind propeller. Also explain wind power density with proper expression. (12)**

**Q.4. Discuss the performance of grid connected wind power system. (12)**

**Q.5. Solve Any Two of the following. (12)**

- a. List the merits and limitation of a solar Photovoltaic system.
- b. Characteristics of PV systems
- c. Construction of wind Turbine.

**Q.6. Solve the following.**

- a. Describe critical parameters require for integration of grid with the system. (06)
- b. Explain the different power quality issues arising in grid connected system. (06)

**Paper End**



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Winter Semester Examination - Dec - 2019**

**Branch: M.Tech. (Electrical Power System)**

**Semester:II**

**Subject:-Modelling and Simulation of Power Electronics System. MTEPS204B**

**Date:- 18/12/2019**

**Marks:60**

**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 or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

**(Marks)**

- Q.1. A) Explain some time domain analysis techniques in detail? Discuss challenges in computer simulation (6)  
B) What is the role of computer simulation in electrical systems. (6)
- Q.2. Discuss state space representation of Buck-Boost converter in detail. (12)
- Q.3. Explain any trapezoidal integration method for simulation in detail (12)
- Q.4. A) Explain state space model of 3-ph induction motor. (6)  
B) Explain in detail the simulation of 3phase 3 level inverter drive for 3 phase Induction Motor. (6)
- Q.5. Discuss the analysis of modelling and simulation of series VAR compensation. (12)
- Q.6. A) Elaborate how is the simulation and design of power electronic converter using state space averaged models. (6)  
B) Elaborate with example LINIERIZATION of converters with transfer function. (6)
- Q.7 A) Explain the modelling of UPFC. (6)  
B). Explain the modelling of STATCOM. (6)

**Paper End**



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**Winter End Semester Examination – December 2019**

**Branch: M. Tech. EPS**

**Semester: I**

**Subject:- High Voltage Power Transmission (MTEPS104A)**

**Marks: 60**

**Date:- 19/12/2019**

**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 or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

**(Marks)**

**Q.1. With reference to EHVAC Line, discuss the following factors.**

**(12)**

- i) Corona bundle conductors
- ii) Clearances in towers.
- iii) Location of ground wire.
- iv) Power transfer ability

**Q.2. Explain lightning phenomenon and over voltages due to lightning.**

**(12)**

**Q.3. Explain Bewley's lattice diagram.**

**(12)**

**Q.4. Explain insulation co-ordination in a power system**

**(12)**

**Q.5. State and explain the requirements for satisfactory operation of HVDC link.**

**(12)**

**Q.6. Write note on corona and its effects on EHVAC line.**

**(12)**





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Winter Semester Examination – Dec – 2019**

**Branch: M. Tech. (Electrical)**

**Semester: II**

**Subject: - Research Methodology (MTEE205E)**

**Marks: 60**

**Date: - 20/12/2019**

**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 or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

- (Marks)**
- Q.1. Briefly describe the different steps involved in a research process? (12)**
- Q.2. How would you differentiate between simple random sampling and complex random sampling designs? Explain clearly giving examples. (12)**
- Q.3. How will you differentiate between descriptive and inferential statistics? Describe the important measures used to summarise the data. (12)**
- Q.4. Write a short note on sampling error and central limit theorem. (12)**
- Q.5. Explain the meaning of analysis of variance. Describe briefly the technique of analysis of variance for one way and two way classification. (12)**
- Q.6. What do you mean by multivariate analysis? Explain how it differ from bivariate analysis. (12)**

Paper End



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Winter Semester Examination – December – 2019**

**Branch: M.Tech. (Electrical Power System)**

**Semester: II**

**Subject: - Energy Management and Auditing (MTEE205C/MTEPS205C)**

**Date: - 20/12/2019**

**Marks: 60**

**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 or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

**(Marks)**

**Q.1. Write notes on following topics (12)**

- a.) Energy Audit of Buildings.
- b.) Considerations in implementing energy conservation programmes.

**Q.2. a) State the operation of utility monitoring and control system. (06)**

- b) Which are the HVAC conditions and quantities to be monitored or controlled? (06)

**Q.3. a) Discuss energy-efficient motors with measures adopted for energy efficiency. (08)**

- b) Draw the Sankey diagram of an induction motor with neat label. (04)

**Q.4. Write the short notes on following. (12)**

- a) Multitasking solid-state meters.
- b) The use of instrument transformers with watt-hour and demand meters.
- c) Paralleling of current transformers.

**Q.5. Attempt any one sub-question of the following.**

- a) Discuss the basic terms in lighting system and features in details. (12)
- b) Explain classification of cogeneration systems. (12)

**Q.6. a) Explain the method of life cycle costing? (06)**

- b) Write short notes on (06)
- i.) Return on Investment (ROI).
  - ii.) Time Value of Money.



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Winter Semester Examination - December - 2019**

**Branch: M.Tech. (Electrical Power System)**

**Semester: I**

**Subject :- MTEPS105B: Power Quality Assessment And Mitigation Marks:60**

**Date:- 21/12/2019**

**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.
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- |   | <b>(Marks)</b> |
|---|----------------|
| Q.1. A] Explain importance of the different power quality terms? Define all.  | (6)            |
| B] What are Good grounding practices and give poor grounding problems.  | (6)            |
| Q.2. A] Explain Various devices used for voltage regulation and give their impact of on reactive power management                       | (6)            |
| B] what are Various causes of flicker and their effects. Explain means to reduce.   | (6)            |
| Q.3. A] Compare Voltage sags versus interruptions.  | (6)            |
| B] Explain in detail different mitigation techniques for voltage sag .  | (6)            |
| Q.4. A] What are the Harmonics series and parallel resonances. Consequences of harmonic resonance.                                      | (6)            |
| B] Explain Harmonic filtering also passive and active filters.  | (6)            |
| Q.5. A] What is need of power quality monitoring considerations & approaches.   | (6)            |
| B] List power quality measurement equipments. Discuss Selection of power quality monitors, selection of monitoring location and period. | (6)            |
| Q.6. A] Explain Power quality indices and standards for assessment disturbances.  | (6)            |
| B] Discuss Power assessment under waveform distortion conditions.   | (6)            |

