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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Winter Semester Examination – December – 2018

Course: M. Tech. (Electrical & Power System/Electrical Engineering) **Semester: I**
Subject with Subject Code: HIGH VOLTAGE POWER TRANSMISSION MTEPS104A
Date: 01/01/2019 **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. **Explain the configuration and special features of high voltage A. C. lines. Also explain the power transfer ability of high voltage A C line.** **(12)**

Q.2. **What do you mean by traveling wave on transmission line. What are the specifications of traveling waves. Derive the expression for surge impedance and wave velocity.** **(12)**

Q.3. **Explain the biological effects of electric field on high voltage A C line. Explain the methods of voltage control in high voltage A C line** **(12)**

Q.4 **Derive the HVDC power flow equation. Explain the effect of delay angle and angle of advance on HVDC power flow** **(12)**

Q.5. **Draw the detail diagram of bipolar HVDC transmission line and explain the function of each component. Also explain the switching arrangement in bipolar HVDC terminal** **(12)**

or

Q.5. **Discuss configuration and types of multi-terminal HVDC system** **(12)**

Q.6. **Explain the various faults occurring on HVDC converter. Also explain the protection of converter transformer and converter valves** **(12)**

or

Q.6. **What do you mean by hierarchical level of control in HVDC system. Draw a schematic diagram and explain control of each unit of HVDC system** **(12)**

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Winter Semester Examination - December - 2018

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

Subject with Subject Code:- Power Quality Assessment & Mitigation (MTEPS105B) **Marks: 60**

Date: 03/01/2019 **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. Discuss the various power quality disturbances with relevant waveforms. State its impact on induction motor and transformers. (12)

Q.2. What is grounding system? Discuss various problems due to poor grounding system. Also state good grounding practices. (12)

Q.3. What are the principles of voltage regulation? Discuss in detail various devices used for voltage regulation. (12)

Q.4. State Economic impacts of voltage sag. Discuss various mitigation measures for voltage sag with relevant diagrams. (12)

Q.5. Define Harmonics, interharmonics and subharmonics. Explain in detail Triplen harmonics. State mitigation techniques of harmonics. (12)

Q.6. Explain in detail.
A] Power quality monitoring system. (6)
B] Harmonic Indices. (6)

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Semester Examination – December - 2018

Branch: M. Tech (Electrical Engineering) **Sem.:- I**

Subject with Subject Code:- Renewable Energy Sources (MTEPS102/MTEE104)

Date: 29/12/2018 **Marks: 60** **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*

(Marks)

Q.1. a) Discuss the main features of various types of renewable and non renewable energy sources **(06)**

b) Explain the importance of non conventional energy sources in the context global warming. **(06)**

Q.2. Explain the I-V characteristics of solar cell. Draw and explain an equivalent circuit of a practical solar PV cell. **(12)**

Q.3.With the help block diagram, explain the functions of various blocks of Wind energy conversion System. **(12)**

Q.4. a) Explain the various types of geothermal resources. **(06)**

b) What are environmental impacts and advantages of Ocean Thermal Energy Conversion? **(06)**

Q.5. a) Write a note on Hybrid system considering different sources. **(06)**

b) Write a note on Battery management. **(06)**

Q.6.a) Explain critical parameters require for integration of grid with the system. **(06)**

b) Discuss different parameters which affect power quality adversely and how they can be controlled **(06)**

***** End *****

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Winter Semester Examination – December – 2018

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

Subject with Subject Code:- Advance Power Electronics (MTEPS103)

Marks: 60 **Date: 27/12/2018** **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 or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

(Marks)

Q.1. a. State and explain turn on methods of SCR. **(06)**
b. Write a short note on MOSFET. **(06)**

Q.2. a. Explain three phase semi converter with RL Load. **(07)**
b. Write a SPWM control Technique. **(05)**

Q.3. a. Explain fly-back and push pull converter. **(08)**
b. Write a short note on class A chopper. **(04)**

Q.4. a. Draw and Explain 120 degree mode operation of three phase inverter. **(08)**
b. Write a short note on Harmonic reduction for inverter. **(04)**

Q.5. a. Explain flying capacitor Multilevel Inverter. **(08)**
b. Write a short note on cascaded multi level inverter. **(04)**

Q.6. Elaborate the use of Power Electronics in HVDC transmission. **(12)**

***** End *****

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Winter Semester Examination – December– 2018

Branch: M. Tech. (Electrical Power System) **Semester: II**
Subject with Subject Code: - Power System Dynamics and Control (MTEPS201)
Date: 26/12/2018 **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.

(Marks)

Q.1. Define Power system stability and explain in detail different types of stability. **(12)**

Q.2. Why park's transformation is required? Apply it to transform electrical and mechanical equations of synchronous machine. **(12)**

Q.3. Why the excitation control is required for an alternator? Show the inclusion of additional variables in the mathematical model of a synchronous machine and discuss about its final state space model. **(12)**

Q.4. Explain the small signal stability of single machine infinite bus system. Develop the block diagram of SMIB using Classical Generator Model for small signal stability analysis. **(12)**

Q.5. With the help of block diagram give structure of PSS. Explain function of each component giving its design criteria. **(12)**

Q.6. Explain operation of delta - omega and delta - P – omega stabilizers in detail and compare them. **(12)**

OR

Q.6 Explain excitation control design and phase lead compensation in detail. **(12)**

***** End*****

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End SemesterExamination – December - 2018

Course: M. Tech. (MEP/ME/MPE/Production) **Semester:- I**

Subject with Subject Code:-Theory of Machining (MMF101)

Marks:60 **Date: 24/12/2018** **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*

(Marks)

Q.1. Solve any Two of the following: **(6×2=12)**

(a) In a finish surface grinding operation on a horizontal spindle surface grinder, the length of the workpiece is 100 mm and its width is 50 mm. The cross feed is applied every stroke of the work table and is set at 0.25 mm, the back engagement is 0.1 mm and the maximum traverse speed is 250 mm/s. The frequency of worktable reciprocation is 1 per sec. Calculate -

1. The machining time
2. The maximum metal removal rate

(b)Define the following:

1. Built up Edge formation 2. Bulk ratio of chip 3. Stabler's chip flow criteria

(c) Derive the correlation between the chip strain and the material properties as a chip breaking criteria.

Q.2.Solve any Two of the following: **(6×2=12)**

(a) Explain the method of measuring the cutting force using piezo-electric dynamometer.

During shaping like single point machining a steel plate at feed 0.20 mm per stroke and depth 4 mm by a tool of rake and inclination angle of 0° and $\phi = 90°$. Pz and Pxmeasured were 800 N and 400 N respectively, chip thickness is 0.4 mm. Using MCD determine the yield shear strength of the work material in the machining condition.

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(b) Derive the expression for determining the shear zone temperature in machining. Assume the suitable assumptions. Also write the various methods of measurement of temperature in machining.

(c) Define surface integrity. Explain the unit event occurred during grinding operation. How it will affect the quality of the generated surface?

Q.3. Attempt the following: **(6×2=12)**

(a) List the essential properties of cutting fluid required as machining coolants and lubricants. Explain the methods of delivery of cutting fluids in machining.

(b) How does a cutting tool fail? Explain in brief the plastic deformation and stability criteria of a cutting tool. Explain how thermo chemical wear occurs on cutting tool.

Q.4. Attempt any one of the following: **(12×1=12)**

(a) Derive the expression for cutting speed that gives minimum production cost. Write the suitable assumptions and define the terms used in the expression.

(b) Show with an appropriate graph how the production rate vary with the cutting speed. Label all the points on the graph and discuss its relevance.
In an attempt to appraise the cost-cutting speed relationship, the following three tests were conducted:

Test 1	V_1=100 m/min	C_p = 8
Test 2	V_2=200 m/min	C_p = 12
Test 3	V_3=300 m/min	C_p = 10

Assuming a parabolic relationship, write an equation that describes the operation between the given points.

Q.5. Solve any two of the following. **(6×2=12)**

(a) Explain with a neat sketch the characteristics of grinding process. Describe with a neat diagram the three modes of grit-workpiece interaction in grinding.

(b) Explain the concept of critical depth of cut with respect to grinding velocity and the force. Show the variation of the above with the critical depth of cut using graphs.

(c) Explain the micro milling analogy of surface grinding process using a neat sketch.

Q.6. Solve any two of the following: **(6×2=12)**

(a)Discuss the effects of the following parameters on working accuracy and MRR in abrasive jet machining. 1) Grain size 2) jet velocity 3) Stand off Distance

(b) Write the advantages and limitations of Electro-discharge machining. At least four each.

(c) Describe the working principle of Ultrasonic machining. Explain how the magneto-strictive generators works in case of USM. What are its advantages over the piezo electric transducers.

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Branch: M.Tech. (Electrical Power System) **Semester: I**
Subject with Subject Code: Power System Modeling (MTEE101)
Marks: 60 **Date: 24/12/2018** **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.*
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(Marks)

Q.1. A] Model & Derive the transfer function of any one non-electrical component. Define time constant in transfer function. (6)
B] Elaborate need for modeling of power system & different areas of power system analysis. (6)

Q.2. A] What is Q & D axis? Derive Park's transformation matrix. (6)
B] Derive the expression of 3 phase synchronous machine for classical model & draw the model. (6)

Q.3. A] Analyze Single-Machine Infinite Bus (SMIB) Configuration. (6)
B] Determine & draw net mmf wave due to the three phase winding in stator of synchronous machine. (6)

Q.4. A] How excitation control is applied? Describe basic elements. (6)
B] Draw & explain excitation system control and protective circuits. (6)

Q.5. A] What are types of excitation systems? Draw & explain any one in detail. (6)
B] Analyze modeling of separately excited dc exciter. (6)

Q.6. A] What is SVC? Why is it used? Draw the Characteristics of SVC with system load characteristics and explain. (6)
B] Draw & explain composite structure of static & dynamic load model. (6)