Hall Ticket No: | | | | | | | | | | |

Question Paper Code: AEEB14

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

MODEL QUESTION PAPER

B.Tech IV Semester End Examinations (Regular), May – 2020

Regulation: IARE–R18

ELECTRICAL POWER GENERATION SYSTEMS

(Electrical and Electronics Engineering)

Time: 3 hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT – I

1	a)	Draw a general layout of a modern thermal power plant and explain the working of different parts in the thermal power plant?	**[7M]**
	b)	Write the advantages, disadvantages of thermal power plant and give some important thermal power plants in India?	**[7M]**
2	a)	Discuss and compare the performance of different types of boilers used in thermal power plants?	**[7M]**
	b)	What are the different merits and demerits of nuclear power plant with respect to hydro electric power plant?	**[7M]**

UNIT – II

3	a)	Discuss the different types of turbines used for hydroelectric projects in modern power system with diagram.	**[7M]**
	b)	Explain about the functioning of Surge tank and Penstock in hydroelectric power generating station?	**[7M]**
4	a)	Write the important considerations in the site selection of hydroelectric plant in modern power system?	**[7M]**
	b)	Explain about Reaction turbines which are used in hydroelectric power station with neat diagram?	**[7M]**

UNIT – III

5	a)	How the solar radiation data is collected and what way it is helpful in solar energy conversion.	**[7M]**
	b)	What is solar power? Discuss the various environmental impact of solar power system on environment?	**[7M]**
6	a)	Explain about Maximum power point techniques used in Solar System how this technique improves s system efficiency?	**[7M]**
	b)	Explain instruments for measuring solar radiation and explain important applications of solar system?	**[7M]**

UNIT – IV

7	a)	State and briefly explain the factors that are determine the output power form wind energy system?	**[7M]**
	b)	Explain various components used in Wind energy system also write the important Wind energy systems in India?	**[7M]**
8	a)	Discuss in detail the operation and control of a wind turbines which are used in wind energy system?	**[7M]**
	b)	Explain how the variations of wind velocity and its directions are taken care in Wind energy systems?	**[7M]**

UNIT – V

9	a)	Explain in detail about the advantage of Sectionalizing of power plant?	**[7M]**
	b)	Give detailed comparison of initial costs of different power plants?	**[7M]**
10	a)	What are the different factors affecting cost of generation explain?	**[7M]**
	b)	Whit neat sketch explain about different load curves.	**[7M]**

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COURSE OBJECTIVES (COs):
The course should enable the students to:

I	Demonstrate various conventional power generation systems including major subsystems.
II	Understand hydroelectric power generation systems along with pumped storage plants and hydraulic turbines .
III	Apply knowledge of solar and wind power generation systems in design and implementation to obtain clean energy.
IV	Illustrate the economic aspects of power generation and power tariff methods.

COURSE OUTCOMES (COs)

CO 1	Discuss the principles and operation of thermal and nuclear power plants.
CO 2	Demonstration of working of hydro power plant and its importance in the power system.
CO 3	Describe the principle, operation of photovoltaic effect and layout of solar power plant.
CO 4	Discuss the construction and working principle of wind energy systems.
CO 5	Explain about economic aspects of power generation.

COURSE LEARNING OUTCOMES (CLOs):
Students, who complete the course, will have demonstrated the ability to do the following:

AEEB14.01	Demonstrate the layout and working principle of thermal power plant.
AEEB14.02	Analyze the principle and operation of different energy conversion systems.
AEEB14.03	Classify the various types of renewable energy sources.
AEEB14.04	Compare the various hybrid energy systems in electrical system.
AEEB14.05	Use the renewable energy sources to meet the constraints in electrical and electronics engineering field.
AEEB14.06	Explain the working of hydro power plant and its importance in the power system
AEEB14.07	Discuss the principles and operations of photovoltaic effect.
AEEB14.08	Describe the layout and working of solar power plant in electrical systems.
AEEB14.09	Build the flow chart of maximum power point tracking system.
AEEB14.10	Illustrate the principle of various types of solar concentrators.
AEEB14.11	Demonstrate the construction and working principle of wind energy systems.
AEEB14.12	Discuss the principle and operation of induction generator in wind energy system.
AEEB14.13	Demonstrate the importance of wind energy system and types of turbines.
AEEB14.14	Generalize the construction and working of nuclear power plant in power systems.
AEEB14.15	Illustrate the effect of non-renewable energy sources on the environment.

MAPPING OF SEMESTER END EXAMINATION QUESTIONS COURSE LEARNING OUTCOMES:

SEE QUESTION No.		COURSE LEARNING OUTCOMES		CO'S	BLOOM TAXONOMY LEVEL
1	a	AEEB14.01	Demonstrate the layout and working principle of thermal power plant.	CO1	Understand
	b	AEEB14.01	Demonstrate the layout and working principle of thermal power plant.	CO1	Remember
2	a	AEEB14.03	Demonstrate the layout and working principle of thermal power plant.	CO1	Understand
	b	AEEB14.04	Demonstrate the layout and working principle of thermal power plant.	CO1	Understand
3	a	AEEB14.05	Analyze the principle and operation of different energy conversion systems.	CO2	Remember
	b	AEEB14.02	Analyze the principle and operation of different energy conversion systems.	CO2	Understand
4	a	AEEB14.06	Compare the various hybrid energy systems in electrical system.	CO2	Understand
	b	AEEB14.06	Compare the various hybrid energy systems in electrical system.	CO2	Understand
5	a	AEEB14.07	Describe the layout and working of solar power plant in electrical systems.	CO3	Remember
	b	AEEB14.08	Describe the layout and working of solar power plant in electrical systems.	CO3	Understand
6	a	AEEB14.09	Build the flow chart of maximum power point tracking system.	CO3	Understand
	b	AEEB14.10	Describe the layout and working of solar power plant in electrical systems.	CO3	Understand
7	a	AEEB14.12	Demonstrate the importance of wind energy system and types of turbines.	CO4	Understand
	b	AEEB14.12	Demonstrate the importance of wind energy system and types of turbines.	CO4	Understand
8	a	AEEB14.12	Demonstrate the importance of wind energy system and types of turbines.	CO4	Understand
	b	AEEB14.12	Demonstrate the importance of wind energy system and types of turbines.	CO4	Remember
9	a	AEEB14.14	Generalize the construction and working of nuclear power plant in power systems.	CO4	Understand
	b	AEEB14.15	Generalize the construction and working of nuclear power plant in power systems.	CO5	Understand
10	a	AEEB14.14	Generalize the construction and working of nuclear power plant in power systems.	CO5	Understand
	b	AEEB14.15	Generalize the construction and working of nuclear power plant in power systems.	CO5	Understand

Signature of Course Coordinator **HOD, EEE**