Printed Pages – 3 **EE – 601**

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2024 **Roll No.**

B.Tech.

SIXTH SEMESTER EXAMINATION, 2005-2006

POWER STATION PRACTICE

Time : 2 Hours *Total Marks : 50*

Note : *(i) Attempt **ALL** questions.*

(ii) In case of numerical problems assume data wherever not provided.

(iii) Be precise in your answer.

1. Attempt ***any three*** parts of the following : **(4x3=12)**

(a) Give a schematic diagram to generate electricity in Hilly area with wind and solar cells.

(b) Give the fundamental operation of MHD generation. Whether the power generated is AC or DC ?

(c) Develop an integrated power generation block diagram comprising of all possible energy generation. How will these blocks be interfaced with GRID ?

(d) What is the percentage of power generated by hydro plants in India ? Which states have maximum hydro generation ?

(e) Identify the global energy needs and mention the attempts being made to get the integrated form of energy.

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2. Attempt *any two* parts of the following : **(6x2=12)**

(a) Identify the factors affecting the efficiency of steam turbines. In what way the boiler performance is related to the turbine performance ? Explain in detail.

(b) Draw a schematic diagram of modern thermal power plants identifying the need of ash minimization criterion.

(c) What are the comparative benefits associated with gas power plants to that of thermal power plants ? What do you understand by open - cycle and closed cycle gas turbine power plants ?

3. Attempt *any four* parts of the following : **(3x4=12)**

(a) Explain the functioning of Impulse turbines. What is the utility of these turbines as maximizing power output ?

(b) Draw the role of governor actions in deciding the output of steam turbines. How the maximum output can be attained ?

(c) Identify the drawbacks of diesel power plants. How can these plants be effectively used as base / peak load plants ? Examine the best suited mode.

(d) Give the general layout of nuclear power plant. Identify the best operating mode of nuclear power plant along with justification.

(e) Show the component diagram of 33 kV substation alongwith the various equipments used with rating.

(f) Explain the safety measures taken to protect the substation of 220 kV and above. What type of protection methodology is adopted and why ? Explain.

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4. Attempt *any two* parts of the following : **(7x2=14)**

(a) Give a complete criterion to determine the load of an area of comprising industrial and commercial complexes. How can this be utilized to design the substation ?

(b) In modern LT distribution stations the VAR meters are installed. What is the mechanism of charging the tariff related to reactive power and how the above can be effectively installed ?

(c) A distribution company wants to charge and penalize the consumers in case of excessive loads of poor power factor. What changes should be made in present existing substation so as to meet the above ?

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