



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR

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QUESTION BANK (DESCRIPTIVE)

Subject with Code : GEP (16EE210)

Course & Branch: B.Tech - EEE

Year & Sem: II-B.Tech & I-Sem

Regulation: AUTONOMOUS

UNIT –I

THERMAL POWER GENERATING SYSTEMS

1. Draw the schematic diagram of a modern steam power station and explain its operation. [L5]10M
2. Explain the important components of a steam power station. [L2]10M
3. What factors are taken into account while selecting the site for a thermal power station ? [L1]10M
4. Explain the function of the following in thermal power plant and explain the principle of operation of each. a)economizer b)Electrostatic precipitator c)condenser d)super heater e) cooling tower [L2]10M
5. a) Mention the merits and demerits of steam power plant [L5]5M
b) Compare the performance of different types of boilers used in thermal power plants[L2]5M
6. Explain the function of chimney and precipitator [L2]10M
7. What is the purpose of?
a) Forced draught fan? [L2]2M
b) What is function of economizer? [L1]2M
c) Which device has highest efficiency in thermal power plant [L2]2M
d) What is the function of governor in hydro plant? [L1]2M
e) what is function of boiler? [L1]2M
8. Discuss the natural and forced draughts and list out the difference between them? [L2]10M
9. Discuss the need of cooling towers and list out various types of cooling towers? [L2]10M
10. Discuss the difference between Kaplan, Francis and pelton turbines and state the type of power plants they are suitable for [L2]10M

UNIT –II

HYDRO & NUCLEAR POWER GENERATING SYSTEMS

- 1 Discuss the merits and demerits of a hydro-electric plant. [L2]10M
2. a) What are the classification of nuclear reactors? [L1]5M
b) Explain about the boiling water reactor [L2]5M
3. Draw the schematic diagram of a nuclear power station and discuss its operation. [L5]10M
- 4 .How hydro electric power plants are classified? [L2]10M
5. Discuss working of a hydro-electric plant with a neat diagram. [L5]10M
6. Draw the schematic diagram of a nuclear reactor and discuss its operation. [L5]10M
- 7 a) Explain about the fast breeder reactor [L2]5M
b) What are the factors considered while selecting the nuclear power plant? [L1]5M

8. Write short note on
- a) FBR [L5] 5M
 - b) PWR [L5] 5M
9. What are the main parts of a nuclear power plant? Explain. [L1]10M
10. a) What are the materials used as a coolant? [L1]2M
- b) What is meant by penstock? [L1]2M
 - c) Classify the types of reactors on the basis of moderator [L3]2M
 - d) What is Nuclear Fission? [L1]2M
 - e) Write any three demerits of nuclear plant. [L5]2M

UNIT-III

SOLAR & WIND POWER GENERATING SYSTEMS

1. a) What are the various (subsystems) names of wind mills? [L1] 2M
- b) Explain solar cooling technique? [L2] 2M
 - c) Explain solar distillation. [L2] 2M
 - d) Explain the working of collector? [L2] 2M
 - e) Write two advantages and disadvantages of concentrating collectors over a flat plate collectors? [L2] 2M
2. Explain a) Horizontal Axis wind mills. [L2] 5M
- b) Vertical Axis wind mills. [L2] 5M
3. a)What is the need for solar thermal energy storage? [L1] 5M
- b) Explain solar pond with neat diagram [L1]5M
4. Explain types of solar energy collectors with principle of solar collector [L2] 10M
5. Explain what is solar energy storage? Explain their methods [L2]10M
6. what are the main components of a flat plate solar collector? [L1] 10M
7. Write short note on concentrating collectors and green house? [L2]10M
8. Prove that in case of horizontal axis wind turbine maximum power can be obtained when ,exit velocity =1/3,wind velocity $P_{max}=\frac{8}{27} \rho A V^3$? [L2] 10M
9. How solar energy can be stored in the form of thermal energy?
explain and discuss in brief [L2] 10M
10. write short notes on
- a) Savonius rotor? [L2]5M
 - b) Darrius rotor? [L2]5M

UNIT-IV

BIOGAS & GEOTHERMAL POWER GENERATING SYSTEMS

1. Draw schematic diagram of geothermal system and explain? [L4] 10M
2. Explain any one type of biogas digester with neat diagram and their advantages and disadvantages [L4] 10M
3. a) Explain with neat sketch about OTEC system? [L4] 5M
b) What are the disadvantages of geothermal energy? [L1] 5M
4. a) How can wind energy be converted in to electrical energy? [L1] 2M
b) Define fermentation. [L2] 2M
c) Define geothermal energy [L2]2M
d) what are the advantages and disadvantages of ocean thermal energy? [L1]2M
e) Write some applications of biogas? [L1]2M
5. What is by anaerobic digestion? What are the factors which affect bio digestion? [L2] 10M
6. Briefly write about different models of biogas plants? ? [L2]10M
7. a) What is the difference between biogas and biomass? ? [L1]5M
b) Differentiate between aerobic and anaerobic digestion? ? [L1]5M
8. Explain the factors affecting bio-digestion of gas? [L4]10M
9. What is biogas? How is it produced? ? [L1]10M
10. What is gobar gas? How it is being prepared? how is it useful for the rural areas? ? [L1]10M

UNIT-V

ECONOMIC ASPECTS OF POWER GENERATION

1. a) An industrial consumer having a maximum demand of 100kw, maintains a load factor of 60%. The tariff rates are Rs.900 per KVA of maximum demand per annum plus Rs.1.80 Per Kwh of energy consumed. If the average power factor is 0.8 lagging, calculate : i)Total energy consumed per annum ii) The annual electricity bill and iii) The overall cost per Kwh consumed. . (L3) [7M]
b) Define block rate tariff and power factor tariff. (L2) [3M]

2. A generating station has the following daily load cycle.

Time (hrs)	0-6	6-10	10-12	12-16	16-20	20-24
Load (MW)	30	40	20	70	50	40

Draw the load curve and find i) Maximum demand ii) Units generated per day iii) Average load and load factor . (L3) [10M]

3. a) Explain about load curve and load duration curve. (L2) [5M]

b) The maximum demand of a generating station is 200MW. The annual load factor being 60% calculate the total electrical energy generated per year. (L3) [5M]

4. The load on a power plant on a typical day is as under

12 Midnight to 5am = 20 MW, 5 AM to 9 AM = 40 MW, 9AM to 6 PM = 80 MW,
6 PM to 10 PM = 100MW, 10 PM to 12 Midnight = 20 MW.

Draw load curve and load duration curve. Find energy supplied by the plant per day in 24 hours and load factor of the plant. (L3) [10M]

5. a) Describe the desirable characteristics of a tariff (L2) [5M]

b) Describe three types of tariff. (L2) [5M]

6. Explain how a load duration curve is plotted. What is its use?

7. a) Define Load factor? (L1) [2M]

b) Define diversity factor? (L1) [2M]

c) Define demand factor? (L1) [2M]

d) Define Maximum demand? (L1) [2M]

e) Define two part tariff. (L1) [2M]

8) a). Difference between two-part tariff and Three –part tariff ? [L2]5M

b). Briefly discuss the type of consumers used? [L2]5M

9) What do you understand by 'Economics of power generation'? Discuss the different classifications of costs of electrical energy? [L2]10M

10) A generating station has a maximum demand of 500MW. The annual load factor is 50% and capacity factor is 40%. Find the reserve capacity of the plant.? [L4]10M

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