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QUESTION BANK (OBJECTIVE)

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. Which is the non- conventional source of energy [ ]
   (A) Fossile fuel (B) Geothermal, ocean, tides and waves
   (C) Radio-active substance (D) Water

2. For a thermal power plant, which is not the fixed cost ? [ ]
   (A) Interest on capital (B) Depreciation (C) Insurance charges (D) Cost of fuel.

3. The overall efficiency of the thermal plant is [ ]
   (A) Less than 30% (B) Between 30% to 50%
   (C) Between 50% to 80% (D) Above 80%

4. The device which recovers a part of heat from flue gases is [ ]
   (A) Condenser (B) Evaporator (C) Draft tube (D) Economiser

5. A condenser in a steam power plant condenses steam coming out of [ ]
   A) Turbine (B) Boiler (C) Economiser (D) Super heater

6. The most important factors to be considered in the selection of fuel for power plants included [ ]
   (A) Cost of fuel (B) Calorific value of fuel (C) A & B (D) None

7. The efficiency of a boiler used in a modern steam power plant is of the order of percentage [ ]
   (A) 30 (B) 50 (C) 85 (D) 100

8. Pulverized coal is [ ]

(A) coal free from ash (B) non-smoking coal (C) coal which bums For long time (D) coal broken into fine particles.

9. Heating value of coal is approximately [ ]

(A) 1000-2000 kcal / kg (B) 2000-4000 kcal / kg (C) 5000-6500 kcal / kg (D) 9000-10,500 kcal / kg.

10. Water gas is a mixture of [ ]

(A) CO_2 and O_2 (B) $O_2$and H_2 (C) H_2, N_2 and O_2 (D) CO, N_2 and H_2.

11. Coal used in power plant is also known as [ ]

(A) steam coal (B) charcoal (C) coke (D) soft coal.

12. Which of the following is considered as superior quality of coal ? [ ]

(A) Bituminous coal (B) Peat (C) Lignite (D) Coke.

13.In a power plant, coal is carried from storage place to boilers generally by means of [ ]

(A) bucket (B) V-belts (C) trolleys (D) manually.

14. Live storage of coal in a power plant means [ ]

(A) coal ready for combustion (B) preheated coal

(C) storage of coal sufficient to meet 24 hour demand of the plant (D) coal in transit.

15. Pressure of steam in condenser is [ ]

(A) atmospheric pressure (B) more than pressure (C) slightly less than pressure (D) much less than pressure.

16. Equipment used for pulverizing the coal is known as [ ]

(A) Ball mill (B) Hopper (C) Burner (D) Stoker.

17.The largest size of steam turbine installed in India is [ ]
(A)100 MW (B) 250MW (C) 500 MW (D) 100MW

18.A condenser in a steam power plant condenses steam coming out of [ ]

(A)turbine (B) boiler (C) economiser (D) super heater

19. The overall efficiency of the thermal plant is [ ]

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(A) CO_2 and O_2 (B) $O_2$and H_2 (C) H_2, N_2 and O_2 (D) CO, N_2 and H_2.

25. Coal used in power plant is also known as [ ]

(A) steam coal (B) charcoal (C) coke (D) soft coal.

26. Condensers in thermal power plant are for condensing [ ]

(A) Steam to water (B) water to ice

(C) Hydrogen gas to liquid gas (D) carbon dioxide to dry ice

27. Induced draught fans are used to_____ [ ]

(A)Cool the steam let out by the turbine on a thermal station

(B) Cool the hot gases coming out of the boiler

(C)Force the air inside the coal furnace

(D)Control the heat generated in a nuclear

(E) Pull the gas out of the chimney

28. Degerative heating is done to [ ]

(A)heat the system (B)heat the feed water

(C)remove dissolved gases in water (D) remove dissolved solid impurities in water

29.Location ofa surge tank in a hydrostation is [ ]

(A)turbine (B)tailrace (C) reservoir (D)dam

30. Which of the power plant is the most reliable [ ]

(A) Hydro – electric (B) Diesel (C) Steam (D) Tidal

31. The overall efficiency of the thermal plant is [ ]

(A) Less than 30% (B) Between 30% to 50%

(C) Between 50% to 80% (D) Above 80%

32. What is the approximate efficiency of a normal power station? [ ]

(A) 30-40% (B) 45-55% (C) 20-25% (D) 60-70%

33.The average load factor of thermal power plant in India? [ ]

(A) 100% (B) 80-90% (C) 50-60% (D) 35-45%

34. As the size at a thermal generating unit increase, the capital cost per KW at installed capacity? [ ]

(A) Increases (B) decreases (C) remains same (D) may increases (or) decreases

35.The average load factor of thermal power plant in India? [ ]

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39. Pressure of steam in condenser is [ ]

(A) atmospheric pressure (B) more than pressure

(C) slightly less than pressure (D) much less than pressure.

40.In a thermal power plant, the feed water coming to the economizer is heated using [ ]

(A)HP steam (B) LP steam (C) direct heat on the furnace (D) flue gases

UNIT – II

HYDRO & NUCLEAR POWER GENERATING SYSTEMS

1. A nuclear power plant is invariably used as a [ ]

(A) base load plant (B) peak load plant (C) stand-by plant (D) spinning reserve plant

2. Which of the power plant is the most reliable [ ]

(A) Hydro – electric (B) Diesel (C) Steam (D) Tidal

3. Water hammer occurs in [ ]

(A) Penstock (B) Surge tank (C) Turbine casing (D) Draft tube

4. Pelton Wheels are used in [ ]

(A) Run – off river plants with pondage (B) High head plants

(C) Low head plants (D) Run – off river plants without pondage

5. Which of the following are the fissile materials? [ ]

(A) U_{238} and Th_{239} (B) U_{235}, U_{233} and Pu_{239} (C) U_{235} and Th_{239} (D) None

6. Which material is used in controlling chain reaction in a nuclear reactor? [ ]

(A) Boron (B) Thorium (C) Heavy water (D) Beryllium

7. In a nuclear power station using boiler water reactor (BWR) water is used as [ ]

(A) A moderator but not as coolant (B) Both moderator and coolant

(C) A coolant but not as moderator (D) Neither moderator nor coolant

8. A steam power station needs space [ ]

(A) Less than that required by hydro – power station of same capacity.

(B) Less than that required by the diesel power station of the same output

(C) Less than that required by atomic power station of the same output

(D) Less than that required by a gas turbine power station of the same output

9.Reflectots of a nuclear reactor are made of [ ]

(A)cast iron (B) beryllium (C) steel (D) boron

10.Graphite is used in nuclear reactorpower plant is a [ ]

(A)fuel (B) coolant (C) moderator (D) electrode

11. In hydro power plants [ ]

(A) Initial cost is high and operating cost is low(B) Initial cost as well as operating costs are high

(C) Initial cost is low and operating cost is high(D) Initial cost as well as operating cost is low.

12. A hydroelectric power station is commonly found in [ ]
(A)Desert areas (B) Holly areas (C) swamps (D) grass lands

13. In hydroelectric power plants [ ]
(A) Operating cost is low and initial cost is high
(B) Operating cost is high and initial cost is low
(C) Both Operating cost as well as initial cost are high
(D) Both Operating cost as well as initial cost are low

14. A penstock is used as a conduit between [ ]
(A) The steam chest and the turbine in a thermal station
(B) The dam and the turbine in a hydro station
(C)The turbine and the discharge drain
(D) The heat exchanger and the turbine in a nuclear power plant

15. Water hammer occurs in [ ]
(A)Surge tank (B) penstock (C) turbine casing (D) draft tube

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19. Water hammer occurs in [ ]

(A) Penstock (B) Surge tank (C) Turbine casing (D) Draft tube

20.The efficiency of a nuclear power plants is less than that of a conventional fuel fired thermal Plant because of [ ]

(A) Less rejection of heat is the condenser (B) higher temperature conditions

(C) Higher pressure conditions (D) low temperature and pressure conditions

21. In a nuclear reactor thermal energy is obtained from [ ]

(A) Fission of radioactive materials (B) fusion of radioactive materials

(C) Burning at the fuel rods on oxygen (D) all of the above

22. The function of the moderator in a nuclear reactor is [ ]

(A)To absorb the excess neutrons (B) to increase the energy at the neutrons

(C) To slow burn the neutrons (D) none

23. Which of the following are the fissile materials? [ ]

(A) U_{238} and Th_{239} (B) U_{235}, U_{233} and Pu_{239} (C) U_{235} and Th_{239} (D) None

24. A hydro electric power station is commonly found in [ ]

(A)desert areas (B)hilly areas (C)swamps (D)grass lands

25.A graphical representation of discharge and time is known as [ ]

(A)loadcurve (B)load duration curve (C)mono graph (D)hydro graph

26. Water hammer occurs in [ ]

(A) Penstock (B) Surge tank (C) Turbine casing (D) Draft tube

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32.In hydroelectric power plants [ ]

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(C)The turbine and the discharge drain
(D) The heat exchanger and the turbine in a nuclear power plant

34. Water hammer occurs in [ ]
(A)Surge tank (B) penstock (C) turbine casing (D) draft tube

35. Local winds are caused by [ ]

(A) differential heating of land and water (B) differential heating of plains and mountains

(C) any of the above (D) none of the above.

36. The total power of a wind stream is proportional to [ ]

(A) velocity of stream (B) (velocity of stream)^2

(C) (velocity of stream)^3 (D) 1/ (velocity of stream)

37. Tidal energy mainly makes use of [ ]

(A) kinetic energy of water (B) potential energy of water

(C) both kinetic as well as potential energy of water (D) none of the above.

38. Which is the non- conventional source of energy [ ]

(A) Fossile fuel (B) Geothermal, ocean, tides and waves

(C) Radio-active substance (D) Water

39. Which of the power plant is the most reliable [ ]

(A) Hydro – electric (B) Diesel (C) Steam (D) Tidal

40.Air preheated in a steam power plant_____ [ ]

(A) Recovers the heat from the flue gases leaving the economizer

(B) Improves combustion rate

(C) Raises the temperature at the furnace gases

(D)All at the above

UNIT-III

SOLAR & WIND POWER GENERATING SYSTEMS

1. Lower speed wind turbines are mainly driven by [ ]

(A) Drag forces (B) Lift forces (C) Push forces (D) None of the above

2. The torque causing the rotation of a rotor is due to the [ ]

(A) Drag force (B) Gravitational force (C) Force of lift (D) Axial thrust

3. Which source of renewable energy is caused by uneven heating of earth's surface [ ]

(A)Solar (B) Wind (C) Geothermal (D) Biomass

4. With increase in height, wind speed [ ]

(A)Increases (B) Decreases (C) Remains the same (D) None of the above

5. Which of the following forces act on the blades of wind turbine rotor? [ ]

(A)Lift force (B) Drag force (C) Both (a) & (b) (D) None of the above

6. The turbine used for wind power plant is [ ]

(A) Steam turbine (B) Aeroturbine (C) Kaplan turbine. (D) Reaction turbine.

7. Tidal energy utilize [ ]

(A) Potential energy of water. (B) Kinetic energy of water. (C) Both of above. (D) none of above.

8.In india the first tidal power plant is likely to come up in [ ]

(A)tamilnadu (B) karnataka (C) gulf of kutch (D) bay of bengal

9.The turbine normally employed in tidal power plant is [ ]

(A) simple impulse type (B) propeller type (C) reaction type (D) reversible type

10. Which of the following source of power is least reliable [ ]

(A) solar energy (B) geothermal power (C) wind power (D) MHD

11. Which of the following is not a source of power ? [ ]

(A) Solar cell (B) Photovoltaic cell (C) Photoelectric cell (D) Thermocouple.

12. An anemometer is an instrument used for measurement of [ ]

(A) Solar radiation (B) Wind speed (C) Temperature gradient (D) Depth in ocean

13. Lower speed wind turbines are mainly driven by [ ]

(A) Drag forces (B) Lift forces (C) Push forces (D) None of the above

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17. Which of the following forces act on the blades of wind turbine rotor? [ ]

(A)Lift force (B) Drag force (C) Both (a) & (b) (D) None of the above

18. The maximum energy conversion efficiency of a wind turbine for a given swept area is [ ]

(a) 25.1% (b) 50.4% (c) 59.3% (d) 99.9%

19. If the velocity of wind is doubled, then the power output will increase by [ ]

(a) 10 times (b) 8 times (c) 2 times (d) 6 times

20. The term Darrious & Savonius rotor are related to [ ]

(a)Small hydropower (b) Wind energy

(c) Turbine (d) Coal extraction mechanism

21. The operation of thermo – electric generator is based on [ ]

(A) See beck effect (B) Hall effect (C) Peltier effect (D) None

22. The energy obtained directly from the sun is called [ ]

(A) Nuclear energy (B) Solar energy (C) Thermal energy (D) Hydro energy

23. Out of the following which one is not a unconventional source of energy ? [ ]

(A) Tidal power (B) Geothermal energy (C) Nuclear energy (D) Wind power.

24. In which of the following power plant the availability of power is least reliable ? [ ]

(A) Solar power plant (B) Wind energy(C) Tidal power plant(D) Geothermal power plant.

25.What is the total power installed capacity (approximate) in India? [ ]

(A)1, 25,000MW (B) 1,75,000MW (C) 2,00,000M (D) 50,000MW

26.What is the approximate efficiency of a normal power station? [ ]

(A)30-40% (B) 45-55% (C) 20-25% (D) 60-70%

27. Local winds are caused by [ ]

(A) differential heating of land and water (B) differential heating of plains and mountains

(C) any of the above (D) none of the above.

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35. Out of the following which one is not a unconventional source of energy ? [ ]

(A) Tidal power (B) Geothermal energy (C) Nuclear energy (D) Wind power.

36. The predominant source of energy on earth is [ ]
(A) Electricity (B) Natural Gas (C) The Sun (D) Plants

37. Which of the following factors is irrelevant with respect to biogas production? [ ]

(A)Temperature (B) p^H value

(C) Carbon to nitrogen ratio (D) Quality of water

38. An anemometer is an instrument used for measurement of [ ]

(A) Solar radiation (B) Wind speed (C) Temperature gradient (D) Depth in ocean

39. The energy obtained directly from the sun is called [ ]

(A) Nuclear energy (B) Solar energy (C) Thermal energy (D) Hydro energy

40. Degenerative heating is done to [ ]

(A)heat the system (B)heat the feed water

(C)remove dissolved gases in water (D) remove dissolved solid impurities in water

UNIT-IV
BIOGAS & GEOTHERMAL POWER GENERATING STATION

1. A geothermal field may yield [ ]

(A) Hot water (B) Dry steam (C) Wet steam (D) All of above.

2. Geothermal steam and hot water may contain [ ]

(A) H_2S, CO_2, NH_3 and random gas (B) CO_2 (C) H_2S (D) NH_3

3. Geothermal power plant is suitable for [ ]

(A) Base load power (B) Peak load power (C) Both of above (D) None of above.

4. In geothermal power plants waste water is [ ]

(A) Discharge into sea. (B) Discharge back to earth..

(C) Recerculated after in cooling tower. (D) Evaporated in ponds.

5. Biogas consist of [ ]

(A) Only ethane. (B) Only methane (C) A special oragnic gas. (D) Methane and carbone dioxide with some impurities.

6. Biogas plants are suitable for [ ]

(A) Nural areas. (B) Coal mines (C) Commercial complexes (D) Metallurgical industries.

7. The heating value of gaseous fuels is about [ ]

(A) 10 KJ/litre. (B) 30 KJ/litre. (C) 100 KJ/litre. (D) 300 KJ/litre.

8. The main by product of the bio gas plant is [ ]

(A) Bio mass (B) Bio gas (C) organic manure (D) none of the above

9.A geothermal field may yield [ ]

(A) dry steam (B) wet steam (C) hot water (D) all of the above

10. During which season the load on a power system is maximum [ ]

(a) Autumn (b) Rainy (c) summer (d) Winter

11. Which of the following factors is irrelevant with respect to biogas production? [ ]

(a)Temperature (b) p^H value

(c) Carbon to nitrogen ratio (d) Quality of water

12. Geothermal energy reservoirs are [ ]
(a)Liquid dominated reservoirs (b) Steam dominated reservoirs
(c) Hot rocks with no water (d) All of the above.

13.The molten mass of earth is called [ ]

(a) Magnous (b) Magna (c) Hot cake (d) Magmus

14. Energy derived from hot spots beneath the earth is called [ ]

(a) Bio energy (b) Geothermal energy
(c) Nuclear energy (d) Hydrogen energy

15.Which of the following are considered to be drawbacks of geothermal energy? [ ]

(a)It is not available everywhere (b) It is available only in areas where

hot rocks are present near the earth's surface (c) All of the above

16. Hydrogen can be stored as a [ ]

(a)Compressed gas (b) Liquid

(c) Metal hydride (d) All of the above

17. Ocean and sea waves are indirectly caused due to [ ]

(a) Pressure gradients (b) Solar energy (c) Geothermal energy (d) None of the above

18. The overall efficiency of an OTEC power plant is [ ]

(a) 2-3% (b) 10-15% (c) 15-20% (d) 20-25%

19. The temperature gradient of ocean thermal energy conversion system

is utilized in [ ]

(a) Internal combustion engines (b) Heat engine
(b) (c) Water turbines (d) None of the above

20. The Ocean thermal energy conversion system that is meant to generate power is most suitable in [ ]

(a)Sub-tropical region (b) Tropical region

(c) Cold region (d) Moderate climate region

21. Which of the following energy originate from the ocean? [ ]

(a) Tidal energy (b) Sea energy (c) Wind energy (d) Hydropower

22. The gas produced by burning wood in an insufficient supply of oxygen

is called [ ]

(a)Producer gas (b) Biogas (c) Natural Gas (d) Nitrogen gas

23. The overall efficiency of an OTEC power plant is [ ]

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26. Which of the following energy originate from the ocean? [ ]

(a) Tidal energy (b) Sea energy (c) Wind energy (d) Hydropower

27. Which of the following fuel does not give ash as residue when burned? [ ]

(A) Wood (B) Charcoal (C) Biogas (D) Coal

28. Biomass can be converted into [ ]

(A)Solid fuel (B) Liquid fuel (C) Gaseous fuel (D) All of the above

29. Biomass can be used as fuel through [ ]

(A)Combustion (B) Fermentation (C) Digestion (D) All of the above

30. Geothermal energy reservoirs are [ ]

(A)Liquid dominated reservoirs (B) Steam dominated reservoirs

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(A)Producer gas (B) Biogas (C) Natural Gas (D) Nitrogen gas

UNIT – V
ECONOMICS ASPECTS OF POWER GENERATION

1.The area under load curve represents [ ]

(A)system voltage (B)current (C) Energy consumed (D) All of the above

2. The area under daily load curve divided by 24 gives [ ]

(A)Average load for the day (B) maximum demand

(C)connected load (D) demand factor

3. Demand factor on a power system is [ ]

(A) Always lesser than unity. (B) Always greater than unity.

(C) Normally lesser than unity. (D) Normally greater than unity.

4. Diversity factor has direct effect on. [ ]

(A) Operating cost per unit generated. (B) Fixed cost per unit per generated.

(C) Both of above. (D) None of above.

5. As the load factor of a generating plant increase the generation cost per KWh generated [ ]

(A) Increases. (B) Decreases. (C) Remain same.. (D) None of these.

6. Two port tariff is charged on the basis of [ ]

(A) Unit consumed. (B) Connected load. (C) Maximum demand. (D). Both A and B.

7. The area under curve represents [ ]

(A) Current. (B) Energy consumed (C). System voltage. (D) Maximum demand.

8. A power system needs injection of VAR at [ ]

(A) Peak load. (B) Off peak load. (C) . Full load (D) Both A and B.

9. The load factor of domestic load is usually [ ]

(A) 10 to 15% (B) 30 to 40% (C) 50 to 60% (D) 60 to 70%

10. Demand factor is defined as [ ]

(A) average load/maximum load (B) maximum demand/connected load

(C) connected load/maximum demand (D) average loadxmaximum load

11. Diversity factor is always [ ]

(A) Equal to unity (B) less than unity

(C) more than unity (D) more than twenty

12. a load curve is a curve [ ]

(A) Load versus generation capacity (B) Load versus current

(C) Load versus time (D) Load versus cost of power

13. The load of a consumer is generally measured in terms of [ ]

(A) Volts (B) Amperes (C) Ampere hour (D) kW.

14. a load curve is a curve [ ]

(a) Load versus generation capacity (b) Load versus current

(c) Load versus time (d) Load versus cost of power

15. The load of a consumer is generally measured in terms of [ ]

(a) Volts (b) Amperes (c) Ampere hour (d) kW.

16.The area under load curve represents [ ]

(a)system voltage (b)current (c) Energy consumed (d) All of the above

17. The area under daily load curve divided by 24 gives [ ]

(a)Average load for the day (b) maximum demand

(c)connected load (d) demand factor

18. Load factor of a power station is defined as [ ]
(A) maximum demand/average load (B) average load x maximum demand
(C) average load/maximum demand (D) (average load x maximum demand
19. Load factor of a power station is generally [ ]
(A) equal to unity (B) less than unity
(C) more than unity (D) equal to zero Diversity factor is always
19. The load factor of domestic load is usually [ ]
(A) 10 to 15% (B) 30 to 40%
(C) 50 to 60% (D) 60 to 70%
20. Annual depreciation cost is calculated by [ ]
(A) sinking fund method (B) straight line method
(C) both (A) and (B) (D) none of the above
21. Depreciation charges are high in case of [ ]
(A) thermal plant (B) diesel plant
(C) hydroelectric plant (D)None
22. Demand factor is defined as [ ]

(A) average load/maximum load (B) maximum demand/connected load
(C) connected load/maximum demand (D) average load x maximum load

23. High load factor indicates [ ]
(A) cost of generation per unit power is increased (B) total plant capacity is utilised for most of the time
(C) total plant capacity is not properly utilised for most of the time (D) none of the above

24. A load curve indicates [ ]
(A) average power used during the period (B) average kWh (kW) energy consumption during the period
(C) either of the above (D) none of the above

25. A consumer has to pay lesser fixed charges in [ ]
(A) flat rate tariff (B) two part tariff
(C) maximum demand tariff (D) any of the above

26. In two part tariff, variation in load factor will affect [ ]
(A) fixed charges (B) operating or running charges
(C) both (A) and (B) (D) either (A) or (B)

27. A load curve is a curve [ ]

(A) Load versus generation capacity (B) Load versus current

(C) Load versus time (D) Load versus cost of power

28. The load of a consumer is generally measured in terms of [ ]

(A) Volts (B) Amperes (C) Ampere hour (D) kW.

29.The area under load curve represents [ ]

(A)system voltage (B)current (C) Energy consumed (D) All of the above

30. The area under daily load curve divided by 24 gives [ ]

(A)Average load for the day (B) maximum demand

(C)connected load (D) demand factor

31. During which season the load on a power system is maximum [ ]

(A) Autumn (B) Rainy (C) summer (D) Winter

32. A load curve is a curve [ ]

(A) Load versus generation capacity (B) Load versus current

(C) Load versus time (D) Load versus cost of power

33. The load of a consumer is generally measured in terms of [ ]

(A) Volts (B) Amperes (C) Ampere hour (D) kW.

34. Diversity factor has direct effect on the [ ]
(a) fixed cost of unit generated (b) running cost of unit generated
(c) both (a) and (b) (d) neither (a) nor (b)

35. Demand factor is defined as [ ]

(A) average load/maximum load (B) maximum demand/connected load

(C) connected load/maximum demand (D) average load x maximum load

36. Diversity factor is always [ ]

(A) Equal to unity (B) less than unity

(C) more than unity (D) more than twenty

37. Demand factor on a power system is [ ]

(A) Always lesser than unity. (B) Always greater than unity.

(C) Normally lesser than unity. (D) Normally greater than unity.

38. Diversity factor has direct effect on. [ ]

(A) Operating cost per unit generated. (B) Fixed cost per unit per generated.

(C) Both of above. (D) None of above.

39. As the load factor of a generating plant increase the generation cost per KWh generated [ ]

(A) Increases. (B) Decreases. (C) Remain same.. (D) None of these.

40. Two port tariff is charged on the basis of [ ]

(A) Unit consumed. (B) Connected load. (C) Maximum demand. (D). Both A and B.

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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 $P_{max}=8/27\ pAV^3$? [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 anum 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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