



Maratha Vidya Prasarak Samaj's

Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY

Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

*Subject: POWER PLANT
ENGINEERING
(22566)*



SYLLABUS

Chapter No.	Name of chapter	Marks With Option
1	Introduction to Power Plant	12
2	High Pressure Boiler	28
3	Steam and Gas Power Plants	22
4	Waste Heat Recovery, Cogeneration and Trigeneration	10
5	Nuclear Power Plants	18
6	Economic Analysis of Power Plants	12
Total Marks :-		102



BOARD THEORY PAPER PATTERN FOR PPE (22566)

Q.1	Attempt any FIVE	5*2=10
a)	Introduction to Power Plant	
b)	High Pressure Boiler	
c)	Steam and Gas Power Plants	
d)	Waste Heat Recovery, Cogeneration and Trigenation	
e)	Nuclear Power Plants	
f)	Introduction to Power Plant	
g)	High Pressure Boiler	
Q.2	Attempt any THREE	3*4=12
a)	Internal Combustion Engine	
b)	High Pressure Boiler	
c)	Steam and Gas Power Plants	
d)	Waste Heat Recovery, Cogeneration and Trigenation	
Q.3	Attempt any THREE	3*4=12
a)	Introduction to Power Plant	
b)	Steam and Gas Power Plants	
c)	Waste Heat Recovery, Cogeneration and Trigenation	
d)	Nuclear Power Plants	
Q.4	Attempt any THREE	3*4=12
a)	High Pressure Boiler	
b)	Nuclear Power Plants	
c)	Introduction to Power Plant	



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY **Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.**

	d)	High Pressure Boiler
	e)	Economic Analysis of Power Plants
Q.5		Attempt any TWO 2*6=12
	a)	High Pressure Boiler
	b)	Steam and Gas Power Plants
	c)	Nuclear Power Plants
Q.6		Attempt any TWO 2*6=12
	a)	High Pressure Boiler
	b)	Steam and Gas Power Plants
	c)	Economic Analysis of Power Plants



CLASS TEST - I

PAPER PATTERN

Syllabus:-

Unit No.	Name of the Unit	Course Outcome (CO)
1	Introduction to Power Plant	CO-566.01
2	High Pressure Boiler	CO-566.02
6	Economic Analysis of Power Plants	CO-566.06

Q.1	Attempt any FOUR	4*2=8Marks	Course Outcome (CO)
a)	Introduction to Power Plant		CO-566.01
b)	High Pressure Boiler		CO-566.02
c)	Economic Analysis of Power Plants		CO-566.06
d)	Introduction to Power Plant		CO-566.01
e)	High Pressure Boiler		CO-566.02
f)	Economic Analysis of Power Plants		CO-566.06
Q.2	Attempt any THREE	3*4= 12Marks	
a)	Introduction to Power Plant		CO-566.01
b)	High Pressure Boiler		CO-566.02



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

c)	Economic Analysis of Power Plants	CO-566.06
d)	High Pressure Boiler	CO-566.02
e)	Economic Analysis of Power Plants	CO-566.06
f)	Introduction to Power Plant	CO-566.01



CLASS TEST - II

PAPER PATTERN

Syllabus:-

Unit No.	Name of the Unit	Course Outcome (CO)
3	Steam and Gas Power Plants	CO-566.03
4	Waste Heat Recovery, Cogeneration and Trigenation	CO-566.04
5	Nuclear Power Plants	CO-566.05

Q.1	Attempt any FOUR	4*2= 8Marks	Course Outcome (CO)
a)	Steam and Gas Power Plants		CO-566.03
b)	Waste Heat Recovery, Cogeneration and Trigenation		CO-566.04
c)	Nuclear Power Plants		CO-566.05
d)	Steam and Gas Power Plants		CO-566.03
e)	Waste Heat Recovery, Cogeneration and Trigenation		CO-566.04
f)	Nuclear Power Plants		CO-566.05
Q.2	Attempt any THREE	3*4= 12Marks	
a)	Nuclear Power Plants		CO-566.05
b)	Nuclear Power Plants		CO-566.05



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY **Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.**

c)	Steam and Gas Power Plants	CO-566.03
d)	Waste Heat Recovery, Cogeneration and Trigeneneration	CO-566.04
e)	Steam and Gas Power Plants	CO-566.03
f)	Waste Heat Recovery, Cogeneration and Trigeneneration	CO-566.04



COURSE OUTCOME (CO)

COURSE:-Power Plant Engineering (22566)

PROGRAMME: - Mechanical Engineering

CO.NO	Course Outcome
CO-566.1	Identify Various Components of Hydro, Steam, Gas Power Plants
CO-566.2	Select High Pressure Boiler For Power Generation
CO-566.3	Identify Various Components of Steam, Diesel and Gas turbine Power Plants
CO-566.4	Measure waste heat Recovery in Typical thermal Power Plants
CO-566.5	Identify Components of Nuclear Power Plants
CO-566.6	Estimate economic parameter of power plants



1. Introduction to Power Plant

Position in Question Paper

Total Marks :12

Q.1. a) 2-Marks.

Q.1. b) 2-Marks.

Q.2. a) 4-Marks.

Q.3. a) 4-Marks.

Descriptive Question

1. Classify Hydro Electric Power Plant
2. Comment on modern Indian and world energy scenario
3. Write short note on power plant and need of power plant.
4. What are the different hydro power plant in India
5. List Advantages and disadvantages of hydroelectric power plant
6. Compare Hydroelectric power plant and diesel power plant
7. State factors for selecting the hydro electric power plant and diesel power plant
8. Explain the Classification of Energy
9. Explain Application of Diesel power Plants
10. Write Short note on Maintenance of Diesel Power Plants
11. List and explain components of diesel power plant



MCQ QUESTIONS

(Total number of Question=Marks*3=12*3=36)

Note: Correct answer is marked with **bold**.

- Which of the following is the correct equation for the electrical power generated by the hydroelectric power plant?
a) $75 \times 0.736 wQH\eta$ Watt
b) $(7.5/0.736) \times wQH\eta$ Watt
c) **$0.845 \times wQH\eta$ Watt**
d) $9.81 \times wQH\eta$
- Which of the following is not a requirement for site selection of hydroelectric power plant?
a) Availability of water
b) Large catchment area
c) Rocky land
d) **Sedimentation**
- The amount of electrical energy that can be generated by a hydroelectric power plant depends upon _____
a) Head of water
b) **Quantity of water**
c) Specific weight of water
d) Efficiency of Alternator
- Potential energy of water is used to drive the turbine.
a) True
b) **False**
- Hydroelectric power plant is _____
a) Non-renewable source of energy
b) **Conventional source energy**
c) Non-conventional source of energy
d) Continuous source of energy
- Hydroelectric power plant is generally located near load centre.
a) True
b) **False**
- Hydroelectric power plant is mainly located in _____
a) Flat areas
b) Deserts
c) **Hilly areas**
d) Deltas
- Which statement about hydroelectric power plant is wrong?
a) Efficiency of hydroelectric power plant does not reduce with age
b) Its construction cost is very high and takes a long time for erection.
c) It is very neat and clean plant because no smoke or ash is produced.
d) **Meeting rapidly changing load demands is not possible in hydroelectric power plant.**
- Which of the following is not an advantage of hydroelectric power plant?
a) no fuel requirement
b) low running cost
c) **continuous power source**
d) no standby losses
- Which of the following statement is true about hydroelectric power plant?
a) **Hydroelectric power plants are multipurpose.**
b) Due to non-uniform flow of water frequency control in such plants is very difficult.
c) Hydroelectric power plant has high running cost
d) Water is used as fuel in hydroelectric power plant



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

11. If the temperature of intake air in internal combustion engine increases, then its efficiency will _____
 - a) remain same
 - b) increase
 - c) **decrease**
 - d) none of the mentioned
12. The operation of forcing additional air under pressure in the engine cylinder is known as _____
 - a) **Supercharging**
 - b) Scavenging
 - c) Turbulence
 - d) Pre-ignition
13. The ignition quality of petrol is expressed by _____
 - a) Cetane number
 - b) **Octane number**
 - c) Calorific Value
 - d) None of the mentioned
14. The mean effective pressure obtained from engine indicator indicates the _____
 - a) maximum pressure developed
 - b) minimum pressure developed
 - c) instantaneous pressure at any point
 - d) **average pressure**
15. The probability of knocking in diesel engines is increased by _____
 - a) high self-ignition temperature
 - b) low volatility
 - c) high viscosity
 - d) **all of the mentioned**
16. Reactors for propulsion applications are designed for _____
 - a) any form of uranium
 - b) natural uranium
 - c) **enriched uranium**
 - d) thorium
17. What is the pour point of fuel oil
 - a) Minimum temperature to which oil is heated in order to give off inflammable vapours in sufficient quantity to ignite momentarily when brought in contact with a flame
 - b) **Temperature at which it solidifies or congeals**
 - c) It catches fire without external aid
 - d) Indicated by 90% distillation temperature i.e., when 90% of sample oil has distilled off
18. What is the maximum temperature in the I.C. engine cylinder is of the order of (in degree Celsius)?
 - a) 500-1000
 - b) 1000-1500
 - c) 1500-2000
 - d) **2000-2500**
19. In compression ignition engines, swirl denotes a _____
 - a) Haphazard motion of the gases in the chamber
 - b) **Rotary motion of the gases in the chamber**
 - c) Radial motion of the gases in the chamber
 - d) None of the mentioned
20. Supercharging is the process of _____
 - a) **Supplying the intake of an engine with air at a density greater than the density of**



the surrounding atmosphere

- b) Supplying compressed air to remove combustion products fully
- c) Providing excess temperature to the sucked in gases
- d) None of the mentioned

21. The object of supercharging the engine is _____

- a) to increase the power output of an engine when greater power is required
- b) to reduce mass of the engine per brake power
- c) to reduce space occupied by the engine

d) all of the mentioned

22. The compensating jet in a carburettor supplies almost constant amount of petrol at all 0 speeds because the _____

- a) jet area is automatically varied depending on the suction
- b) the flow from the main jet is diverted to the compensating jet with increase in speed
- c) flow is produced due to the static head in the float chamber**
- d) the diameter of the jet is constant and the discharge coefficient is invariant

23. The ratio of the volume of charge admitted at N.T.P. to the swept volume of the piston is called?

- a) overall efficiency
- b) mechanical efficiency
- c) relative efficiency
- d) volumetric efficiency**

24. A moderator generally used in nuclear power plants is?

- a) heavy water
- b) concrete
- c) graphite & concrete**
- d) graphite

25. In a diesel engine, the duration between the time of injection and ignition is known as?

- a) delay period**
- b) period of ignition
- c) burning period
- d) pre-ignition period

26. Surge tank in Hydropower plant:

- a) Is the main reservoir
- b) Absorbs pressure swing
- c) Reduce surge frequency of electricity
- d) Is used with Kaplan turbines

27. Role of penstock:

- a) Carries water to the turbine
- b) Absorbs pressure swing
- c) Is used with Kaplan turbines
- d) Reduces load

28. Reaction turbines are employed for:

- a) Low heads
- b) Medium heads
- c) Both of these
- d) None of these

29. Impulse turbines are used for:

- a) Low heads
- b) Medium heads
- c) Both of these
- d) None of these

30. Of given methods, which method is used to produce electricity in a hydroelectric power plant:

- a) Heat energy of water converted to mechanical energy
- b) Potential energy of water converted to mechanical energy
- c) Ionization of water to obtain chemical energy



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

d) All of these

31. Of given statements which statement about hydroelectric power plant is wrong:

- a) Its capital cost is very high
- b) A long duration of time is needed for building a hydroelectric power plant
- c) A hydroelectric power plant can supply power to fluctuating loads

d) Per unit cost of hydro power plant is higher than diesel plant

32. What type of hydropower plant does not use a dam:

- a) Impoundment
- b) **Run of river**
- c) Pumped storage
- d) Penstock

33. Of mentioned points which of the following is not an advantage of hydroelectric power:

- a) It is a renewable source
- b) No standby losses
- c) Low running cost
- d) **Continuous power supply**

34. In a 2 stroke engine, the operation cycle are completed in how many strokes and revolution?

- a) 4 strokes and 2 revolutions.
- b) stroke and 2 revolutions.
- c) 2 strokes and 1 revolution.
- d) 4 stroke and 4 revolutions

35. The diesel plants are mainly used _____

- a) As peak load plants.
- b) As base load plants.
- c) As standby power plants.
- d) **Both peak and stand by plants**

36. What is the ranging capacity of the diesel plant?

- a) 50 – 750 kW
- b) 100 – 1175 kW
- c) **75 – 3750 kW**
- d) 150 – 4575 kW



2.High Pressure Boilers

Position in Question Paper

Total Marks-12

Q.1. c) 2-Marks.

Q.2. b) 4-Marks.

Q.4. b) 6-Marks.

Descriptive Question

1. List and Explain Function of High pressure Boilers
2. Explain Maintenance procedure of any four major components of high pressure boiler
3. Explain with neat sketch Construction and working of Benson Boiler
4. Explain bubbling fluidized bed combustors
5. Classify high pressure boiler and explain its working.
6. State need of fluidized bed boiler
7. What are the advantages of FBC boiler?
8. Explain Control System of Boiler
9. Comment on IBR
10. Give classification of high Pressure Boiler
11. Explain with neat sketch Construction and working of La Mont Boiler
- 12.Explain with neat sketch Construction and working of Loeffler Boiler
- 13.Explain with neat sketch Construction and working of Hartman Boiler
- 14.Explain with neat sketch Construction and working of Velox Boiler
- 15.Explain Maintenance Procedure of High Pressure Boiler and FBC Boilers



MCQ QUESTIONS

(Total number of Question=Marks*3=12*3=36)

Note: Correct answer is marked with **bold**.

1. What type of boiler is a Lamont boiler?
 - a) **Forced circulation**
 - b) Natural circulation
 - c) Over-through
 - d) Positive forced circulation
2. What is called as the heart of the Lamont boiler?
 - a) Water drum
 - b) **Centrifugal pump**
 - c) Furnace
 - d) Blower
3. Through what is feed water from hot-well is passed through, before entering steam and water drum in Lamont boiler?
 - a) Evaporator tubes
 - b) **Economizer**
 - c) Distributer header
 - d) Circulating pump
4. In what form are the boiler's tube arrange in Lamont boiler?
 - a) parallel in Vertical
 - b) Inclined vertically
 - c) **parallel in horizontal**
 - d) Horizontally inclined
5. Through which does the even circulation of feed water is possible in Lamont boiler?
 - a) **Nozzles**
 - b) Water trough
 - c) Feed pump
 - d) Hose
6. What is the pressure range between which Lamont boilers operates?
 - a) 80-120bar
 - b) **120-160bar**
 - c) 180-360bar
 - d) 450-560bar
7. In which year was Lamont boiler invented?
 - a) 1905
 - b) 1910
 - c) 1920
 - d) **1925**
8. What type of steam is generated by evaporator tube of Lamont boiler?
 - a) **Saturated steam**
 - b) Unsaturated steam
 - c) Superheated steam
 - d) Flash steam
9. Where is water steam separator drum located in Lamont boiler?
 - a) Inside of the boiler
 - b) Right above the furnace
 - c) Before the feed water pump
 - d) **Outside of boiler**
10. What is the main disadvantage of Lamont boiler?
 - a) Less flexible in design
 - b) Low heat transfer rate
 - c) **Formation of bubbles**
 - d) Low steam generation capacity
11. In which year was Benson boiler was invented?
 - a) 1918
 - b) 1920
 - c) 1921
 - d) **1922**
12. What type of boiler is a Benson boiler?
 - a) **Super critical boiler**
 - b) Fire tube boiler
 - c) Natural circulation boiler
 - d) Over-through boiler



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

13. What is the capacity of Benson boiler?
a) 180 tonnes/hr & above
b) **150 tonnes/hr & above**
c) 250 tonnes/hr & above
d) 300 tonnes/hr & above
14. What is the major disadvantage of the Benson boilers?
a) Boiler is big in size
b) Has large storage capacity
c) **Deposition of salts**
d) Bubble formation
15. Why starting valve is closed and valve 2 is opened while taking boiler on range in Benson boiler?
a) **Avoid excessive heating of tube**
b) To maintain the constant flow of water
c) To avoid pressure built up in tubes
d) To avoid pipe leakages at joint
16. What is the pressure range between which Lamont boilers operates?
a) 80-120bar
b) **120-160bar**
c) 180-360bar
d) 450-560bar
17. In which year was Lamont boiler invented?
a) 1905
b) 1910
c) 1920
d) **1925**
18. What type of steam is generated by evaporator tube of Lamont boiler?
a) **Saturated steam**
b) Unsaturated steam
c) Superheated steam
d) Flash stea
19. Where is water steam separator drum located in Lamont boiler?
a) Inside of the boiler
b) Right above the furnace
c) Before the feed water pump
d) **Outside of boiler**
20. What is the main disadvantage of Lamont boiler?
a) Less flexible in design
b) Low heat transfer rate
c) **Formation of bubbles**
d) Low steam generation capacity
21. In which year was Benson boiler was invented?
a) 1918
b) 1920
c) 1921
d) **1922**
22. What type of boiler is a Benson boiler?
a) **Super critical boiler**
b) Fire tube boiler
c) Natural circulation boiler
d) Over-through boiler
23. What is the capacity of Benson boiler?
a) 180 tonnes/hr & above
b) **150 tonnes/hr & above**
c) 250 tonnes/hr & above
d) 300 tonnes/hr & above
24. What is the major disadvantage of the Benson boilers?
a) Boiler is big in size
b) Has large storage capacity
c) **Deposition of salts**
d) Bubble formation
25. Why starting valve is closed and valve 2 is opened while taking boiler on range in Benson boiler?
a) **Avoid excessive heating of tube**



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

- b) To maintain the constant flow of water
c) To avoid pressure built up in tubes
d) To avoid pipe leakages at joints
26. Why single boiler unit per turbine is equipped commonly?
a) **For better turbine control**
b) To deduce the costs
c) For overcoming losses of power
d) To improve the efficiency
27. What is the critical average pressure at which the single boiler unit per turbines is designed to handle?
a) 150 bar
b) **220 bar**
c) 740 bar
d) 575 bar
28. How can be the plant efficiency of steam power plant is increased?
a) **By using high pressure and high temperature steam**
b) By equipping ash and flue gas clearance system
c) By maintaining the boiler on daily basis by cleaning the soot and combustion products
d) By using better and efficient type of fuel for combustion
30. Which type of boilers is preferred cost wise when the boilers are required to raise less than 30 tonnes of steam?
a) Fluid boiler
b) Cornish boiler
c) Butterley boiler
d) **Shell boiler**
31. What is the temperature at which the steam boilers are capable to withstand?
a) 200°C
b) 280°C
c) **540°C**
d) 358°C
32. The _____ may have water circulation either by natural means due to difference in density or by external means.
a) Piping
b) Tubes
c) Furnace
d) **Boiler**
33. What increases as steam pressure increases inside a boiler?
a) Force
b) **Density**
c) Rate of steam conversion
d) Viscosity
34. What is needed to be increased to increase the heat transfer rate in the boiler?
a) Gas velocities
b) Fuel input
c) **Water velocities**
d) Air supply
35. In what is water in high pressure boiler circulated through?
a) Conduits
b) Cove
c) Channel
d) **Tubes.**
36. What type of boiler is a Lamont boiler?
a) **Forced circulation**
b) Natural circulation
c) Over-through
d) Positive forced circulation



3. Steam and Gas Power Plant

Position in Question Paper

Total Marks-14

Q.1. c) 2-Marks.

Q.2. b) 4-Marks.

Q.4. b) 6-Marks.

Descriptive Question

1. Explain Steam Power Plant with Neat Sketch
2. State the Necessity of Waste Heat recovery in Thermal power plants
3. Classify Fuel handling system in Steam Power plants
4. Explain the working of 'Open Type Gas Turbine with neat sketch.
5. Explain the working of Electrostatic Principle with neat sketch
6. Draw a layout of Typical Fuel Handling System used in Thermal Power Plant. Name the different components used in Fuel Handling system.
7. Name any four control systems used in Steam Power plant
8. List any four desirable characteristics of elements used in Temperature control system in power plants
9. Explain Maintenance Procedure of Steam Power plants
10. State Components of Gas Turbine Power Plants
11. What are the methods to improve thermal efficiency of Gas turbine power Plants
12. Explain Maintenance Procedure of Gas Turbine plant



MCQ Question

(Total number of Question=Marks*3=14*3=42)

Note: Correct answer is marked with **bold**.

- Which of these is a 'fissile fuel'?
 - Thorium**
 - Carbon
 - Potassium
 - Graphite
- Which of these is a 'working fluid' in liquid phase?
 - Water**
 - Steam
 - Mercury
 - Oxygen
- Which of these is an output of a 'Furnace'?
 - Fuel gas
 - Air
 - Flue gases**
 - Water Vapor
- What kind of energy output is obtained from a 'Steam Power Plant'?
 - Heat energy
 - Sound energy
 - Electricity**
 - Thermal energy
- What kind of a process does a 'Steam Power Plant' undergoes?
 - Adiabatic
 - Cyclic**
 - Irreversible
 - Expansion
- Water that is fed back to the boiler by the pump is called?
 - Adsorbate
 - Absorbate
 - Condenset
 - Condensate**
- The net change in internal energy in a steam power plant is?
 - Positive
 - Negative
 - Zero**
 - None of the mentioned
- The product of efficiency & heat transferred to the working fluid is?
 - Net temperature change
 - Net work done**
 - Net enthalpy change
 - None of the mentioned
- What are the components of a Steam Power Plant?
 - Evaporator, Condenser, Boiler, Expansion valve
 - Evaporator, Condenser, Boiler, Turbine
 - Boiler, Turbine, Condenser, Pump**
 - Boiler, Turbine, Pump, Expansion valve
- Shaft work is fed to _____ for getting an electrical output.
 - Motor
 - Generator**
 - Rotor
 - Accelerator
- What is the air standard cycle for a Gas-Turbine called?
 - Reheat cycle
 - Rankine cycle
 - Brayton cycle**
 - Diesel cycle
- What is the difference between a Rankine cycle & a Brayton cycle?
 - working fluid in a Brayton cycle undergoes phase change while it doesn't in



- Rankine cycle
- b) **working fluid in a Brayton cycle doesn't undergo phase change while it does in Rankine cycle**
- c) both are same
- d) none of the mentioned
13. Which of the following is a type of Gas Turbine Plant?
- a) Single Acting
- b) Double Acting
- c) **Open**
- d) None of the mentioned
14. Power is produced when the working fluid does some work on the?
- a) Shaft
- b) Fins
- c) **Blades**
- d) None of the mentioned
15. A Gas Turbine is which type of combustion plant?
- a) external
- b) open
- c) **internal**
- d) cannot say
16. Which among these is the main component of a gas turbine plant?
- a) Condenser
- b) **Compressor**
- c) Boiler
- d) Both Compressor & Boiler
17. Which type of compressor is used in a gas turbine plant?
- a) Reciprocating compressor
- b) Screw compressor
- c) **Multistage axial flow compressor**
- d) Either Reciprocating compressor & Screw compressor
18. What part or % of power developed is utilised for driving the compressor?
- a) **65 %**
- b) 70 %
- c) 55 %
- d) 80 %
19. The gas turbine power plant mainly uses which among the following fuels?
- a) Coal and Peat
- b) Kerosene oil and diesel oil and residual oil
- c) Gas oil
- d) **Natural gas and liquid petroleum fue**
20. in steam power plant which of the following component needs more maintenance:
- a) Condenser
- b) **Boiler**
- c) Turbine
- d) Coal carrying system
21. The pH value of the water used in boiler is:
- a) Unity
- b) 7
- c) Slightly less than seven
- d) **Slightly more than seven**
22. For the flue gas flow, tick the correct sequence:
- a) Boiler-Air preheater- economizer- ID fan- Chimney
- b) Boiler- ID fan -Air preheater- Economizer- Chimney
- c) **Boiler- Economizer- Air preheater- ID fan- Chimney**
- d) None of the above
23. Hydrogen cooling employed in large thermal power plant alternator:
- a) **Increases the insulation life**



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

- b) Decreases the insulation life
c) Does not affect the insulation life
d) None of the above
24. Hydrogen cooling is employed in:
a) **Turbo Generators only**
b) Water wheel Generators only
c) Can be used in both turbo generators and water wheel generators
d) None of the above
25. The efficiency of the electro static precipitators will be of the order:
a) **99.6%**
b) 90%
c) 85%
d) 80%
26. Economizer is normally employed when boiler pressure exceeds:
a) **70 kg/cm²**
b) 50 kg/cm²
c) 30 kg/cm²
d) Can be used for all pressures
27. The sizing of the generator in power plant is based on:
a) Current carrying capacity
b) Insulation strength ratings only
c) **Both (a) and (b)**
d) None of the above
28. Without Electro static precipitators:
a) **ID fan rating should be increased**
b) Economizer rating should be increased
c) Chimney height should be reduced
d) None of the above
29. In thermal power plants the condenser used is of:
a) **Surface type**
b) Jet type
c) Can be both surface type and jet type
d) None of the above
30. Coal rank classifies coal as per its:
a) Specific gravity
b) Degree of metamorphism
c) Carbon percentage
d) **Ash content**
31. Induced draft fans are used to:
a) Cool the steam let out by the turbine in the thermal power station
b) Cool the hot gases coming out of boiler
c) Forces the air inside the coal furnace
d) **Pull the gases out of furnace**
32. Generally the speed of turbine generators employed in thermal power plants will be in the range of
a) 750 rpm
b) 1000 rpm
c) **3000 rpm**
d) 5000 rpm
33. Large size thermal power plants will be:
a) peak load plants
b) **Base load plants**



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udaji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

- c) Can be operate either as peak load or base load plants
d) None of the above
34. The auxiliary consumption of thermal power plants will be in the range:
a) 2-5% of plant power generated
b) 8-10% of power generated
c) 15-20% of power generated
d) 20-25% of power generated
35. Which of the following equipment is installed in steam power plant to reduce air pollution:
a) Air filer
b) HEPA filter
c) **Electro static precipitator**
d) All the above can be used
36. Burning of low grade coal can be improved by:
a) Pulverizing the coal
b) Blending with high quality coal
c) Oil assisted ignition
d) All the above
37. Equipment used for pulverizing the coal is:
a) hopper
b) Stoker
c) **Ball mill**
d) Electro static precipitator
38. The percentage of carbon in anthracite is usually:
a) **More than 90%**
b) About 70%
c) About 50%
d) Below 40%
39. for the same power the size of the turbine:
a) Increases with speed
b) Decreases with speed
c) Constant irrespective of speed
d) None of the above
40. Which type of coal has lowest calorific value?
a) Peat
b) Lignite
c) Bituminous
d) Anthracite
41. Pipes carrying steam in thermal power plant are generally made of:
a) **Steel**
b) Cast iron
c) aluminum
d) Cobalt
42. In a super heater:
a) Pressure rises and temperature drops
b) Temperature rises and pressure drops
c) Temperature rises and pressure remains unchanged
d) Pressure rises and temperature remains the same



4. Waste Heat Recovery, Co Generation and Tri generation

Position in Question Paper

Total Marks-8

Q.1. c) 2-Marks.

Q.2. b) 4-Marks.

Q.4. b) 6-Marks.

Descriptive Question

1. State the Necessity of Waste Heat recovery in Thermal power plants
2. Explain the Term 'Trigeneration'? State its necessity in thermal power Plant
3. Explain with neat sketch the working principle of Cogeneration
4. State the need of Cogeneration
5. Explain term Waste heat recovery
6. Explain with neat sketch the working of waste heat recovery system in thermal power plant
7. What are the opportunities of waste Heat recovery in Thermal Power Plants

MCQ Question

(Total number of Question=Marks*3=8*3=24)

Note: Correct answer is marked with **bold**.

1. Energy can be recovered from all types of wastes.
a) True
b) **False**
2. Energy recovery is typically via production of _____
a) Gas
b) Heat
c) Light
d) **Steam**
3. What is the maximum percent of energy recovered if the steam is condensed before reintroduced to system?
a) 25
b) 35
c) 45
d) 55
4. Energy recovery percentage depends on the type of waste.
a) True
b) **False**
5. Which of the following industrial process uses waste as a fuel?
a) **Cement kilns**
b) Lead manufacturing
c) Acid manufacturing
d) Sulphur manufacturing
6. What is the combustion temperature range in cement kiln incineration?



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udaji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

- a) 1300-1600
b) **1350-1650**
- c) 1250-1450
d) 1235-1600
7. Non-volatile heavy metals in kiln are fixed into _____
a) **Clinker's crystalline**
b) Fumes
c) Solid lump
d) Slag
8. Which of the following waste types are not suitable for co-combustion in cement kilns?
a) **Chlorine**
b) Hydrogen
c) Calcium
d) Carbonate
9. Having two separate units for process heat and power is?
a) useful
b) **useless**
c) pollution reducing
d) none of the mention
10. A plant producing both, electrical power & process heat simultaneously is?
a) Cogential plant
b) Cogenerial plant
c) **Cogeneration plant**
d) Conglomerate plant
11. In a back pressure turbine _____
a) **pressure at the exhaust from the turbine is the saturation pressure corresponding to the temperature desired in the process**
b) pressure at the entrance of the turbine is the saturation pressure corresponding to the temperature desired in the process
c) pressure at the exhaust from the turbine is the saturation pressure corresponding to the pessure desired in the process
d) none of the mentioned
12. In a by-product power cycle?
a) the power is produced initially
b) power production is in the middle stages of the cycle
c) **power production is after the cycle has ended**
d) none of the mentioned
13. Back pressure turbines are usually _____ with respect to their power output.
a) large
b) **small**
c) very large
d) very small
14. In terms of cost per MW compared to condensing sets of the same power, the back
a) **more expensive**
b) cheaper
c) costly
d) none of the mentioned
15. Which of these is not an application of back pressure turbine?
a) desalination of sea water
b) **filtration of water**
c) process industries
d) petrochemical installation
16. Back pressure turbine is placed between _____
a) Turbine & Pump
b) Boiler & Pump
c) Turbine & Heat Exchanger
d) **Boiler & Turbine**
17. Which of the following is a good medium for constant temperature heating?



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

- a) Water
b) **Steam**
- c) Coolant
d) Diesel
18. The cogeneration plant efficiency n_{CO} if W_T , Q_i , Q_H represents turbine work, heat input, heat output respectively is given by?
a) $n_{CO} = (W_T + Q_i) / Q_H$
b) $n_{CO} = (W_T - Q_i) / Q_H$
c) $n_{CO} = (W_T + Q_H) / Q_i$
d) **$n_{CO} = (W_T + Q_H) / Q_i$**
19. The electricity fraction of total energy output if W_1 and Q_1 represents the turbine work and heat output is given by?
a) **$W_1 / (W_1 + Q_1)$**
b) $W_1 / (W_1 - Q_1)$
c) $W_1 / (W_1 Q_1)$
d) W_1 / Q_1
20. If e is the electricity fraction of the total energy output, m is the electric plant efficiency and n is the steam generator efficiency; the heat added per unit total energy output is given by?
a) **$(1 / m) + ((1 - e) / n)$**
b) $(1 / n) + ((1 - e) / m)$
c) $(1 / m) + ((1 + e) / n)$
d) $(1 / n) + ((1 - e) / m)$
21. Pass-out turbines are used in which of these cases?
a) relatively high back pressure
b) small heating requirement
c) only relatively low back pressure
d) **both relatively high back pressure and small heating requirement**
22. Which of these is not considered economical for cogeneration?
a) a high fraction of electric to total energy
b) **a low fraction of electric to total energy**
c) a low fraction of total energy to electric energy
d) none of the mentioned
23. What is the maximum percent of energy recovered if the steam is condensed before reintroduced to system?
a) 25
b) **35**
c) 45
d) 55
24. Energy recovery percentage depends on the type of waste.
a) True
b) **False**



5. Nuclear Power Plant

Position in Question Paper

Total Marks-12

Q.1. c) 2-Marks.

Q.2. b) 4-Marks.

Q.4. b) 6-Marks.

Descriptive Question

1. Name any four fuels used in Nuclear power plant
2. State the functions of International Atomic Energy Agency
3. Compare PWR and BWR
4. Draw a layout of Boiling water reactor Nuclear plant. State the functions of each component
5. Name any four Nuclear power plant situated in India with their Capacity
6. Name the regulating Agencies for Nuclear power plants
7. Draw general arrangements of Nuclear Power Plants
8. What are the points to be considered while selecting site of Nuclear power Plants
9. Comment on Nuclear Waste Disposal
10. Compare Nuclear Power Plant with Thermal Power Plant
11. Explain Nuclear Reactor.
12. Classify Nuclear Reactor

MCQ Question

(Total number of Question=Marks*3=12*3=36)

Note: Correct answer is marked with **bold**.

1. The best capable alternative source which can meet the future energy demand is

a) thermal power plant

b) nuclear power plant

c) hydroelectric power plant

d) geothermal power plant

2. How much coal is required to generate energy equivalent to the energy generated by 1 kg of uranium?

a) 30000 tonnes of high grade coal



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

- b) 300 tonnes of high grade coal
c) 10000 tonnes of high grade coal
d) 3000 tonnes of high grade coal
3. Nuclear fuel in reactor lasts for _____
a) more than 5 months
b) few weeks
c) few days
d) more than 5 years
4. Cost of nuclear fuel in nuclear power plant economics is considered as _____
a) running cost
b) maintenance cost
c) **capital cost**
d) development cost
5. In economics of nuclear power plant taxes and insurance charges are taken as _____
a) operating cost
b) maintenance cost
c) capital cost
d) fixed cost
6. Which of the following are not taken as operation and maintenance cost in economics of nuclear power plant?
a) **Taxes and insurance**
b) Salaries and wages of staff
c) Cost of waste disposal
d) Cost of processing materials
7. What is the overall efficiency of nuclear power plant?
a) 20 to 25%
b) 25 to 30%
c) **30 to 40 %**
d) 50 to 70 %
8. The land area required for installation of nuclear power plant is _____
a) more than thermal power plant
b) less than thermal power plant
c) equal to thermal power plant
d) depends on type of construction
9. All of the nuclear fuel reserve will be ended in about 400 years.
a) True
b) **False**
10. With respect to the load centre which location is suitable for establishment of nuclear power plant?
a) Load centre
b) **Near load centre but at reasonable distance**
c) Far away from load centre
d) Near chemical industries
11. Operating cost of nuclear power plant is less than thermal power plant.
a) **True**
b) False
12. The efficiency of a nuclear power plant in comparison to a conventional thermal power plant is
a) same
b) more
c) less
(d) may be less or more depending on size
13. Isotopes of same elements have
a) same atomic number and different masses



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

- (b) **same chemical properties but different atomic numbers**
(c) different masses and different atomic numbers
(d) different chemical properties and same atomic numbers
14. Atomic number of an element in the periodic table represents the numbers of
(a) **protons in the nucleus** (c) neutrons in the nucleus
(b) electrons in the nucleus (d) electrons in the atom
15. The mass number of a substance represents the sum of total number of
(a) protons and neutrons in an atom
(b) protons and electrons in an atom
(c) neutrons and electrons in an atom
(d) **protons and neutrons in a nucleus**
16. Which is not identical for an atom and an isotope
(a) **mass number** (c) chemical properties
(b) atomic number (d) position in periodic table
17. Amongst the following, the fissionable materials are
(a) **U233 and Pu239** (c) U235 and Pu235
(b) U238 and Pu239 (d) U238 and Pu239
18. A nuclear unit becoming critical means
(a) it is generating power to rated capacity
(b) it is capable of generating much more than rated capacity
(c) there is danger of nuclear spread
(d) **chain reaction that causes automatic splitting of the fuel nuclei has been established**
19. Moderator in nuclear plants is used to
(a) reduce temperature
(b) extract heat from nuclear reaction
(c) control the reaction
(d) **cause collision with the fast moving neutrons to reduce their speed**
20. The most commonly used moderator in nuclear plants is
(a) heavy water (c) graphite and concrete
(b) concrete and bricks (d) **graphite**
21. The nuclear energy is measured as
(a) **MeV** (c) farads
(b) curie (d) MW
22. The total energy released in fission of U is
(a) 5 MeV (c) **199 MeV**
(b) 10 MeV (d) 168 MeV
23. Breeder reactor has a conversion ratio of
(a) unity (c) less than unity
(b) **more than unity** (d) zero
24. Boiling water reactor employs
(a) boiler



**Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik**

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

- (b) **direct cycle of coolant system**
(c) double circuit system of coolant cycle
(d) multi pass system
25. Fast breeder reactor uses
(a) boiler
(b) direct cycle of coolant system
(c) **double circuit system of coolant cycle**
(d) multi pass system
26. One gram of uranium will produce energy equivalent to approximately
(a) 1 tonne of high grade coal
(b) **4.5 tonnes of high grade coal**
(c) 10 tonnes of high grade coal
(d) 100 tonnes of high grade coal
27. Which of the following nuclear reactor does not need a heat exchanger for generation of steam
(a) gas cooled
(b) liquid metal cooled
(c) pressurised water
(d) **boiling water**
28. The number of isotopes of hydrogen are
(a) 1
(b) 2
(c) **U**
(c) 3
29. The commonly used material for shielding is
(a) **lead or concrete**
(b) lead and tin
(c) graphite or cadmium
(d) thick galvanized sheets
30. The main interest of shielding in nuclear reactor is protection against
(a) X-rays
(b) infra-red rays
(c) a, P, and y rays
(d) **neutrons and gamma rays**
31. Reflector in nuclear plants is used to
(a) **return the neutrons back into the core**
(b) shield the radioactivity completely
(c) check pollution
(d) conserve energy
32. Ferrite material is
(a) the most fissionable material
(b) the basic fuel for nuclear plants
(c) basic raw material for nuclear plants
(d) **the material which absorbs neutrons and undergoes spontaneous changes leading to the formation of fissionable material**
33. Enriched uranium is one in which
(a) **%age of U235 has been artificially in-creased**
(b) %age of U has been artificially increased
(c) %age of U234 has been artificially in-creased
(d) extra energy is pumped from outside



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

34. Which of the following particles is the lightest
- (a) nucleus
 - (b) **electron**
 - (c) proton
 - (d) meson
35. Which of the following is the heaviest
- (a) neutron
 - (b) proton
 - (c) **atom**
 - (d) electron
36. In nuclear fission each neutron that causes fission releases
- (a) no new neutron
 - (b) at least one new neutron
 - (c) one new neutron
 - (d) **more than one new neutrons**



6. Economic Analysis of Power Plant

Position in Question Paper

Total Marks: 12

Q.1. c) 2-Marks.

Q.2. b) 4-Marks.

Q.4. b) 6-Marks.

Descriptive Question

1. Classify and Explain Energy
2. Define i)Fixed Cost ii)Running Cost
3. Explain methods of calculating depreciation cost
4. Explain estimation of performance parameters of power plant
5. Explain What are the factors affecting on choice of power plant
6. Define load factor, capacity factor, thermal efficiency ,operational efficiency
7. Explain Unit energy cost
8. State the procedure to determine the cost of energy per kWh
9. Thermal power plants consists of two 50 MW units, each running at 6000 hours and one 20MW units runs at 3000 hours per year. Energy produced by the plant is 840×10^6 kWh per year. Find Plant load factor and plant use factor
10. Peak load on power plant is 60 MW. The load having maximum demand 30MW, 20MW, 10MW and 14MW connected to power plant. The capacity of power plant is 80 MW and load factor 0.5. Estimate
 - i. Energy supplied per year
 - ii. Demand factor
 - iii. Diversity factor



MCQ Question

(Total number of Question=Marks*3=12*3=36)

Note: Correct answer is marked with **bold**

1. What is the advantage of sectionalizing of power plant?
 - a) **High reliability**
 - b) Low capital cost
 - c) Low maintenance
 - d) Easy operation
2. The area under the load curve represents _____
 - a) the average load on power system
 - b) maximum demand
 - c) **number of units generated**
 - d) load factor
3. Which of the following is equal to the maximum demand?
 - a) The ratio of area under curve to the total area of rectangle
 - b) The ratio of area under curve and number of hours
 - c) **The peak of the load curve**
 - d) The area under the curve
4. Load duration curve indicates _____
 - a) the variation of load during different hours of the day
 - b) total number of units generated for the given demand
 - c) total energy consumed by the load
 - d) **the number of hours for which the particular load lasts during a day**
5. During which time the demand of electrical energy is maximum?
 - a) 2 A.M. to 5 A.M.
 - b) 5 A.M. to 12 P.M.
 - c) 12 P.M. to 7 P.M.
 - d) **7 P.M. to 9 P.M**
6. Size and cost of installation depends upon _____
 - a) average load
 - b) **maximum demand**
 - c) square mean load
 - d) square of peak load
7. What is Demand factor?
 - a) Ratio of connected load to maximum demand
 - b) Ratio of average load to connected load
 - c) **Ratio of maximum demand to the connected load**
 - d) Ratio of kilowatt hour consumed to 24 hours
8. Which of the following represents the annual average load?
 - a) (KWh supplied in a day)/24
 - b) {(KWh supplied in a day)/ 24 } × 365
 - c) {(KWh supplied in a month)/(30 × 24)}
 - d) **(KWh supplied in a year) / (24 × 365)**
9. The load factor is _____
 - a) **always less than unity**
 - b) less than or greater than 1
 - c) always greater than 1
 - d) less than zero
10. In practice what is the value of diversity factor?



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

- a) Less than Unity
b) **Geater than Unity**
11. Coincidence factor is reciprocal of _____
a) average load
b) demand factor
c) Equal to or greater than Unity
d) Less than zero
12. Which of the following is called as cold reserve?
a) **Reserve capacity available but not ready for use**
b) Reserve capacity available and ready for use
c) Generating capacity connected to bus and ready to take load
d) Capacity in service in excess of peak load
13. What is the advantage of sectionalizing of power plant?
a) **High reliability**
b) Low capital cost
c) Low maintenance
d) Easy operation
14. The area under the load curve represents _____
a) the average load on power system
b) maximum demand
c) **number of units generated**
d) load factor
15. Which of the following is equal to the maximum demand?
a) The ratio of area under curve to the total area of rectangle
b) The ratio of area under curve and number of hours
c) **The peak of the load curve**
d) The area under the curve
16. Load duration curve indicates _____
a) the variation of load during different hours of the day
b) total number of units generated for the given demand
c) total energy consumed by the load
d) **the number of hours for which the particular load lasts during a day**
17. During which time the demand of electrical energy is maximum?
a) 2 A.M. to 5 A.M.
b) 5 A.M. to 12 P.M.
c) 12 P.M. to 7 P.M.
d) **7 P.M. to 9 P.M**
18. Size and cost of installation depends upon _____
a) average load
b) **maximum demand**
c) square mean load
d) square of peak load
19. What is Demand factor?
a) Ratio of connected load to maximum demand
b) Ratio of average load to connected load
c) **Ratio of maximum demand to the connected load**
d) Ratio of kilowatt hour consumed to 24 hours
20. Which of the following represents the annual average load?
a) (KWh supplied in a day)/24
b) {(KWh supplied in a day)/ 24 } × 365
c) {(KWh supplied in a month)/(30 × 24)
d) **(KWh supplied in a year) / (24 × 365)**



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

21. The load factor is _____
- a) **always less than unity**
 - b) less than or greater than 1
 - c) always greater than 1
 - d) less than zero
22. In practice what is the value of diversity factor?
- a) Less than Unity
 - b) **Geater than Unity**
 - c) Equal to or greater than Unity
 - d) Less than zero
23. Coincidence factor is reciprocal of _____
- a) average load
 - b) demand factor
 - c) capacity factor
 - d) **diversity factor**
24. Which of the following is called as cold reserve?
- a) **Reserve capacity available but not ready for use**
 - b) Reserve capacity available and ready for use
 - c) Generating capacity connected to bus and ready to take load
 - d) Capacity in service in excess of peak load
25. What is the advantage of sectionalizing of power plant?
- a) **High reliability**
 - b) Low capital cost
 - c) Low maintenance
 - d) Easy operation
26. The area under the load curve represents _____
- a) the average load on power system
 - b) maximum demand
 - c) **number of units generated**
 - d) load factor
27. Which of the following is equal to the maximum demand?
- a) The ratio of area under curve to the total area of rectangle
 - b) The ratio of area under curve and number of hours
 - c) **The peak of the load curve**
 - d) The area under the curve
28. Load duration curve indicates _____
- a) the variation of load during different hours of the day
 - b) total number of units generated for the given demand
 - c) total energy consumed by the load
 - d) **the number of hours for which the particular load lasts during a day**
29. During which time the demand of electrical energy is maximum?
- a) 2 A.M. to 5 A.M.
 - b) 5 A.M. to 12 P.M.
 - c) 12 P.M. to 7 P.M.
 - d) **7 P.M. to 9 P.M**
30. Size and cost of installation depends upon _____
- a) average load
 - b) **maximum demand**
 - c) square mean load
 - d) square of peak load
31. What is Demand factor?
- a) Ratio of connected load to maximum demand
 - b) Ratio of average load to connected load
 - c) **Ratio of maximum demand to the connected load**
 - d) Ratio of kilowatt hour consumed to 24 hours



Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik

Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.

RSM POLY Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

32. Which of the following represents the annual average load?
- a) (KWh supplied in a day)/24
 - b) $\{(KWh \text{ supplied in a day}) / 24\} \times 365$
 - c) $\{(KWh \text{ supplied in a month}) / (30 \times 24)\}$
 - d) (KWh supplied in a year) / (24 × 365)**
33. The load factor is _____
- a) **always less than unity**
 - b) less than or greater than 1
 - c) always greater than 1
 - d) less than zero
34. In practice what is the value of diversity factor?
- a) Less than Unity
 - b) **Geater than Unity**
 - c) Equal to or greater than Unity
 - d) Less than zero
35. Coincidence factor is reciprocal of _____
- a) average load
 - b) demand factor
 - c) capacity factor
 - d) diversity factor**
36. Which of the following is called as cold reserve?
- a) Reserve capacity available but not ready for use**
 - b) Reserve capacity available and ready for use
 - c) Generating capacity connected to bus and ready to take load
 - d) Capacity in service in excess of peak load