

**University of Mumbai**  
**Examination 2020 under cluster 4 (PCE)**

Program: BE Mechanical Engineering

Curriculum Scheme: Rev2012

Examination: **Fourth Year Semester VII**

Course Code: **MEE7012** Course Name: **Power Plant Engineering (Elective-II)**

Time: 1 hour

Max. Marks: 50

Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	A cogeneration plant produces _____.
Option A:	power
Option B:	process heat
Option C:	maximum efficiency
Option D:	both power and process heat
Q2.	What is the effect of increase in pressure at which heat is added on the pump work in the Rankine cycle?
Option A:	the pump work decreases with increase in pressure of heat addition
Option B:	the pump work increases with increase in pressure of heat addition
Option C:	the pump work does not change with increase in pressure of heat addition
Option D:	the pump work either increases or decreases with increase in pressure of heat addition
Q3.	In India largest thermal power station is located at _____.
Option A:	Kota
Option B:	Sarni
Option C:	Chandrapur
Option D:	Neyveli
Q4.	The proper indication of incomplete combustion is _____.
Option A:	high CO content in flue gases at exit
Option B:	high CO <sub>2</sub> content in flue gases at exit
Option C:	high temperature of flue gases
Option D:	the smoking exhaust from chimney
Q5.	The commercial sources of energy are _____.
Option A:	solar, wind and biomass
Option B:	fossil fuels, hydropower and nuclear energy
Option C:	wood, animal wastes
Option D:	agriculture wastes
Q6.	The percentage Oxygen by volume in atmosphere air is _____.
Option A:	0.21
Option B:	0.23
Option C:	0.77
Option D:	0.79

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Q7.	What is the function of 'stroker' ?
Option A:	Burning fuel
Option B:	Handling fuel
Option C:	Feeding fuel
Option D:	Storage fuel
Q8.	In the spreader stroker secondary air is supplied _____.
Option A:	through nozzles
Option B:	through holes
Option C:	from top side
Option D:	from bottom side
Q9.	The major constituent of fly ash is _____.
Option A:	Magnesium oxide
Option B:	Aluminum oxide
Option C:	Silicon dioxide
Option D:	Calcium oxide
Q10.	In which burner liquid fuel is raised by capillary action?
Option A:	Re-circulating burner
Option B:	Wick burners
Option C:	Rotating cup burner
Option D:	Pressure jet burners
Q11.	Pumped storage plant in connection with thermal power plant is used to take _____.
Option A:	Base load
Option B:	Equal load
Option C:	No load
Option D:	Peak load
Q12.	Which is NOT design of GT-ST cycle ?
Option A:	Heating feed water with exhaust gas
Option B:	Employing the gases from supercharged boiler to expand in gas turbine.
Option C:	Employing the gases as combustion air in steam boiler.
Option D:	Rejecting heat from steam to heat the gases.
Q13.	In combined GT-ST plant no mechanical draught supply needed because _____.
Option A:	furnace gas pressure is low
Option B:	furnace gas pressure is high
Option C:	Induced or forced draught is not possible.
Option D:	It will increase the cost.

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Q14.	The conversion of old power plant into combined power plant is known as _____.
Option A:	Repowering.
Option B:	Reusing.
Option C:	Reforming.
Option D:	Renovating.
Q15.	The energy produced by 4.5 tons of high grade coal is equivalent to energy produced by _____.
Option A:	1 kg of uranium
Option B:	1 gm of uranium
Option C:	100 gm of uranium
Option D:	10 gms of uranium
Q16.	Enriched Uranium is one in which _____.
Option A:	% of U-235 has been artificially increased
Option B:	% of U-238 has been artificially increased
Option C:	% of U-234 has been artificially increased
Option D:	Extra energy is pumped from outside
Q17.	Coolant used in liquid metal fast breeder reactors is _____.
Option A:	heavy water
Option B:	molten sodium
Option C:	CO <sub>2</sub>
Option D:	helium
Q18.	Plutonium-239 is _____.
Option A:	Fissile material
Option B:	Fissionable material
Option C:	Moderator
Option D:	Poison
Q19.	Determine total annual cost ( Rs.) of water softening plant from the following data. Cost = Rs. $2.56 \times 10^5$ , Salvage value = 6% , Life = 10yrs , annual cost of chemicals = Rs. 15000 , Annual repair cost = Rs. 10000 , Labour cost per month = Rs. 3000, Rate of interest by sinking fund method = 11%, Salvage value = Rs. 15360.
Option A:	72390.6
Option B:	74390.6
Option C:	75390.6
Option D:	73390.6

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Q20.	The area under the load curve represents _____.
Option A:	number of units generated
Option B:	the average load on power system
Option C:	maximum demand
Option D:	load factor
Q21.	Block rate tariff, where energy charge decreases with the increase in energy consumption,
Option A:	Discourages the consumers for more consumption.
Option B:	Encourages the consumers for more consumption.
Option C:	Encourages the consumers to restrict their demand
Option D:	Encourages the consumers to improve the power factor.
Q22.	Why is Maximum demand tariff not applicable to domestic consumers?
Option A:	Low load factor
Option B:	Lower energy consumption
Option C:	Low maximum demand
Option D:	Low power factor
Q23.	Size and cost of installation depends upon _____.
Option A:	average load
Option B:	maximum demand
Option C:	square mean load
Option D:	square of peak load
Q24.	A motor of 25 H.P connected to condensate pump has been burnt beyond economical repairs. An alternative has been proposed with following details. Following is the given data for certain power plant. Salvage value = Rs.600, Depreciation = Rs. 220 / year , Interest = Rs250 / year, Maintenance = Rs. 400/-, Energy rate is 12 paise/kWh. Motor is operated at full load for 30% of time and at half load for the remaining period. Assume 365 days in year. Efficiency at full load and half load is 90% and 85% respectively. Calculate total cost of motor in Rs/year
Option A:	17272
Option B:	14272
Option C:	15272
Option D:	16272
Q25.	Ideal regenerative Rankine cycle _____.
Option A:	Does not affect efficiency
Option B:	Increases work output
Option C:	Increases the heat supplied
Option D:	Increases efficiency

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	B
Q3.	C
Q4	A
Q5	B
Q6	A
Q7	C
Q8.	A
Q9.	C
Q10.	B
Q11.	D
Q12.	D
Q13.	B
Q14.	A
Q15.	A
Q16.	A
Q17.	B
Q18.	A
Q19.	C
Q20.	A
Q21.	B
Q22.	C
Q23.	B
Q24.	C
Q25.	D