Enrollment No……

Master of Technology
Second Semester Examination, June-2021
Thermal Power Plant Engineering [MTTPE201]

Time: 3:00 Hrs **Max Marks 70**

Note: Attempt any five questions.
All questions carry equal marks.

Q.1 Derive the expression for maximum blade efficiency of a reaction turbine.

Q.2 Explain with neat sketch the following :-
i) Air & Gas circuit
ii) Cooling water circuit.

Q.3 What are Base Load & Peak load plants, explain in details.

Q.4 What are the major advantages of coal beneficiation? What is coal oil mixture? How it is prepared

Q.5 What is the necessity of compounding of steam turbines? Explain different methods of compounding.

Q.6 Explain why a subsonic nozzle is convergent while a supersonic nozzle is divergent.

Q.7 What is plant management? Also explain power plant personal.

Q.8 Write Short note on following,
a) Tariff methods
b) Different types of cooling systems

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Master of Technology
Second Semester Examination, June-2021
Design of Heat Exchangers [MTTPE202]

Time: 3:00 Hrs **Max Marks 70**

Note : Attempt any five questions out of eight.

Q.1 What is the purpose of using baffles in a heat exchanger?

Q.2 Explain effectiveness of counter flow heat exchanger.

Q.3 What do you mean by correction factor for a cross flow heat exchanger?

Q.4 What are the causes of development of stress in a heat exchanger and how thermal stress can be minimized?

Q.5 Derive the effectiveness of parallel flow heat exchanger.

Q.6 What do you mean by mixed and unmixed flow as applied to cross flow heat exchanger?

Q.7 Derive an expression for LMTD of counter flow heat exchanger.

Q.8 Draw the schematic of a two shells heat exchanger?

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Master of Technology

Second Semester Examination, June-2021

Advance Refrigeration System [MTTPE203]

Time: 3:00 Hrs **Max Marks 70**

Note : Attempt any five questions out of eight.
All questions carry equal marks.

Q.1 What arc the different types of heat transfer resistance in water cooled condensers? flow is the total resistance related to the heat transfer? What are natural refrigerant. Discuss their potential and limitations.

Q.2 Explain the working of an Actual vapour compression refrigeration cycle with the help of p-h and T-S diagram.

Q.3 Discuss different types of compressors used in refrigeration system with neat sketch?

Q.4 Explain with the help of neat sketch an externally equalized thermostatic expansion valve.

Q.5 Write a detailed note on refrigerant absorbent pair for vapor absorption refrigeration system.

Q.6 Explain the working of the heat pump when used for the following purposes:
(a) Concentrating the juice and
(b) Desalination of sea water.

Q.7 Explain the constructional features of flooded type evaporator.

Q.8 Write Advantage of multi-pressure system.

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Master of Technology

Second Semester Examination, June-2021

Steam and Gas Turbine [MTTPE204]

Time: 3:00 Hrs **Max Marks 70**

Note : Attempt any five questions out of eight.
All questions carry equal marks.

Q.1 A stage of an impulse turbine is velocity compounded with two rows of moving blades. The isentropic enthalpy drop in the stage is 320 kg. The nozzle angle is 160 and mean blade speed 150m/sec. Velocity coefficient of the blades is 0.9 for all blades which are symmetrical. Steam flow rate through the turbine is 20 kg Sec. Determine blade angles, power output, stage efficiency and K.E. of steam leaving the stage.

Q.2 Define degree of admission. Why is partial admission of steam adopted in high pressure stages of an impulse turbine?

Q.3 What is the function of the pressure equalizing holes in a Reaction Turbine?

Q.4 Deduce a general expression relating area, velocity, pressure etc of a compressible fluid expanding isentropically through a nozzle and draw conclusions regarding the type of nozzle to be used for accelerating flow through the nozzle.

Q.5 Define reheat factor and internal efficiency of a multistage turbine.

Q.6 A gas turbine power plant of 12 MW capacity works on closed cycle using air as working medium. The pressure ratio is 4.3, the temperature of air at the inlet of the compressor is 300k and maximum temperature in the cycle is 960k.

Q.7 What do you mean by choking flow through a nozzle?

Q.8 Dry saturated steam at an absolute temperature T1 expands in a turbine to an absolute temperature T2. Assuming a very large number of stages, show that the reheat factor is given by Where stage efficiency of each stage.

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Master of Technology

Second Semester Examination, June-2021

Maintenance of Thermal Power Plant [MTTPE205]

Time: 3:00 Hrs **Max Marks 70**

Note : Attempt any five questions out of eight.
All questions carry equal marks.

Q.1 Explain predictive and preventive maintenance of steam turbine and its components?

Q.2 Discuss types of lubricants and their comparative properties & explain the theories of elasto-hydrodynamic and boundary lubrications.

Q.3 Discuss various reasons and types of failures in hearings?

Q.4 State about warning systems used in maintenance department and classify the maintenance techniques and state their comparison advantages and disadvantages.

Q.5 Discuss the classification of on-line techniques of diagnostic maintenance, Discuss any one technique?

Q.6 Design the preventive maintenance system for boiler and Generator of a power plant?

Q.7 Write short notes on the following:
(i) Classification of cooling towers.
(ii) Lubrication of bearings.

Q.8 Define the following terms:
(i) Signature analysis.
(ii) Wear analysis.
(iii) Thermography