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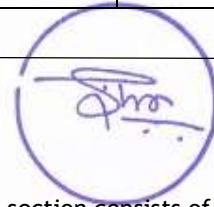
Branch: Signature of Invigilator:

Semester: VIth Date: 29/04/2022 (MORNING)

Subject with Code: ME393 ELEMENTS OF HYDEL & THERMAL POWER PLANT

Marks Obtained	Section A (30)	Section B (20)	Total Marks (50)

INSTRUCTION TO CANDIDATE



1. The booklet (question paper cum answer sheet) consists of two sections. First section consists of MCQs of 30 marks. Candidates may mark the correct answer in the space provided / may also write answers in the answer sheet provided. The Second section of question paper consists of subjective questions of 20 marks. The candidates may write the answers for these questions in the answer sheets provided with the question booklet.
2. The booklet will be distributed to the candidates before 05 minutes of the examination. Candidates should write their roll no. in each page of the booklet.
3. Place the Student ID card, Registration Slip and No Dues Clearance (if applicable) on your desk. All the entries on the cover page must be filled at the specified space.
4. Carrying or using of mobile phone / any electronic gadgets (except regular scientific calculator)/chits are strictly prohibited inside the examination hall as it comes under the category of unfair means.
5. No candidate should be allowed to enter the examination hall later than 10 minutes after the commencement of examination. Candidates are not allowed to go out of the examination hall/room during the first 30 minutes and last 10 minutes of the examination.
6. Write on both side of the leaf and use pens with same ink.
7. The medium of examination is English. Answer book written in language other than English is liable to be rejected.
8. All attached sheets such as graph papers, drawing sheets etc. should be properly folded to the size of the answer book and tagged with the answer book by the candidate at least 05 minutes before the end of examination.
9. The door of examination hall will be closed 10 minutes before the end of examination. Do not leave the examination hall until the invigilators instruct you to do so.
10. Always maintain the highest level of integrity. Remember you are a BITian.
11. Candidates need to submit the question paper cum answer sheets before leaving the examination hall.

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI			
(END SEM SP/2022)			
CLASS: B. Tech			SEMESTER : VI
BRANCH: All			
SUBJECT: ME393: Elements of Hydel and Thermal Power Plants(OE-II)			
Duration: 2 Hours			FULL MARKS: 50

INSTRUCTIONS:

- 1. The question paper contains Two sections. SEC-A(MCQ) of 30 questions of One mark each and SEC-B(Short Questions) of 8 question of 2.5 marks each, and all are compulsory.**
- 2. The missing data, if any, may be assumed suitably.**

Sec-A(MCQ) of 30 questions - One mark each

Q1. Choose the correct answer.

- In hydro electric power plant any type of turbines can be used.
- In hydro electric power plant, the choice of turbine is based on electricity demand.
- In hydro electric power plant, the choice of turbine is based the availability of pressure head and discharge.

Q2. In a Pump Storage power plant

- two water reservoirs are placed at different elevations
- two water reservoirs are placed at same elevations
- none of the above

Q3. Choose the correct answer.

As compared to hydro electric power plan, steam turbine power plant is more costly to build.

- true
- false

Q4. With reference to hydropower station, the graphical representation of discharge and time is known as

- Hydrograph
- Hectograph
- Load duration curve.

Q5. Choose the correct answer.

As compared to hydro power turbines, the steam power turbines runs at higher rpm

- true
- false

Q6. The pumped storage scheme is employed to supply

- during the peak hours
- during the off-peak hours
- none

Q7. Which of the following is a high head turbine

- Pelton turbine
- Francis turbine
- Kaplan turbine

Q8. Francis turbine is a/an

- (a) Impulse turbine
- (b) Reaction turbine
- (c) none

Q9. Kaplan turbines are used whenever the water head is

- (a) High
- (b) Low
- (c) medium

Q10. Francis and Kaplan turbine falls under the category of

- (a) reaction turbine
- (b) impulse turbine
- (c) none

Q11. Which of the following components *is not* a part of hydro-electric power plant

- (a) penstock
- (b) surge tank
- (c) economizer

Q12. In hydro-electric power plants, ----- reduces water hammer effect in penstock

- (a) surge tank
- (b) valves
- (c) none

Q13. In fire tube boiler

- (a) water flows through the boiler tubes
- (b) hot gas flows through the boiler tubes
- (c) none

Q14. In water tube boiler

- (a) water flows through the boiler tubes
- (b) hot gas flows through the boiler tubes
- (c) none

Q15. In thermal power plants, boilers are used

- (a) to produce steam
- (b) to produce hot water
- (c) none

Q16. The fire tube boilers

- (a) are high pressure boilers
- (b) are low pressure boilers
- (c) none

Q17. A device attached to the steam chest for preventing explosion due to excessive internal pressure of steam is called

- (a) water level indicator
- (b) Pressure gauge
- (c) safety valve
- (d) none

Q18. The function of super heater in boiler is

- (a) to heat the flue gas
- (b) to increase the temperature of steam
- (c) superheat the feed water

Q19. The coal is fed to the furnace through _____

- (a) conveyer belt
- (b) crane
- (c) hopper

Q20. What is the function of cyclone separators in pneumatic ash handling system?

- (a) to force up the movement of ash through pipes or tubes
- (b) to separate the lighter dust particles
- (c) to draw out the dust from furnace

Q21. Which medium is used to carry ash in the pneumatic ash handling system?

- (a) Conveyer belt
- (b) Chain belt
- (c) air

Q22. Which medium is used to carry ash in hydraulic system?

- (a) Air
- (b) water
- (c) steam

Q23. Ash is widely used in the production of _____.

- (a) cement
- (b) plastics
- (c) Food oxidants

Q24. How can we increase the rate of combustion of solid fuel?

- (a) by the process of pulverization
- (b) by removing the impurities present in it
- (c) by storing it in the right conditions

Q25. In a condenser, heat is dissipated mainly by

- (a) radiation
- (b) conduction
- (c) convection

Q26. Pressure inside the condenser is

- (a) less than atmospheric
- (b) more than atmospheric
- (c) none

Q27. The vacuum obtainable in a condenser is dependent upon temperature of cooling water

- (a) true
- (b) false

Q28. The function of the draught system is

- (a) to supply a sufficient quantity of air to the furnace for complete combustion of fuel.
- (b) to overcome the resistance contributed by flue gas passages to the flow of air & flue gas.
- (c) to discharge exhaust gases at sufficient height to avoid pollution in the atmosphere
- (d) all of these

Q29. Where is the fan installed in a forced draught system?

- (a) base of the chimney
- (b) above the boiler
- (c) between economizer and air preheater
- (d) none

Q30. Which **is not** correct statement about the function of furnace_____?

- (a) mix fuel with air and ignite
- (b) separate ash from coal
- (c) maintain heat supply to prepare and ignite the incoming fuel

SUBJECT: ME393: Elements of Hydel and Thermal Power Plants(OE-II)

Sec-B(Short Answer) of 8 questions- 2.5 marks each

- Q31. What are the essential components in a Steam turbine power plant? [2.5]
- Q32. What are the essential components in a Hydro power plant? [2.5]
- Q33. Where and why penstock is used in hydraulic machines? [2.5]
- Q34. Where and why surge tank is used in hydraulic machines? [2.5]
- Q35. Name some boiler mountings and accessories [2.5]
- Q36. What are the advantages of fire tube boilers? [2.5]
- Q37. What is a cooling tower? In thermal power plants where there are used? [2.5]
- Q38. What is Pulverized fuel, and where they are used? [2.5]

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