



11819

17559

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) *All questions are compulsory.*
 - (2) *Answer **each** next main question on a **new** page.*
 - (3) *Illustrate your answers with **neat** sketches **wherever** necessary.*
 - (4) *Figures to the **right** indicate **full** marks.*
 - (5) *Assume suitable data, if **necessary**.*
 - (6) *Mobile Phone, Pager and any other Electronic Communication devices are **not permissible** in Examination Hall.*

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| 1. A) Attempt any three of the following : | 12 |
| a) State the importance of energy conservation in industry. | |
| b) Explain the use of components of wind mill with neat sketch. | |
| c) Write any four energy benchmarking parameters used in industry. | |
| d) Write advantages and disadvantages of solar energy (any four). | |
| B) Attempt any one of the following : | 6 |
| a) Define calorific value of the fuel. State the difference between net calorific value and gross calorific value. | |
| b) Explain D.C. and A.C. current with its characteristics. | |
| 2. Attempt any four of the following : | 16 |
| a) Explain structure of audit report. | |
| b) Explain features of perform achieve and trade-PAT scheme. | |
| c) Describe power factor with the terms associated with it. | |
| d) Draw a neat sketch of shell and tube heat exchanger. | |
| e) Explain Indian energy scenario. | |
| 3. Attempt any four of the following : | 16 |
| a) Explain gasification of biomass. | |
| b) Write any four energy conservation measures in boiler. | |
| c) Explain methodology of detailed energy audit. | |
| d) Draw a neat labelled sketch of biogas plant. | |
| e) Describe classification of energy (any two). | |

P.T.O.



4. A) Attempt **any three** : **12**
- a) Explain with neat sketch constructional features of water pump.
 - b) Explain energy generation from tide and ocean.
 - c) Describe electricity generation from thermal power plant with block diagram.
 - d) Write any four features of Energy Conservation Act 2001.
- B) Attempt **any one** : **6**
- a) Explain the role of (three) 3T's of combustion. A substance of mass 25 kg at 25°C is heated to 80°C. If the specific heat of the substance is 0.25 kcal/kg°C. Calculate the quantity of heat added in the substance.
 - b) Define energy audit. Explain the purpose of knowing energy cost in energy audit.
5. Attempt **any two** : **16**
- a) Explain characteristics curves of pump. Give any four energy conservation opportunities in pumping systems.
 - b) State the importance of simple payback period in energy conservation projects. Give any six ENCON recommendations.
 - c) Explain any two types of cooling tower with diagram.
6. Attempt **any two** : **16**
- a) Explain the steps to check performance assessment of heat exchanger.
 - b) Describe efficiency calculation of boiler by direct method.
 - c) State any four advantages and disadvantages of renewable energy. Explain solar photovoltaic energy.
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