Ref No. Ex/PG/PE/T/116A/2018

MASTER OF POWER ENGINEERING EXAMINATION, 2018

(1ST SEMESTER)

ENERGY PLANNING, MANAGEMENT AND MODELING

Time : Three (3) Hours Full Marks : 100

Answer any **Five (5)** Questions. All questions carry equal marks :

1. a) Define. (4 x 3 = 12)
   - Acid Rain
   - Ozone Layer depletion
   - Designated consumers as per Energy Conservation Act

   b) What is energy security? (2)

   c) What are the strategies to meet future challenges to energy security? (6)

2. a) What are the sources of greenhouse gas ? (4)

   b) What is "Global Warming Potential"? (4)

   c) What is the link between biodiversity and climate change? (6)

   d) What are the main roles of
   - United Nations Framework for climate change? (3)
   - Conference of parties? (3)

3. a) Indicate project cycle of a CDM project (5)

   b) What is sustainable development? How can we approach this concept? (5)

   c) What are the uses of prototype carbon fund ? (5)

   d) What is PAT (Perform and Trade) scheme ? (5)

4. a) Who proposes National Electricity Plan in India ? (2)

   b) What are the terms of reference of National Electricity Plan 2015?. (6)

   c) What are the major steps for preparing such plan? (6)

   d) Furnish at least six (6) major highlights of National Electricity Plan 2015. (6)

5. a) What is the principle of co-generation? (5)

b) What are the various technical options for co-generation? (5)

c) What are the factors influencing co-generation choice? (5)

d) Explain the term "Heat to Power Ratio" related to co-generation system. (5)

6. a) What are the various types of electric lamps?. (4)

b) Explain the following terms (1 x 6)

- Luminaire
- Control Gear
- Illuminance
- Lux
- Luminous Efficacy
- Color rendering Index

c) Indicate some good practices in lighting which can result in energy efficiency. (10)

7. a) What are the various methods of pump capacity control? (5)

b) What are the effects of oversizing a pump? (5)

c) List down a few energy conservation opportunity in pumping system. (10)

8. a) "Various types of energy models are appropriate to find out solutions for various types of energy related problems" – Discuss (4)

b) What are the Non-formal Methods of Energy Modelling? (4)

c) What are the reasons for relying on the 'Input Method'? (4)

d) What are the fundamental characteristics of Delphi Method? (4)

e) What are the two (2) phases of Delphi Inquiry Method? (4)