M. Arch. Sem- II (Sustainable Architecture) (2014 Course) (CBCS) : SUMMER - 2019

SUBJECT: ENERGY SYSTEMS & UTILITIES

Day: Thursday
Date: 02/05/2019

Time: 10.00 A.M. TO 12.00 NOON
Max Marks : 60

S-2019-3739

N.B. :

1) Solve any **THREE** questions from each section.
2) Answer to two sections should be written in **SEPARATE** Answer books.
3) Figures to the right indicate **FULL** marks.

SECTION - I

Q.1 Define or Describe in brief following terms **(Any Five)** **(10)**

a) Boiler Evaporation Ratio and Boiler Efficiency
b) Specific Heat and Latent Heat of Vapourisation
c) Excess Air in Combustion
d) Boiler Blow down and Air venting in Steam System
e) Saturation Temperature and Superheat in Boiler Systems
f) Hot and Cold Insulation
g) Definition of Boiler and Steam Pipe as per Indian Boiler Regulation

Q.2 Write Short Notes on following **(Any Two)** **(10)**

a) List down the Specification of Boilers. Describe all four Boiler systems. List down types of Boilers
b) Explain 3 'T"s of Combustion and Differentiate between Incomplete combustion, Good combustion and Perfect combustion
c) Explain Steam distribution system, its parameters and significance of pipe sizing

Q.3 Describe the following **(Any Two)** **(10)**

a) Describe Low temperature, Medium temperature and High temperature Insulation
b) Describe construction and functioning of Economizer and Heat Pipe
c) Purpose of Insulation and Economic Thickness of insulation

Q.4 Long Question **(10)**

Describe Direct and Indirect method of assessing Boiler efficiency

Q.5 Long Question **(10)**

Elaborate on Direct and Indirect Benefits of Waste Heat Recovery

SECTION – II

Q.6 Define or Describe in brief following terms **(Any Five)** **(10)**

a) Instantaneous demand, Sanctioned demand and Contract demand
b) Step-by-step method of Maximum Demand Control
c) Capacity, Effectiveness, Cycles of Concentration (COC) and Blow down losses in Cooling Tower
d) Demand Side Management (DSM)
e) Transformer losses and Transformer efficiency
f) Vapour Absorption System
g) Electric motor characteristics

P.T.O.

Q.7 Write Short Notes on following **(Any Two)** **(10)**

a) Explain Concept of Power Factor. Explain construction and functioning of Automatic Power Factor Controller

b) Effect of voltage and frequency variation on losses and performance of 3-phase Induction motor

c) Describe different types of Fans

d) Describe Components of Cooling Tower

Q.8 Describe the following **(Any Two)** **(10)**

a) Describe losses in 3-phase Induction motor and Special features of Energy Efficient Motor

b) List down various Types of Transformers and Standard ratings of Transformers. Describe in brief Energy efficiency labeled Transformers

Q.9 Long Question **(10)**

Describe various types of Cooling Towers. List down at least Ten measures for Energy saving in Cooling Towers

Q.10 Long Question **(10)**

Describe Scope and Coverage of ECBC-2007. Explain various stipulations in ECBC for HVAC, Hot Water system and Electric Motors

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