Enrollment No: _____ Exam Seat No:_____

C. U. SHAH UNIVERSITY

Winter Examination-2019

Subject Name : Alternate Energy Sources

Subject Code : 4TE03AES1 Branch: B.Tech (Mechanical)

Semester : 3 Date : 28/11/2019 Time : 02:30 To 05:30 Marks : 70

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 Attempt the following questions: (14)

a) Which of the following energy has the greatest potential among all the sources of renewable energy? **(01)**
(A) Solar energy (B) Wind Energy
(C) Thermal energy (D) Hydro-electrical energy

b) What does MHD stands for in the energy field? **(01)**
(A) Magneto Hydro Dynamic (B) Metal Hydrogen Detox
(C) Micro Hybrid Drive (D) Metering Head Differential

c) The amount of energy received in unit time on a unit area perpendicular to the sun's direction at the mean distance of the earth from the sun is called _____ **(01)**
(A) Solar radiation (B) Solar constant
(C) Intensity of solar radiation (D) Air Mass

d) The time from sunrise to sunset is termed as _____ **(01)**
(A) Slope (B) Day length
(C) Local solar time (D) Solar intensity

e) _____is a glazing which limits the radiation and convection heat losses. **(01)**
(A) Absorber plate (B) Selective surface
(C) Insulation (D) Transparent cover

f) What is the main source for the formation of wind? **(01)**
(A) Uneven land (B) Sun
(C) Vegetation (D) Seasons

g) Which country has world's largest tidal power plant? **(01)**
(A) Netherlands (B) South Korea
(C) Laos (D) Bolivia

h) Which country created wind mills? **(01)**
(A) Egypt (B) Mongolia
(C) Iran (D) Japan

i) How is height of wave determined? **(01)**
(A) By wind speed (B) By force of wave

(C) By a immersion scale (D) By a floating device

j) The working fluid chosen by Anderson OTEC cycle is _____ **(01)**
(A) Propane (B) Water
(C) Engine oil (D) ISO-butane

k) Earth's outer layer rock is called as _____ **(01)**
(A) Mantle (B) Crust
(C) Outer core (D) Asthenosphere

l) A device for converting substances (chemically or physically) into gas is called _____ **(01)**
(A) Gasifies (B) Biogas plants
(C) Draughts (D) Gas chambers

m) The scattered solar radiation is called _____ **(01)**
(A) Direct Radiation (B) Beam Radiation
(C) Diffuse radiation (D) Infrared Radiation

n) Kinetic energy that results from the oscillation of water is called_____. **(01)**
(A) Wave energy (B) Tidal energy
(C) Ocean thermal energy (D) Hydro energy

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions** **(14)**

(a) What is meant by renewable energy sources? What are the prospects of nonconventional energy sources in India? **(07)**

(b) Explain in detail how solar energy can be effectively utilized in day-today life. **(07)**

Q-3 **Attempt all questions** **(14)**

(a) List the main components of a flat plate solar collector, Explain the function of it. **(07)**

(b) Explain with neat diagram about solar pond and its characteristics. **(07)**

Q-4 **Attempt all questions** **(14)**

(a) Is wind energy a better alternative source of energy for Indian demand? Explain in detail how wind energy is produced. **(07)**

(b) Compare the different types of solar cells with respect to power output and efficiency. **(07)**

Q-5 **Attempt all questions** **(14)**

(a) Describe with a neat sketch the working of a wind energy conversion system (WECS) with its main components **(07)**

(b) With relevant diagram, explain the working principle of tidal power plant. Enumerate the advantages and disadvantages of tidal power plant. **(07)**

Q-6 **Attempt all questions** **(14)**

(a) Describe the closed cycle O.T.E.C. system with its advantages over open cycle system. **(07)**

(b) List out the various points to be carried out for selection of site for a biogas plant. **(07)**

Q-7		**Attempt all questions**	**(14)**
	(a)	List application and prospects of geothermal energy with reference to Indian context.	**(07)**
	(b)	Compare and contrast the biomass energy and biogas energy.	**(07)**
Q-8		**Attempt all questions**	**(14)**
	(a)	With the help of schematic diagram, explain the operation of closed cycle MHD generating plant.	**(07)**
	(b)	Explain the concept of daylight saving as a means for energy conservation.	**(07)**