JAF-003-0493001 Seat No. _____

B. Sc. / M. Sc. (Applied Physics) (Sem. III) (CBCS) Examination

November - 2019

Non-conventional Energy Resources : Paper - IX

(New Course)

Faculty Code : 003

Subject Code : 0493001

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All questions are compulsory.
(2) Numbers in the right margin indicate marks.

1 Attempt any **seven** short questions : (two marks each) **14**

(1) Define the term "Energy".
(2) State different sources of energy used in day-to-day life.
(3) Define wind energy.
(4) What is minimum speed of wind required to generate energy ?
(5) State different mechanisms used to harness solar energy.
(6) Define renewable energy.
(7) State any two environmental concerns for non-renewable energy.
(8) Give the examples of non- renewable energy.
(9) Write any five sources of renewable energy.
(10) Define the term "biomass".

2 (a) Write answers of any **two** : **10**

(1) Energy use patterns of India - Discuss.
(2) Energy use pattern in different parts of the world and its impact on the environment.
(3) Explain the power generation from wind energy.
(4) State the advantages and disadvantages of wind energy.

(b) Write answer of any **one** : **4**

(1) State the requirement of human energy consumption.
(2) Describe the environmental concerns of wind energy.

3 (a) Write answers of any **two** : **10**

(1) Write a note on Mie scattering and non-selective scattering.

(2) How solar energy is harnessed by solar furnace and solar power plants ?

(3) Explain briefly the mechanism of solar cells.

(4) Discuss the absorption and reflection principle for harnessing solar energy.

(b) Write answer of any **one** : **4**

(1) State the working of solar heater.

(2) Explain briefly the Rayleigh scattering.

4 (a) Write answers of any **two** : **10**

(1) Explain floating dome type biogas plant.

(2) Define tidal energy. Explain the important component of tidal energy.

(3) What is bio gas plant? Explain fixed dome type biogas plant.

(4) What is hydropower plant? Describe basic components of hydropower plant.

(b) Write answer of any **one** : **4**

(1) Write a short note on Biofuels.

(2) Write advantages and disadvantages of biomass energy.

5 (a) Write answers of any **two** : **10**

(1) Explain any two types of geothermal resources.

(2) Explain working Principle of Polymer electrolyte membrane (PEM) fuel cells (PEMFC).

(3) Discuss the advantage and disadvantages of nuclear energy.

(4) What are fuel cells ? Explain in detail.

(b) Write answer of any **one** : **4**

(1) Discuss nuclear energy from Fission and Fusion.

(2) Describe classification of fuel cells.
