KAMARAJ COLLEGE (Autonomous)

Accredited with A+ Grade by NAAC

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

(4 Pages) **Reg. No:……**

Question Code: 26O03312 **Course Code : 25PEPH11**

PG Degree - End Semester Examinations, November 2026

First Semester

M.Sc. PHYSICS

Energy Physics

(For those who joined in June 2025 onwards)

Time : 3Hours **Maximum : 75 Marks**

PART – A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer :

CO:1 K:1 1. _____ is a non-commercal source of energy.

(a) Hydroelectric power (b) Nuclear power

(c) Natural gas (d) Wood

CO:1 K:2 2. The nuclear power stations generate electricity based on the principle of_____

(a) Controlled nuclear fusion (b) Uncontrolled nuclear fusion

(c) Controlled nuclear fission (d) Uncontrolled nuclear fission.

CO:2 K:1 3. When the water level is below the mean sea level, it is called as _____

(a) Flood tide (b) Spring tide

(c) Neap tide (d) Ebb tide

CO:2 K:2 4. In OTEC, the open cycle or claude cycle, _____ is used as a working fluid.

(a) Ammonia (b) Water

(c) Propane (d) Methanol

CO:3 K:1 5. The combination of _____ and generator is called as aero generator.

(a) Transformer (b) Actuators

(c) Sensor (d) Wind turbine

CO:3 K:2 6. _____ forces act perpendicular to the direction of air flow.

(a) Buoyancy (b) Lift

(c) Friction (d) Drag

CO:4 K:1 7. Biogas is a mixture containing carbon dioxide and _____

(a) Methane (b) Ethane

(c) Ethylene (d) Butane

CO:4 K:2 8. Fermentation is the breakdown of complex molecules in organic compound under the influence of _____

(a) Yeast (b) Bacteria

(c) Enzymes (d) All the above

CO:5 K:1 9. The standard value of solar constant is_____

(a) 1353 KW/m^2 (b) 1363 KW/m^2

(c) 1343 KW/m^2 (d) 1373 KW/m^2

CO:5 K:2 10. The optimum operating voltage of a photovoltaic cell is _____ at normal temperatures.

(a) 0.35V (b) 0.45V

(c) 0.55V (d) 0.25V

PART – B (5 X 5 = 25 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 250 words.

CO:1 K:3 11. (a) Write short notes on non-conventional energy sources.

(OR)

(b) Discuss about Nuclear energy.

CO:2 K:4 12. (a) Explain how tidal energy is produced.

(OR)

(b) Write any five uses of tidal energy.

CO:3 13. (a) Give the advantages of wind energy conversion systems.

K:3

(OR)

(b) State the applications of wind energy.

CO:4 14. (a) Elaborate on dry processes of biomass conversion.

K:3

(OR)

(b) Discuss the advantages of anaerobic digestion.

CO:5 15. (a) Explain solar pyranometer with its types.

K:4

(OR)

(b) Explain about the photovoltaic conversion of solar energy into electric power.

PART – C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 600 words.

CO:1 16. (a) Give a detailed account on conventional energy sources with their availability and future needs.

K:6

(OR)

(b) Discuss the methods of energy storage and distribution.

CO:2 17. (a) Describe the components of tidal power plants.

K:5

(OR)

(b) Explain the principle of ocean thermal energy conversion in detail.

CO:3 18. (a) Discuss the basic components of wind energy conversion systems.

K:6

(OR)

(b) Discuss the two broad classifications of wind energy conversion systems.

CO:4 19. (a) Describe the wet process in biomass conversion.

K:6

(OR)

(b) Discuss the process of biogas generation in detail.

CO:5 20. (a) Describe the construction and working of solar distillation unit.

K:5

(OR)

(b) Depict the principle and working of solar pond with neat sketch.