

Total No. of Printed Pages:2

SUBJECT CODE NO:- 2030
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc. T.Y (Sem-VI)
Examination March/April-2022 (To Be Held In June/July-2022)
Physics Paper-XX
(Non -Conventional Energy Sources and Optical Fiber)

[Time:1:53 Hours]

[Max. Marks:50]

Please check whether you have got the right question paper.

N.B.

- i) Solve all questions.
- ii) Draw the diagram wherever necessary.

- Q.1
- a) Explain Biomass energy. Give its advantages and disadvantages. 10
 - b) Explain in details the I-V characteristics of solar cell and define fill Factor. 10
- OR
- a) Describe -1) A Multimode step Index Fiber 10
 2) Monomode step Index Fiber
 - b) Describe -1) External CVD 10
 2) Axial Vapour Deposition
- Q.2
- a) 1) Write a short note on Monoblade Horizontal axis Wind turbine (Monoblade HAWT) 05
 2) Calculate the power of wind turbine whose wind power density is 740 w/m^2 and swept area 320 m^2 . 05
 - b) 1) Explain 'Halide Fiber', and its characteristics. 05
 2) A step index fiber has a numerical aperture 0.17 core diameter of $100 \mu\text{m}$. What are the number of modes at operating wavelength $0.85 \mu\text{m}$. 05
- OR
- a) 1) State the advantages and disadvantages of storage batteries. 05
 2) A solar cell having fill factor 0.71 gives 0.65 voltage at maximum power point at STC, the cell gives 3.5 A short circuit current and 0.81 V open circuit voltage. What is the current at maximum power point of solar cell? 05
 - b) 1) Explain the standard test to be performed during the fiber cable testing. 05
 2) A Fiber with cladding radius of $200 \mu\text{m}$ is bent along the curve of radius 4 cm. Compute the resulting strain on the fiber. 05
- Q.3 Choose the correct answer 10
1. The power available in winds flowing over the earth surface is estimated as
 - (a) $1.6 \times 10^7 \text{ MW}$
 - (b) $1.6 \times 10^{17} \text{ MW}$
 - (c) $1.6 \times 10^{10} \text{ MW}$
 - (d) None of these

2. Twin blade horizontal axis wind turbine generator unit is of –
 - a) 1.5 MW, 2.5 MW, 3.5 MW
 - b) 0.5 MW, 1.5 MW, 2.5 MW
 - c) 1 MW, 2 MW, 3 MW
 - d) None of these

3. Lead acid battery are commonly used as _____ source of energy for SLI.
 - (a) Main
 - (b) Stable
 - (c) Permanent
 - (d) Mobile

4. The typical value of fill factor is in the range of -
 - (a) 0.5 – 0.05
 - (b) 0.5 – 0.083
 - (c) 0.5 – 0.06
 - (d) None of these

5. The cladding material of HPSIR Fiber is _____
 - (a) Doped Silica
 - (b) Plastic
 - (c) Glass
 - (d) Polymer

6. In plastic fiber both core and cladding are made from-
 - (a) Silica
 - (b) Plastic
 - (c) Glass
 - (d) Polymer

7. In external CVD, rate of deposition is
 - (a) 1 to 2 gm/sec
 - (b) 1 to 2 gm/min
 - (c) 0.1 to 0.2 gm/min
 - (d) 1 to 2 milligm/min

8. The useful materials for outer jacket of fiber cable are –
 - (a) Polyvinyl chloride
 - (b) Polyethylene
 - (c) Polyethane
 - (d) All of above

9. Optical fiber are made from-
 - (a) Silica glass
 - (b) Plastic
 - (c) Rubber
 - (d) both a & b

10. The output power of solar cell is a product of –
 - a) Current and resistance
 - b) Current and charge
 - c) Voltage and charge
 - d) Current and voltage