

Reg. No.:



Name:

University of Kerala

W7063

Third Semester FYUGP Degree Examination, November 2025

Discipline Specific Core Course

PHYSICS

UK3DSCPHY204 - Light, Electricity and Emerging energy sources

Academic Level: 200-299

2024 Admission

Time: 1 Hour 30 Minutes(90 Mins.)

Max. Marks: 42

Part A. 6 Marks. Time: 6 Minutes. (Cognitive Level: Remember(RE)/Understand(UN)) Objective Type. 1 Mark Each. Answer all questions

Qn No.	Question	CL	CO
1	Name the primary source of energy used in a solar power plant.	RE	5
2	Mention one advantage and application of fluorescent lamp	RE	1
3	Explain any two advantages of laser light over ordinary one.	UN	3
4	Distinguish between incandescent and fluorescent lamps.	UN	1
5	Write one use of solar drying.	UN	5
6	Write the relation between f-stop and aperture size.	UN	2

Part B. 8 Marks. Time: 24 Minutes. (Cognitive Level: Understand(UN)/Apply(AP)) Short Answer. 2 marks each. Answer all questions

Qn No.	Question	CL	CO
7	Write short notes on the working principle of an AC generator.	UN	4
8	Infer and Match the Solar Device (Column A) with its Principle / Function (Column B). Column A 1. Solar Distillation 2. Solar Pumping 3. Solar Air Heater 4. Solar Drying Column B A. Converts solar energy into heat to remove moisture from products B. Uses solar energy to raise water from a lower level to a higher level C. Purifies water using evaporation and condensation	UN	5

Qn No.	Question	CL	CO
	D. Transfers heat to air for warming or ventilation		
9	Apply your understanding of AC voltage to sketch and compare single phase and three phase voltage waveforms for a balanced load	AP	4
10	Illustrate one method to reduce the effects of global warming.	AP	5

Part C. 28 Marks. Time: 60 Minutes (Cognitive Level: Apply (AP)/Analyse (AN)/Evaluate (EV)/Create (CR)) Long Answer: 7 marks each. Answer all 4 Questions choosing among options * within each question

Qn No.	Question	CL	CO
11	A) Apply the concept of gas discharge to explain how a fluorescent lamp produces visible light OR B) Apply your understanding of photodiode operation to design a circuit that converts light energy into a measurable electrical signal	AP	1, 1
12	A) Analyse how a low-temperature solar power plant can be used to produce usable energy OR B) Analyse how the development and use of solar power plants can help mitigate the effects of global warming. Break down the relationship between solar energy generation, reduction in greenhouse gas emissions, and long term environmental impacts	AN	5, 5
13	A) Evaluate the performance of Homo Junction and Hetero Junction lasers in terms of efficiency and practical applications. Which type of laser would you recommend for high-speed optical communication systems, and why? OR B) Evaluate the working principle of a semiconductor laser by analysing its working and list the practical limitations	EV	3, 3
14	A) Design a hybrid power generation system that uses single phase generator to supply electricity to a small residential area. OR B)	CR	4, 4

Qn No.	Question	CL	CO
	Design an integrated sensing and control system that utilizes light, heat and or pressure sources to monitor and optimize an industrial process.		