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**B. Sc. (Hons.) Mathematics 2nd Semester
Examination – May, 2019**

PHYSICS-II

Paper : BHM 126 Opt. ii

Time : Three hours] [Maximum Marks : 60

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : There are *eight* questions in all. Question no. 1 is *compulsory*. Out of Remaining *Seven* Question *five* questions have to be answered, selecting at least *one* question from each Unit.

Compulsory Question :

1. (a) A pn junction diode has a small forward resistance and a large reverse resistance why. 2
- (b) What are values of ripple factors for half and full wave rectifiers ? What information do we obtain from their comparison ? 2

- (c) In a transistor base is made very thin and it is very lightly doped. Why ? 2
- (d) What are the disadvantages of negative feedback in amplifier. 2
- (e) Define spatial and temporal coherence in lasers. 2

UNIT – I

2. What is a solar cell ? Discuss its construction, working , I. V. characteristics and uses of a solar cell. 10
3. (a) Explain the working of a full wave rectifier. Find the expression for its efficiency and ripple factor. 6
- (b) A half wave rectifier uses a transformer of turns ratio 5 : 1 and the load resistance is 500. If the primary voltage is 220 V find : (i) d.c. output voltage (ii) peak inverse voltage. 4
4. Draw a circuit and describe the method to obtain characteristics of a pnp transistor in CB configuration. 10

UNIT – II

5. Draw a circuit of two stage R-C coupled amplifier. Explain the action and discuss its frequency response. 10

6. (a) Draw a circuit for voltage divider biasing transistor. Explain its working for stabilization.
- (b) What are the advantages of negative feedback amplifier?

UNIT – III

7. Explain the principle, construction and working of RUBY laser.
8. Explain in detail the following properties of laser.
- (a) Directionality
 - (b) Light intensity
 - (c) high degree of coherence
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