

Roll No.

41192

B. Sc. (Pass Course) 4th Semester

Examination – May, 2019

PHYSICS (OPTICS - II)

Papers : Phy-402

Time : Three hours / [Maximum Marks : 45

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 : Attempt at least **one** question from each Unit. A student has to attempt **five** questions in all.

UNIT – I

1. With the help of a suitable diagram discuss the conditions of formation of dark and bright rings in terms of diameters of the ring in Newton's ring experiment. 9
2. Explain the term Fresnel's Half Period Zone in relation to plane wave and derive an expression for resultant amplitude at a point P due to these zones. 9

P. T. O.

Roll No.

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B. Sc. (Pass Course) 4th Semester

Examination – May, 2019

BOTANY - I (BIOLOGY & DIVERSITY OF SEED
PLANTS - II)

Paper : BOT 4.1

Time : Three hours / [Maximum Marks : 40

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 : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. 1 is **compulsory**. All questions carry equal marks.

1. (a) What are HOLOTYPE specimens? 1
- (b) Define CHEMOTAXONOMY. 1
- (c) BUTTERFLY - shaped irregular corolla is characteristic feature of..... family. 1
- (d) Define an EFFECTIVE publication. 1

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(ii) Twelve similar coins are tossed for a large number of times. Calculate :

- (a) the probability of getting the heads of 7 coins uppermost
- (b) the probability of most probable distribution
- (c) the probability of least probable distribution

UNIT - II

3. Explain phase space and density of phase points, Describe cellular nature of phase space and prove conservation of density in phase space. 9

4. (i) Describe the Maxwell-Boltzmann statistics for systems of non-interacting particles. 4.5

(ii) A system obeying quantum statistics starts following the approximately the laws of classical statistics. Deduce the necessary conditions. 4.5

5. Derive the most probable distribution in case of particles obeying Bose-Einstein statistics. Apply the results to deduce the Planck's radiation law. 9

UNIT - III

6. Obtain the expression for specific heat of a Bose gas and discuss its variation with temperature. Use it to explain the phenomenon of B-E condensation. 9

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3. With the help of neat sketch, describe Michelson interferometer and hence deduce the condition of maxima and minima. Mention few applications of it. 9

UNIT - II

4. Discuss in detail the N-slit diffraction pattern and derive the condition for maxima and minima for such systems. 9

5. Write short notes on :

(a) Dispersive and resolving power of an optical instrument 6

(b) Rayleigh Criterion 3

UNIT - III

6. What is Double refraction ? Discuss the construction and working of Nicol prism. 6

7. Discuss the following :

(a) Quarter-wave and Half-wave Plate 6

(b) Polarization due to scattering 3

8. What is optical activity ? Discuss in detail the construction and working of half shade polarimeter. 6

(2)

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