

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
B.Sc./IMSc. Summer 2017-18 Examination

Semester: 4**Subject Code: 11104251****Subject Name: Modern Physics****Date: 08/05/2018****Time: 10:30 am to 1:00 pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A) Essay type/ Brief note (4x2) (Each of 04 marks) (08)

- (a) Explain Bohr atomic model.
- (b) Explain Zeeman effect.

Q.1. B) Answer the following questions (Any two)

- (a) Short note (04)
 1. Explain Milkan's oil drop experiment.
- (b) Explain Pauli's Exclusion principle. (04)
- (c) Explain right hand rule. (04)

Q.2. A) Answer the following questions.

- (a) Short note (04)
 1. Explain electric spin and spin magnetic moment.
- (b) Explain production of X-ray. (04)

Q.2. B) Answer the following questions (Any two)

- (a) Short note (03)
 1. Define stimulated absorption.
- (b) Define spontaneous emission. (03)
- (c) Give the difference between stimulated and spontaneous emission.. (03)

Q.3. A) Essay type (08)

- (a) Explain He:Ne laser with their working and construction.

Q.3. B) Answer the following questions (Any two)

- (a) Short note (04)
 1. Explain Pumping mechanism.
- (b) Write applications of LASER. (04)
- (c) Explain Principle of Holography. (04)

Q.4. A) Answer the following questions.

- (a) Short note. (04)
 1. Write applications of an Optical Fiber.
- (b) Explain total internal reflection. (04)

Q.4. B) Answer the following questions (Any two)

- (a) Short note **(03)**
1. Explain type 1 and type 2 semiconductors.
- (b) Explain Doppler effect in light. **(03)**
- (c) Write special theory of Relativity. **(03)**