B.Sc. (Part—II) Semester–III Examination

3S : FORENSIC SCIENCE

(Forensic Physics)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) All questions are compulsory.
(2) Question No. **1** carries **8** marks while each of the remaining questions carries **12** marks.

1. (A) Fill in the blanks :
   (i) Caliber is a distance between two opposite _____.
   (ii) The study of projectile in motion is called as _____.
   (iii) LASER stands for _____.
   (iv) Analyzer is a part of _____ microscope. 2

   (B) Multiple choice questions :
   (i) Father of ballistics is :
   (a) Calvin Goddard (b) Albert Osborn
   (c) Paul Kirk (d) Henry Fauld
   (ii) In rifle gun which type of projectile is used ?
   (a) Shots (b) Bullets
   (c) Pellets (d) Wads
   (iii) Polarized light is used in :
   (a) Spectrophotometer (b) Scanning electron microscope
   (c) Stereomicroscope (d) Polarizing microscope
   (iv) Ruby laser is a :
   (a) Semiconductor laser (b) Solid state laser
   (c) Gas laser (d) Liquid laser 2

   (C) Answer in **one** sentence :
   (i) What is revolver ?
   (ii) What do you mean by firearm ?
   (iii) What is angle of ricochet ?
   (iv) What is analyzer ? 4

UNIT–I

2. (A) State the industrial applications of laser. 4
   (B) Distinguish laser from ordinary light. 2
   (C) Describe the construction and working of helium-neon laser ? 6

OR

3. (P) Explain with neat diagram step index fiber and graded index fiber. 3
   (Q) What is solar cell ? Explain its working. 3
   (R) Derive an expression for numerical aperture of step-index fiber. 3
   (S) Explain the phenomenon of total internal reflection. 3

UNIT–II

4. (A) Define half life time. If decay constant of uranium is 0.0315 per year, determine its half life time. 4
   (B) Give the applications of radioisotopes. 4
   (C) Give the brief account of nuclear properties. 4

OR

5. (P) State the basic principle of radiometric dating. What are most common types of radiometric dating ? 4
   (Q) Give the brief account of nuclear charge and nuclear spin. 4
   (R) Define radioactive distintegration. State and explain the laws of radioactive disintegration. 4

UNIT–III

6. (A) Give detail account on classification of firearms. 4
   (B) Explain internal ballistics in detail. 4
   (C) What is angle of elevation of barrel ? 4

OR

7. (P) What is firearm ? What is shotgun and rifle gun ? 4
   (Q) Explain shotgun ammunition. 4
   (R) Explain the following terms :
   (i) Lock time (ii) Ignition time 4

UNIT–IV

8. (A) What is ISO Number ? 4
   (B) Explain report writing with example of questioned bullet (Q_1) and controlled bullet (C_1). 4
   (C) Explain different parts of DSLR camera. 4

OR

9. (P) Explain in detail about shutter speed and aperture. 4
   (Q) Write down steps in crime scene investigation. 4
   (R) What do you mean by 35 mm film ? 4

UNIT–V

10. (A) What is trajectory of bullet ? Explain equation for parabolic trajectory of bullet. 4
    (B) What do you mean by ricochet ? What are different factors affecting ricochet ? 4
    (C) What is Gyroscopic drift and air resistance ? 4

OR

11. (P) Explain the following terms :
    (i) Critical angle
    (ii) Angle of incidence
    (iii) Angle of ricochet. 4
    (Q) Explain in detail about canting. 4
    (R) What do you mean by escape velocity and terminal velocity ? 4

UNIT–VI

12. (A) What is compound microscope ? Explain principle, parts and application of compound microscope. 4
    (B) Explain SEM. 4
    (C) What do you mean by microspectrophotometer ? 4

OR

13. (P) What is stereomicroscope ? Explain principle, parts and application of stereomicroscope. 4
    (Q) Explain TEM. 4
    (R) What do you mean by polarizing microscope ? 4