AR – 556

Third Semester B. Sc. (Part - II) Examination

3S : FORENSIC SCIENCE

(Forensic Physics)

P. Pages : 7

Time : Three Hours] [Max. Marks : 80

Note : (1) All questions are compulsory.
(2) Question No. **one** carries **eight** marks while each of the remaining question carry **twelve** marks.

1. (A) Fill in the blanks :—

(i) Terminal ballistic is also known as _____ .

(ii) Deflection of bullet from its path is called _____ .

(iii) _____ is the study of what happens within the barrel of weapon.

(iv) Ruby is made up of aluminium oxide containing small percentage of _____ atoms. 2

(B) Multiple choice questions

(i) Crystallographic study is done in

(a) Simple microscope

(b) Compound microscope

(c) Stereomicroscope

(d) Polarized microscope

(ii) A laser beam consists of

(a) Light material Particles

(b) Highly coherent photons

(c) Electrons

(d) Cosmic rays

(iii) When two lighter nuclei are fused to form a heavier nucleus, the process is called _____ .

(a) Nuclear fission

(b) Nuclear Fusion

(c) Mass defect

(d) Decay constant

(iv) When a ray of light travels from denser medium to rarer medium, refracted ray bends ————.

(a) Parallel to the normal

(b) Towards the normal

(c) Away from the normal

(d) Perpendicular to the normal. 2

(C) Answer in **one** sentence :

(i) Define Metastable state.

(ii) Enlist the types of condenser.

(iii) What is function of diaphragm ?

(iv) What is external ballistics ? 4

UNIT I

2. (A) State the medical and chemical applications of laser. 4

(B) Describe the construction and working of semiconductor laser. 3

(C) Distinguish laser from ordinary light. 2

(D) Explain stimulated emission. 3

OR

3. (P) Derive an expression for acceptance angle of an optical fiber. 3

(Q) What are different types of losses in optical fiber ? 3

(R) What is –

(i) Step index fiber ?

(ii) Graded index fiber ? 3

(S) How propagation of light takes place in optical fiber ? 3

UNIT II

4. (A) Define radioactive disintegration. State and explain the laws of radioactive disintegration. 4

(B) Give the brief account of nuclear properties. 4

(C) Give the applications of radio isotopes. 4

OR

5. (P) Define half life time. If decay constant of uranium is 0.0315 per year determine its half life time. 4

(Q) Give a brief account of nuclear composition :
(i) Nuclear size. (ii) Nuclear spin. 4

(R) State the basic principle of radiometric dating. What are most common types of radiometric dating ? 4

UNIT III

6. (A) Draw and label basic firearm with basic mechanism. 4

(B) Define ballistic. Explain the types of ballistic. 4

(C) Give a brief account on internal ballistic. 4

OR

7. (P) Explain the device that measures barrel pressure. 4

(Q) Define recoil. Explain theory of recoil. 4

(R) Derive an expression for exterior ballistic. 4

UNIT IV

8. (A) Explain the working mechanism of camera with labeled diagram. 4

(B) Give a brief account on explosure index. 4

(C) Explain the following terms :

(i) Flash (ii) Light 4

OR

9. (P) Explain in detail on ISO number. 4

(Q) Explain the principle, construction and working of G.M. counter. 4

(R) Explain characteristics of FET. 4

UNIT V

10. (A) Give a brief account on the external ballistic. 4

(B) Write down twist verses stability. 4

(C) What is bullet drop ? Explain escape velocity. 4

OR

11. (P) Explain the following terms :

(i) Shooting up and down.

(ii) Air resistance.

(iii) Canting. 6

(Q) Explain ricochet in detail. 3

(R) How stability affected in bullet flight ? 3

UNIT VI

11. (A) Draw a basic diagram of compound microscope and enlist its parts. 4

(B) Explain the stereomicroscope. 4

(C) Give a brief account on micro-spectrophotometer. 4

OR

12. (P) Explain Polarizing microscope in detail. 4

(Q) Explain the advantages and disadvantages of transmission electron microscope. 4

(R) Explain the parts of comparison microscope. 4

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