PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2017
(Third Semester)

Branch - PHYSICS

ATOMIC, MOLECULAR & LASER PHYSICS

Time : Three Hours Maximum : 75 Marks

SECTION-A (20 Marks)
Answer ALL questions
ALL questions carry EQUAL marks (1 0 x 2 - 20)

1 Define critical potential.
2 What is photoelectric effect?
3 Define normal zeeman effect.
4 What are quantum numbers?
5 What is characteristic x-ray?
6 State Bragg's law.
7 What is population inversion?
8 What is LIDAR?
9 What is packing fraction?
10 What are isotopes? Write any two isotopes.

SECTION - B (25 Marks)
Answer ALL Questions
ALL Questions Carry EQUAL Marks (5 x 5 - 25)

11 a Explain the determination of critical potential?
OR
b Discuss the quantum mechanical explanation of normal effect.

12 a State and explain stark effect.
OR
b Briefly explain the applications of photoelectric cell.

13 a What are continuous and characteristics X - rays? Explain .
OR
b Explain how the x-rays are absorbed.

14 a Explain the principle of lasers.
OR
b Explain the applications of lasers in industry and medicine.

15 a What are positive rays rays? Give any four properties of positive rays.
OR
b Describe the construction and working of Dempster's mass spectrograph.

SECTION - C (30 Marks!
Answer any THREE Questions
ALL Questions Carry EQUAL Marks (3 x 10 = 30)

16 Discuss the classical theory of normal and anomalous Zeefnan effect. Give the experimental evidence.
17 Describe the vector atom model. Explain how the quantum numbers are associated with vector atom model.
18 Describe with neat diagram, the construction and working of powder crystal method.
19 Explain the principle, construction and working of He-Ne laser.
20 Explain with neat diagram,, the construction and functioning of UV instrumentation.

Z-Z-Z END