

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2019

(First Semester)

Branch – PHYSICS

MECHANICS

Time : Three Hours

Maximum : 75 Marks

SECTION-A (20 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 2 = 20)

- 1 Define Centre of Pressure.
- 2 State the principle of Archimedes.
- 3 What is radius of gyration?
- 4 What is moment of inertia?
- 5 What is bending of beam?
- 6 What is Cantilever?
- 7 Define the efficiency of a jet.
- 8 Mention two uses of an artificial satellite.
- 9 What are called constraints?
- 10 State D'Alembert's Principle.

SECTION - B (25 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 5 = 25)

- 11 a Deduce the thrust on an immersed plane.
OR
- b Discuss the pressure due to a compressible fluid.
- 12 a Calculate the moment of inertia of a rectangular lamina.
OR
- b Describe the Conical Pendulum.
- 13 a Discuss the bending of a beam.
OR
- b Determine the elastic constants.
- 14 a Discuss the multi stage rocket.
OR
- b Enumerate the materials of the frame of the satellite.
- 15 a Deduce the D'Alembert's Principle.
OR
- b Deduce Lagrange's equation of Atwood machine.

SECTION - C (30 Marks)

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

- 16 Determine the metacentric height of a slip.
- 17 Explain: Bar pendulum.
- 18 Determine the Young's modulus for the material of a beam.
- 19 Explain the effect of smaller cross section of the jet.
- 20 Obtain the Lagrange's equation.