

O. P. JINDAL SCHOOL, SAVITRI NAGAR
ANNUAL EXAMINATION (2023 – 2024)

Class: XI
 Subject: PHYSICS

MM: 70
 Time: 3 Hrs

General instruction

(Fifteen minutes extra will be given for reading the question paper.)

- There are 33 questions in all. All questions are compulsory.
- This question paper has five sections: Section A, Section B, Section C, Section D and Section E.
- All the sections are compulsory.
- Section A contains sixteen questions, twelve MCQ and four Assertion Reasoning based of 1 mark each, Section B contains five questions of two marks each, Section C contains seven questions of three marks each, Section D contains two case study based questions of four marks each and Section E contains three long answer questions of five marks each.
- There is no overall choice. However, an internal choice has been provided in one question in Section B, one question in Section C and all three questions in Section E. You have to attempt only one of the choices in such questions.
- Use of calculators is not allowed.

SECTION A

- 1.If, $A = 2\hat{i} + 3\hat{j}$ and $B = \hat{i} + j$, find the component of A along B is
 (a) $5/\sqrt{2}$ (b) $3/\sqrt{2}$
 (c) $1/\sqrt{2}$ (d) $\sqrt{2}$
- 2.A lift having mass 100 kg is rising up with an acceleration 4 m/s². The tension in the string is (Take $g = 10\text{ms}^{-2}$)
 (a) 1380N (b) 1160N
 (c) 2380N (d) 580N
- 3.The Centre of mass of a semi circular disc of uniform mass distribution having radius R is
 (a) $2R/\pi$ (c) $\pi/2R$
 (c) $4R/3\pi$ (d) $3\pi/4R$
4. The moment of inertia of a solid cylinder of uniformly distributed mass of M kg and radius R about center of mass is
 (a) $MR^2/4$ (b) $MR^2/8$
 (c) $MR^2/2$ (d) MR^2
- 5.The energy associated with each degree of freedom of a gas molecule is
 (a) Zero (b) $KT/2$
 (c) KT (d) $KT/3$
- 6.The kinetic energy of 23gm of NO_2 gas at 27^o C is
 (a) Zero (b) 1.0015kJ
 (c) 1.8706kJ (d) 5.0157kJ