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Roll No.	Total No. of Pages : 02
Total No. of Questions : 09	
B.Sc (Hons) Aircraft Maintenance PHYSICS	(Sem.–1)
Subject Code : BSCARM-103-18	
M.Code : 75634	
Time:3 Hrs.	Max. Marks:60

INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :

- a) Define vector triple product.
- b) State Hooke's law and its significance.
- c) What is Poisson's ratio and what can be its maximum and minimum values?
- d) Give the meaning and equation of centre of mass.
- e) What do you mean by geosynchronous orbits?
- f) What is the difference between inertial and gravitational mass?
- g) Define damped harmonic motion.
- h) Two photons approach each other, what is their relative velocity?
- i) What is the difference between linear momentum and angular momentum?
- j) What is the rest mass of a body?



[2]

SECTION-B

- 2. Derive an expression for the time of oscillation of a torsion pendulum. How will you use it to determine the modulus of rigidity of a wire? [5]
- 3. Prove that a frame of reference moving with uniform translational acceleration with respect to an inertial frame is a non-inertial frame. [5]
- 4. a) Prove that the work done by a conservative force round a closed path is zero. [3]
 - b) Show that in a central force field the angular momentum of a particle is conserved.
- Describe the principle of motion of a rocket. Explain that the final velocity of a multistage rocket is much greater than the final velocity of a single stage rocket of the same weight and fuel supply. [5]
- 6. Discuss length contraction and time dilation on the basis of Lorentz transformation. [5]

SECTION-C

- 7. Describe the Searle's method of measuring Young's modulus of the material in the form of a wire. Derive the formula used.
- 8. Show that for a particle executing simple harmonic motion, the average value of kinetic and potential energy is the same and is equal to half the total energy.
- 9. a) What is the principle of conservation of linear momentum? Show that the linear momentum of a system of particles remains constant in the absence of any external force acting on it.
 - b) What do you mean by potential energy? Show that it is a function of position whose negative gradient gives the conservative force.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.