Sc PHYSI	CS Stania Himsersity of Bahamalpur 187/A-00 New Maximum marks Max. Time Allowed	40
S. No.	Note: Attempt any five questions, Selecting two from section II and two from Section III. Q.No.1 in section I is compulsory.	3.4
O.No.1	Attempt any four parts of the following	,
	 (a) Can the sum of the magnitude of two vectors ever be equal to the magnitude of the sum of these two vectors? Explain. (b) Is it possible for the angular momentum of an object to be zero if the angular velocity is non-zero? Is it possible for the angular velocity of an object to be zero if the angular momentum is non-zero? Explain. (c) Calculate the mass of the electron having energy of 0.511 Mev./c (d) Can a body have kinetic energy without having momentum? Can a body have momentum without having kinetic energy. Explain your answers. 	
	(e) Is the force of friction conservative? Explain it. Section II	
Q. 2(n)		1
(b)	Define Gravitational Potential energy and Gravitational Potential Find the Expression	
	for Gravitational Potential energy using integration technique	
Q.3(a)	Define Conservative and non-conservative forces. Show the apring force is a	
	conservative force.	
(p)	What is an Isolated system. Show that in an Isolated system of particles, the total	
	relativistic energy remains constant.	
	What are elastic and inelastic Collisions 7 Now that in the absence of an external force	-
Q.4 (a)		
	total momentum of the system remains constant.	
(b)	State and prove Bernoulli's equation.	-
Q. 5(a)	Section III	
~	Find Vet. if F vet 37 + st compagation white feature	
(p)	How much work must be done to increase the speed of an electron from(i) 0.18c to 0.19c and the 0.98c to 0.99c? Note that the speed increase (0.01) is the same in each case	
(.6 (a)	The coefficient of static friction between the tires of a car and a dry road is 0.62. The	
	mass of the car-is 1500 kg. What maximum braking force is obtainable (a) on a level	
	road and (b) on an 8.6° downgrade	-
(b)	An object of 2.0 kg mass makes an elastic collision with another object at rest and continues to move in the original direction but with one forth of its original speed.	
	What is mass of the struck object?	
Q.7(a)	A swimmer moves through the water at speed of 0.22m/sec. The drag force opposing	
	this motion is 110N. How much power is developed by the swimmer.	4
(b)	An office window is 3.43 m by 2.08 m. As a result of the passage of a storm, the outside air pressure drops to 0.962 atm, but inside the pressure is held at 1.00 atm.	
1-1-1-	What net force pushes out on the window.	
Q.8(a)	A projectile is fired vertically from the Earth's surface with an initially speed of 9.42 km/s Neglecting atmospheric friction, how far above the Earth's surface will it	
(b)	A stream of bullets whose muss mis each 3.8 g is fired horizontally with a speed of 1100 m/s into a large wooden block of muss M(+12 kg) that is initially at rest on a horizontal table. If the block is free to slide without friction across the table, what spece	4

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