Sanjay Ghodawat University, Kolhapur

2020-21

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

EXM/P/09/00

Year and Program: T.Y B.Sc B.sc 2020-21	**School of Science**	**Department: Physics**
Course Code: PHS301	**Course Title: Classical Mechanics**	**Semester : V**
Day : Tuesday **Date : 15.12.2020**	**End Semester Examination**	**Time : 2 Hrs.** **Max Marks : 50**

Instructions: 1) All Questions are compulsory.
2) Use of non-programmable calculator is allowed.

		Marks	Bloom's Level	CO
Q.1	**Answer the following (any Two)**–			
a)	i) What is central force? State characteristics of central forces.	04	L1	CO1
	ii) What is conservative force? Show that, the force F=yzi+zxj+xyk is a conservative force.	04	L1	CO1
b)	Deduce the equation for total energy in central force field hence show that total energy remains constant.	08	L2	CO1
c)	Explain the effect of coriolis force on the Earth.	08	L3	CO2
Q.2	**Answer the following (any two)** –			
a)	Deduce the relation for angular frequency of coupled oscillations.	08	L2	CO2
b)	What is laboratory frame? Obtain relation between recoil angle and scattered angle in laboratory frame.	08	L2	CO3
c)	Construct Rutherford's scattering formula.	08	L3	CO3
Q.3	**Answer the following (any two)** –			
a)	Explain relativistic variation of mass with velocity.	09	L2	CO4
b)	Describe four space hence give four vector formalism.	09	L2	CO4
c)	Define bounded and unbounded motion hence reproduce the differential equation of motion under central force.	09	L1	CO1

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