Sanjay Ghodawat University, Kolhapur

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

2020-21

EXM/P/09/00

Year and Program: 2020-2021,B.Sc. II	**School of Science**	**Department: Physics**
Course Code: PHS 201	**Course Name: Physics III**	**Semester :III**
Date and Time:	**End Semester Examination**	**Time:2 Hrs. Max Marks:50**

Instructions: 1) All Questions are compulsory.

			Marks	BL	CO
Q.1		**Answer / Solve the following(Any Two)**			
	a)	State and obtain First law of thermodynamics for a closed system.	8	L1	CO1
	b)	Explain Carnot's cycle with diagram and obtain an expression for its efficiency.	8	L1	CO2
	c)	i) Explain Clausius inequality for the entropy? Provide proof for it. ii) Explain any two thermodynamic potentials.	8	L1	CO2
Q.2		**Answer / Solve the following(Any Two)**			
	a)	Obtain an expression for the root mean square velocity of gas molecules.	8	L3	CO3
	b)	Define mean free path and sphere of influence. Obtain an expression for the mean free path and write Maxwell's correction to it.	8	L3	CO3
	c)	Obtain the Maxwell's- Boltzmann velocity distribution function for an ideal gas.	8	L3	CO3
Q.3		**Answer / Solve the following(Any Two)**			
	a)	What is Fermi-Dirac statistics? Obtain Fermi-Dirac distribution law.	9	L2	CO4
	b)	State Wein's displacement law using proper curve. Derive Wein's displacement law from Planck's law.	9	L2	CO4
	c)	i) Write a note on black body radiations. ii) What is momentum, position and phase space? Show minimum permissible size of the cell in a diagram.	9	L2	CO4

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