Sanjay Ghodawat University, Kolhapur

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

2020-21

EXM/P/09/00

B. Sc-I	**School of Science**	**Sem II**
PHS102	**Physics-II**	**Max Marks: 50**
Day:	**End Semester Examination**	
Date:	**Time: 2 hours**	

Instructions: 1) Questions Q.1, Q.2 and Q.3 are compulsory.
2) Rough calculations on paper are not allowed.
3) Use non-programmable calculator is allowed.

		Marks	Bloom's Level	CO
Q.1	**Answer the following**			
a)	Using Stokes theorem show that the surface integral of a curl of a vector equals to the line integral of a vector. State suitable example.	8	L4	CO1
b)	i) How much is the energy contained in a capacitor? Explain using any one type of capacitor. ii) Obtain relation between the electric field and electric potential.	8	L3	CO2
	OR			
b)	i) Why divergence of magnetic field and curl of an electric field is zero?	4	L3	CO1
	ii) Discuss potential due to solid sphere i) Outside the sphere ii) On the sphere iii) Inside the sphere.	4	L3	CO2
Q.2	**Answer the following**			
a)	Elaborate how different magnetic materials respond to the externally applied magnetic field? Discuss how these magnetic materials can be differentiated on the basis of their properties?	8	L3	CO3
b)	Consider a straight current carrying conductor, draw magnetic field produced by it and derive the relation for magnetic field produced by this conductor.	8	L2	CO3
	OR			

b)	Which magnetic material shows hysteresis properties? Explain in detail how the hysteresis loop is formed when external magnetic field is applied?	8	L2	CO3

Q.3 Answer the following

a)	How much is the velocity possessed by an electromagnetic wave in vacuum? Prove using suitable derivation.	9	L4	CO4
b)	i) Write Maxwell's equations with physical significances.	4	L3	CO4
	ii) Prove $\nabla.(\nabla \times B) = 0$ for modified Ampere's law.	5		
	OR			
b)	State and prove Poynting theorem. Which law of conservation is stated by Poynting theorem?	9	L3	CO4