Name: **Enrolment No:**	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Sem Examination, Dec 2022

Course: Advanced Drives and Controllers for eV — **Semester: VII**
Programme: B.Tech Electrical Engineering — **Max Marks:100**
Course Code: EPEG 4016 — **Duration : 3 Hrs.**

S. No.		Marks	CO
	Section A Short Answer Question. Each Question carries 4 marks		
Q.1	Describe in brief Characteristics of DC Shunt Motor.	**4**	**CO1**
Q.2	How the various drags varies with the speed of vehicles?	**4**	**CO2**
Q.3	List 2 challenges associated with use of IGBT based switching devices.	**4**	**CO3**
Q.4	Name various fluxes present in the air gap for a BLDC motor?	**4**	**CO2**
Q.5	Why SRM motors are cheaper compared to BLDC motors	**4**	**CO3**
	Section B **Each Question carries 10 marks**		
Q.6	Explain challenges with Charging infrastructure? Why fast charging is not recommended at domestic level?	**10**	**CO3**
Q.7	Simulate the suitability of PMSM motors as eV motor with the help of its characteristics?	**10**	**CO2**
Q.8	With step by step diagram develop Approximate Equivalent circuit of Induction motors, referred to Stator side.	**10**	**CO2**
Q.9	Enumerate the complete switching circuit diagram and block diagram of speed control on Induction motors using Vector Control technique.	**10**	**CO3**
	Section 'C' **Long Answer Question (20 Marks)**		
Q 10	A) Compare and distinguish how PMSM motors are better compared to BLDC motors. Justify the answer with at least 3 points with relevant diagrams. B) Enumerate and with the help of 'Curve fitting' simulation, justify the suitability of DC Series motors to meet the ideal characteristics.	**10 M** **10 M**	**CO4**
Q 11	a. "Mathematical modelling can help engineers in to improved technical and economical aspects associated with engineering design", Justify the statement with relevant to Production cost, Performance, Wastage.	**10 M**	**CO1**
	b. Develop a complete Full bridge circuit for the speed control of PMSM motors	**10 M**	