Name: **Enrolment No:**	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2022

Course: AUTOMOTIVE ELECTRICAL & ELECTRONICS **Semester: IV**
Program: B.Tech. - Automotive Design Engineering **Time : 03 hrs.**
Course Code: ECEG 2026 **Max. Marks: 100**

Instructions: Attempt all sections.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Discuss briefly about how batteries are rated.	4	CO1
Q 2	Explain Construction and working of D.C generator.	4	CO3
Q 3	How can a Throttle Position sensor be diagnosed using a scan tool?	4	CO5
Q 4	How is a Mass Air Flow sensor tested?	4	CO5
Q 5	Explain the constructional details of starter motor.	4	CO2

SECTION B
(4Qx10M= 40 Marks)

Q 6	How does a hot film Mass Air Flow sensor work?	10	CO4
Q 7	Write five benefits of In-Vehicle Network.	10	CO5
Q 8	Draw and explain modern electronic charging circuit.	10	CO3
Q 9	Attempt any two of the following: 1. Explain constant current method of charging a lead acid battery. 2. Write short note on LED lighting system in automobile. 3. With a neat sketch, explain the construction of a lead acid battery.	10	CO1

SECTION-C
(2Qx20M=40 Marks)

Q 10	a. Explain the principle of operations, constructions and working of starting Motor. (12) b. Why does a gear-reduction unit reduce the amount of current required by the starter motor? (6) c. What are the symptoms of a defective starter drive? (4)	20	CO2

Q 11	Attempt any four of the following: 1. Explain the working of startor solenoid. 2. Write a note on developing trends of automotive electronic systems. 3. Compare various protocols in in-vehicle networks. Explain each protocol in detail. 4. How can the dashboard light be turned off? 5. Explain Controller Area Network (CAN) Classes A, B, and C.	**20**	**CO 4**