Reg. No.																

Question Paper Code	14310

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2026

Eighth Semester

Electrical and Electronics Engineering

20EEEL805 - AUTOMOTIVE ELECTRICAL AND ELECTRONICS SYSTEMS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (i) (MCQ)
(16 × 1 = 16 Marks)
Answer ALL Questions

		Marks	K – Level	CO
1.	Dimensioning of wires refers to a) Selection of proper wire size b) Coloring of wires c) Length measurement d) Insulation type	1	K2	CO1
2.	A common source of interference in vehicles is a) Tyres b) Ignition system c) Seats d) Fuel tank	1	K1	CO1
3.	A battery that fails load test should be a) Used normally b) Ignored c) Replaced d) Painted	1	K3	CO1
4.	If alternator fails, the vehicle will a) Run normally b) Stop immediately c) Depend only on battery d) Increase speed	1	K1	CO2
5.	If voltage regulator fails, output voltage may a) Remain constant b) Become zero c) Be fixed d) Increase or decrease abnormally	1	K2	CO2
6.	If clicking sound is heard but engine does not start, cause may be a) Good battery b) Faulty starter motor c) High speed d) Low resistance	1	K3	CO2
7.	Ignition system is used in a) Diesel engines b) Petrol engines c) Electric vehicles d) Hybrid only	1	K2	CO3
8.	In direct ignition, each cylinder has a) One battery b) One coil c) One alternator d) One fuse	1	K1	CO3
9.	Instrument cluster displays a) Fuel level b) Speed c) Warning signals d) All of these	1	K3	CO3
10.	Common semiconductor material is a) Copper b) Silicon c) Aluminum d) Iron	1	K1	CO4
11.	If ECU fails, the vehicle will a) Run normally b) Malfunction c) Increase speed d) Reduce voltage	1	K3	CO4

12.	Gyroscopes are _____		1	K2	CO4
	a) Inertial sensors	b) Pressure sensors			
	c) Voltage sensors	d) Humidity sensors			
13.	OSI model has		1	K1	CO5
	a) 5 layers	b) 6 layers			
	c) 7 layers	d) 8 layers			
14.	Two wire interface is also called as _____		1	K3	CO5
	a) UART	b) SPI			
	c) I^2C	d) CAN			
15.	Ring topology failure affects		1	K2	CO5
	a) One node only	b) Entire network			
	c) Voltage only	d) Current only			
16.	If LIN bus fails,		1	K3	CO5
	a) Engine stops	b) Minor systems affected			
	c) Entire vehicle stops	d) Battery fails			

PART - A (ii) (Short Answer Questions)
(8 × 3 = 24 Marks)
Answer ALL Questions

17.	Prepare circuit diagram using switch, fuse, battery, electrical load in proper sequence electrical symbols.	3	K3	CO1
18.	Identify the methods of battery ratings.	3	K3	CO1
19.	Apply the concept of self-excitation in alternator.	3	K3	CO2
20.	Identify any four remedial measures for faulty starting system with justifications.	3	K3	CO2
21.	Compare conventional and electronic ignition system.	3	K4	CO3
22.	Select the functions of Exhaust gas oxygen sensor.	3	K3	CO4
23.	List the duty ratings of electrical machines.	3	K4	CO4
24.	Classify the network bus systems.	3	K4	CO5

PART - B (Descriptive Answer Questions)
(5 × 12 = 60 Marks)
Answer ALL Questions

25.	a)	Identify the factors used to determine proper wire size in automotive electrical circuits. Explain the construction of stranded wire and state advantages of stranded wire over solid wire.	12	K3	CO1
		OR			
	b)	Construct the lead acid battery with neat sketch and explain the working with charging and discharging equations.	12	K3	CO1
26.	a)	Utilize with neat diagram, explain the principle of operation of alternator. Describe the importance of voltage regulation in Alternator.	12	K3	CO2
		OR			
	b)	Make use of the sequence of operations during engine starting to discuss the working of a starting system in an automobile**.**	12	K3	CO2
27.	a)	Make use of block diagram, explain the working of computer-controlled ignition system.	12	K3	CO3
		OR			
	b)	Apply the automatic head light dimming in automotives and explain its important components.	12	K3	CO3

28.	a)	Analyze the principle of sensors to describe the working of position, speed and acceleration sensors, used in automotive applications.	*12*	*K4*	*CO4*
		OR			
	b)	Compare and contrast the electromechanical actuators and fluid mechanical actuators with neat explanation.	*12*	*K4*	*CO4*
29.	a)	Classify the various layers of OSI reference model and explain the functions of each layer.	*12*	*K4*	*CO5*
		OR			
	b)	Analyze the basic principles of networking, including network topology and network organization.	*12*	*K4*	*CO5*