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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: II - THEORY EXAMINATION (2025- 2026)

Subject: Automotive Engineering

Time: 2 Hours

Max. Marks: 50

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

15

1. Attempt all parts:-

(1.1) What is an automobile? (CO1,K1)

1

- (a) Stationary machine
- (b) Self-propelled vehicle
- (c) Electrical device
- (d) Industrial tool

(1.2) The main function of an I.C. engine is to convert:(CO2, K1)

1

- (a) Heat energy into mechanical energy
- (b) Electrical energy into heat
- (c) Mechanical energy into heat
- (d) Chemical energy into electrical energy

(1.3) BLDC stands for:(CO3,K1)

1

- (a) Brushless DC Motor
- (b) Basic DC Motor
- (c) Battery DC Motor
- (d) Balanced DC Motor

(1.4)	Sensors are used to:(CO4,K2)	1
(a)	Perform mechanical work	
(b)	Detect physical parameters	
(c)	Increase speed	
(d)	Store energy	
(1.5)	Actuators are controlled by:(CO4,K2)	1
(a)	Driver	
(b)	ECU	
(c)	Battery	
(d)	Radiator	
2. Attempt all parts:-		
(2.1)	Write any two uses of automobiles.(CO1,K2)	2
(2.2)	Define inline engine configuration with example.(CO2, K2)	2
(2.3)	What is regenerative braking?(CO3,K2)	2
(2.4)	Define hybrid powertrain.(CO3,K2)	2
(2.5)	What is ADAS?(CO4,K2)	2
<u>SECTION-B</u>		15
3. Answer any <u>three</u> of the following:-		
(3.1)	Describe the braking system with its types and also explain the hydraulic braking system with a neat sketch.(CO1,K2)	5
(3.2)	Describe the main components of an I.C. engine with diagram and their functions.(CO2, K2)	5
(3.3)	Describe the lubrication system and its methods with suitable diagram.(CO2, K2)	5
(3.4)	Explain main components of EV with diagram and their functions.(CO3,K2)	5
(3.5)	Explain 360-degree camera system with block diagram (CO4,K2)	5
<u>SECTION-C</u>		20
4. Answer any <u>five</u> of the following:-		
(4.1)	Classify automobiles based on purpose with examples in details.(CO1,K2)	4
(4.2)	Explain the function of the suspension system with its types and also explain any one type with a diagram.(CO1,K2)	4
(4.3)	Compare 2-stroke and 4-stroke engines with suitable diagram.(CO2, K2)	4
(4.4)	Explain the battery ignition system with a neat sketch.(CO2, K2)	4
(4.5)	Explain Lithium-ion battery with applications and advantages.(CO3,K2)	4
(4.6)	Explain series hybrid system with suitable diagram.(CO3,K2)	4
(4.7)	Explain automatic emergency braking with sketch.(CO4,K2)	4
(4.8)	Compare conventional vehicles with ADAS-equipped vehicles.(CO4,K2)	4