



Paper id: 250925

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Subject Code: KAU061

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BTECH
(SEM VI) THEORY EXAMINATION 2024-25
AUTOMOTIVE ELECTRICAL AND ELECTRONICS

TIME: 3 HRS**M.MARKS: 100****Note:** Attempt all Sections. In case of any missing data; choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 10 = 20**

Q No.	Question	CO	Level
a.	Explain the terms "ampere-hour (Ah)" and "C-rate" in relation to battery ratings.	1	K2
b.	State one of Kirchhoff's laws or apply it to a simple circuit.	1	K2
c.	What is the purpose of a voltage regulator, and give an example of where it might be used?	2	K2
d.	What is the main function of a cut-out relay in a circuit?	2	K2
e.	Explain the function of a Schmitt trigger and why it's called a "trigger."	3	K2
f.	Write the key component of Battery Ignition System	3	K2
g.	What are the two main types of memory in a typical electronic system?	4	K2
h.	What is one key advantage of FlexRay over CAN?	4	K2
i.	Explain the principle behind conductivity sensors used to measure the concentration of a solution.	5	K2
j.	What is the different between sensor and transducer?	5	K2

SECTION B**2. Attempt any three of the following:****10 x 3 = 30**

a.	Describe the purpose of a wiring harness in an automobile and Explain its main components.	1	K2
b.	Explain how a solenoid switch works with neat sketch diagram	2	K2
c.	Explain the basic function of a relay and describe two common types of relays, outlining their primary application.	3	K2
d.	Explain the purpose of an Automatic Air Conditioning (AAC) control unit in a vehicle, and describe its advantage over a manual air conditioning system	4	K3
e.	What do you mean by Radar technology explain in details?	5	K3

SECTION C**3. Attempt any one part of the following:****10 x 1 = 10**

a.	"Explain different types of connectors, including their functions and provide examples. Discuss how these connectors are used in various applications, highlighting the importance of selecting the right connector for a specific task. Support your answer with clear diagrams and illustrations	1	K3
b.	Describe the principle of operation and construction of a lead-acid battery. Discuss the chemical reactions involved during discharge and charging. What are the advantages and disadvantages of using a lead-acid battery?	1	K2

4. Attempt any one part of the following:**10 x 1 = 10**

a.	Describe the construction and working principle of a starter motor, including the different types of starter drive mechanisms.	2	K2
b.	Describe the construction, operating principle, advantages, and disadvantages of three-phase alternators. Highlight their applications and compare their suitability for different power generation and distribution scenarios	2	K3



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5. Attempt any one part of the following:

10 x 1 = 10

a.	Describe the principle of operation and advantages of a distributor-less ignition system, focusing on the Coil-on-Plug (COP) and waste-spark types. Compare and contrast the distributor-less system with a conventional distributor-based system.	3	K3
b.	Explain the working and construction of indicator lamp with the help of neat sketch diagram.	3	K2

6. Attempt any one part of the following:

10 x 1 = 10

a.	Explain the advantages and disadvantages of using a bus topology in a computer network. Discuss the types of networks where bus topology would be a suitable choice.	4	K2
b.	Explain the role and functions of the ABS, Steering Control Unit (SCU), and SRS control unit in a modern vehicle. Compare their operating principles, key components.	4	K3

7. Attempt any one part of the following:

10 x 1 = 10

a.	"Explain the purpose of a purge control system in a LIDAR sensor. Describe at least two methods of purging a LIDAR sensor, including their advantages and disadvantages.	5	K2
b.	Explain the working principles of vibration sensors. Discuss the different types of vibration sensors and their respective applications, highlighting the advantages and disadvantages of each.	5	K5

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