Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Engineering

End Sem (Even) Examination May-2022

AU3CO09 Automotive Electricals & Electronics

Programme: B.Tech. Branch/Specialisation: AU

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. On a top-terminal battery, the negative terminal post is: **1**
(a) Smaller than the positive terminal post
(b) The same size as the positive terminal post
(c) Larger than the positive terminal post
(d) None of these

ii. The number of amperes that the battery can deliver for 30 seconds at 0°F [-18°C] without cell voltages falling below 7.2 volts is called: **1**
(a) Charging rate (b) Reserve capacity
(c) Cold-cranking rate (d) Ampere-hour rate

iii. To start the engine, the starting motor rotates the crankshaft about: **1**
(a) 3000-rpm (b) 45,000-rpm
(c) 50-rpm (d) 200-rpm

iv. The alternator produces an alternating current in its: **1**
(a) Rotor field coil (b) Stator winding
(c) Regulator (d) Load circuit

v. In a head lamp the metal shield is placed below the: **1**
(a) Dipper beam (b) Main beam
(c) Both (a) and (b) (d) None of these

vi. The type of reflector used for automobile head lamp is: **1**
(a) Spherical (b) Parabolic
(c) Hyperbolic (d) None of these

vii. MAF sensor is used for determining: **1**
(a) Mass of air (b) Temperature of air
(c) Pressure of air (d) All of these

viii. MAP sensor determines the absolute pressure of: **1**
(a) Fuel tank (b) Manifold (c) Engine (d) Crankcase

P.T.O.

ix. In the electronic ignition system, the primary circuit is opened and closed by: **1**
(a) Solenoid (b) Contact points
(c) Mechanical switch (d) Electronic switch

x. In an MPFI system the fuel injection takes place: **1**
(a) In manifold (b) Near inlet valve
(c) In throttle body (d) None of these

Q.2 i. Define ampere-hour rating for a battery. **2**

ii. Write any three steps of battery maintenance. **3**

iii. Briefly describe the construction of a lead-acid battery with the help of a neat sketch. **5**

OR iv. Explain briefly any two types of test carried out to determine the condition of a battery. **5**

Q.3 i. Mention any two function of charging system. **2**

ii. Describe the construction and working of a starting motor with a neat sketch. **8**

OR iii. With the help of diagram explain briefly about the working principle and construction of an alternator. **8**

Q.4 i. What is headlight aiming? **3**

ii. With the help of neat sketch explain construction and working of electric horn. **7**

OR iii. Draw neatly the electrical fuel gauge circuit and explain its construction. **7**

Q.5 i. Brief about the function of lambda sensor and detonation sensor. **4**

ii. What is an ABS? With neat diagram explain working of four channel ABS. **6**

OR iii. With neat sketch explain construction and working of a crank position sensor. **6**

Q.6 Write short note on any two:

i. Throttle body injection **5**

ii. CDI **5**

iii. Electronic fuel injection **5**

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Marking Scheme
AU3CO09 Automotive Electricals & Electronics

Q.1	i.	On a top-terminal battery, the negative terminal post is: (a) Smaller than the positive terminal post		**1**
	ii.	The number of amperes that the battery can deliver for 30 seconds at 0°F [-18°C] without cell voltages falling below 7.2 volts is called: (c) Cold-cranking rate		**1**
	iii.	To start the engine, the starting motor rotates the crankshaft about: (d) 200-rpm		**1**
	iv.	The alternator produces an alternating current in its: (b) Stator winding		**1**
	v.	In a head lamp the metal shield is placed below the: (a) Dipper beam		**1**
	vi.	The type of reflector used for automobile head lamp is: (b) Parabolic		**1**
	vii.	MAF sensor is used for determining: (a) Mass of air		**1**
	viii.	MAP sensor determines the absolute pressure of: (b) Manifold		**1**
	ix.	In the electronic ignition system, the primary circuit is opened and closed by: (d) Electronic switch		**1**
	x.	In an MPFI system the fuel injection takes place: (b) Near inlet valve		**1**
Q.2	i.	Definition of ampere-hour rating for a battery.		**2**
	ii.	Any three steps of battery maintenance 1 mark for each step	(1 mark * 3)	**3**
	iii.	Construction of a lead-acid battery Diagram	3 marks 2 marks	**5**
OR	iv.	Any two types of test carried out to determine the condition of a battery 2.5 marks for each test	(2.5 marks *2)	**5**
Q.3	i.	Any two function of charging system 1 mark for each function	(1 mark * 2)	**2**
	ii.	Construction Diagram Working of a starting motor	2.5 marks 3 marks 2.5 marks	**8**
OR	iii.	Construction Diagram Working principle and construction of an alternator	2.5 marks 3 marks 2.5 marks	**8**
Q.4	i.	Headlight aiming		**3**
	ii.	Construction Diagram Working of electric horn	2 marks 3 marks 2 marks	**7**
OR	iii.	Electrical fuel gauge circuit diagram Construction	4 marks 3 marks	**7**
Q.5	i.	Function of lambda sensor Detonation sensor	2 marks 2 marks	**4**
	ii.	ABS Diagram Working of four channel ABS	2 marks 2 marks 2 marks	**6**
OR	iii.	Construction Diagram Working of a crank position sensor	2 marks 2 marks 2 marks	**6**
Q.6		Write short note on any two:		
	i.	Throttle body injection Diagram Working	 2 marks 3 marks	**5**
	ii.	CDI Diagram Working	 2 marks 3 marks	**5**
	iii.	Electronic fuel injection Diagram Working	 2 marks 3 marks	**5**

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