

Q.P. Code: 13514

(3 Hours)

(Total Marks: 80)

N.B: 1. Question No. 1 is compulsory.

2. Attempt any Three from remaining questions.

3. Draw neat sketches wherever necessary.

- Q.1 Write comparison (differentiate) between the following: 20
- Lead acid battery and Alkaline battery
  - Dynamo and Alternator
  - Reserve capacity and Cold Cranking Ampere capacity with its graph
  - Coil ignition system and magneto Ignition system
- Q.2 a) Define Torque terms used in relation with Engine and Starting system. Also classify Starter motor drives and with neat sketch explain the working of any one type of Starter motor drive. 10
- b) Describe in detail CDI and DIS with proper diagrams and differentiate between the two. 10
- Q.3 a) Describe the working of PEM and Alkaline fuel cells in brief with suitable sketches and reactions. 10
- b) Discuss with suitable sketches the functioning of any three types of Automotive Sensors. 10
- Q.4 a) Discuss with suitable sketches the functioning of any three types of Automotive Actuators. 10
- b) Explain the various Cables, their sizes, color codes and wiring harness systems used in Automotive Vehicles. 10
- Q.5 a) Describe the working of any two Intelligent Vehicle systems with suitable schematic diagrams and also mention their applications. 10
- b) What is the need of 42 volt automotive electrical system? Explain transition from 12 volt to 42 volt system with its advantages and disadvantages. 10
- Q.6 Write short-notes on any four of the following: 20
- Automotive embedded system
  - Sealed beam head lamp construction
  - Power operated windows
  - Air management system
  - Rectification from AC to DC

BE [AUTO] Sem VIII

CBQS

first half 2017

Sub: VD

Date: 18/5/17

Q.P. Code :13522

Time: 3 Hrs

Max Marks: 80

NB:

1. Question No 1 is compulsory
  2. Answer any three questions from remaining
  3. Assume suitable data if required
  4. Draw sketches to justify your answer
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1. (a) Derive an equation for doubly conjugate point. 10  
(b) Calculate the doubly conjugate point for the following data 10  
M= 1000 Kg  
M<sub>s</sub>=727 Kg  
Wheel base= 2.286 m.  
Front/rear distribution= 40/60  
K<sub>1</sub> front = 21.7 KN/m  
K<sub>2</sub> rear = 25 KN/m
  2. (a) Derive an expression for steady state yaw response to steering input. 10  
(b) Explain wheel Wobble and Wheel shimmy. 10
  3. (a) Explain the cornering dynamics of pneumatic tires. 10  
(b) Explain over- steering and Under-steering. 10
  4. (a) Derive an expression to prove  $C_{21}=C_{12}$  with equalizing suspension system. 10  
(b) Explain the advantages of front wheel drive with suitable vector diagram. 10
  5. Write short notes on any four of the following. 10
    - (a) Road resistance.
    - (b) Anti-Roll Bar
    - (c) Tyre Vibration
    - (d) Conicity and Ply steer.
    - (e) Aerodynamic lift.



BE AUTO SEM VIII (3 Hours) *credit based VM* [Total Marks: 80] *May 2017*

- N.B: (1) Question no 1 is compulsory.  
 (2) Attempt any THREE out of remaining FIVE questions.  
 (3) Figures to the right indicate full marks.  
 (4) Illustrate your answers with sketches wherever necessary.

- Q.1 Attempt any FOUR from following SIX questions. 20
- What is the need of engine's cylinder head valves and valve related parts in regular operation of engine? 05
  - Explain the five things that should be done prior to aligning the headlight. 05
  - What is the need of deploying the security and anti theft devices in automobile? 05
  - Explain the working operation of Power mirror system. 05
  - What is double declutching? State its effect on vehicle performance if any with suitable reasoning. 05
  - During the normal running of car on the road surface alternator belt slips from pulley, what will be its effect on battery charging? Explain in detail. 05
- Q.2
- Explain the complete installation procedure in detail for camshaft and its bearings. 10
  - Which type of automotive battery you will suggest for your vehicle? Support your answer with proper justification. 04
  - While diagnosing the seat belt that will not buckle: Technician A looks inside the buckle: Technician A looks inside the buckle and disassembles it and moves any obstructions that may prevent it from latching onto the belt latch. Technician B replaces the buckle if the obstruction cannot be easily removed from the buckle. What is correct? Explain it with justification. 06
- Q.3
- Explain the working of rear window defroster 06
  - What is the difference between active and passive restraint systems? Explain importance of having restrain system in automobile. 06
  - While discussing the power flow through five speed transmission while it is in first gear. Technician A says that power enters on input shaft, which rotates the countershaft that is engaged with first gear. Technician B says that first gear synchronizer engages with clutching teeth of first gear and locks the gear to the main shaft, allowing power to flow from input gear through the countershaft and to the first gear and the main shaft. Who is correct? Justify your answer. 06
  - Explain the need of effective suspension system 02
- Q.4
- Explain fuel injection system diagnosis and service 10
  - Explain trouble diagnosis of final drive. 10
- Q.5
- Explain Power steering diagnosis and service. 10
  - Explain various clutch problems diagnosis and service. 10
- Q.6 Attempt any FOUR from following SIX questions. 20
- How the failure of Cooling system will affect the vehicle performance? 05
  - Explain the need of carrying out starting system diagnosis and service 05
  - What is the need of having air bag system? 05
  - Explain the operation of Power Lock system. 05
  - Explain the various U Joint problems. 05
  - Explain the brake calliper inspection procedure. 05

BE(AUTO) SEM VIII CBSGS VS May 2017 Q.P. Code :17145

Dt - 30/5/17

(3 Hours)

Total Marks: - 80

Please check whether you have got the right question paper.

- N.B:
- (1) Question no.1 is compulsory.
  - (2) Attempt any three out of remaining five questions.
  - (3) Figures to the right indicate full marks.
  - (4) Illustrate your answers with sketches wherever necessary.

- Q.1** Answer any four of the following:
- a Explain the causes of accidents for all types of vehicles. 05
  - b Explain the significance of head restraint position. 05
  - c Explain the application of any two software used in accident reconstruction analysis. 05
  - d Explain how accident data is interpreted? 05
  - e Explain injury tolerance limits with an example. 05
- Q.2**
- a Explain the Euro-NCAP test procedure for pedestrian protection. 10
  - b Compare quasistatic seat test with hydge sled test. 10
- Q.3**
- a Explain the main steps in the reverse projection photogrammetry process. 10
  - b Explain the significance of occupant simulation and biomechanics. 10
- Q.4**
- a Explain the design requirements for frontal collision. 10
  - b Explain in detail the working of antilock braking system. How wheel slip is calculated? 10
- Q.5**
- a Explain any one recent innovation in automotive safety system. 10
  - b Explain any five types of illustrative errors. 10
- Q.6**
- a Explain in detail the four aspects of universal design. 10
  - b Explain key issues of vehicle safety in India. Support your answer with a case study. 10