Ref. No.: Ex/PG/AuE/PC/T/112/2025

M.E. Automobile Engineering First Year First Semester - 2025

Subject: Automotive Chassis and Transmission

Time: 3 hrs **Full Marks: 100**

Instructions: Answer any *five* questions etc.

1. (a) State the basic function of the suspension system. (b) What are the basic requirements of a good suspension system? (c) Name the various types of shock absorbers used in suspension system of automobiles. (d) What are the functions of a shock absorbers? (e) Describe the telescopic shock absorbers with a neat sketch. (f) Explain rigid axle and Independent suspension system

[3+3+2+2+5+5]

2. (a) What is Chassis? (b) What are the different components of Chassis? (c) Write the functions of different parts of chassis. (d) Mention the defects found in Chassis (e) What do you understand by unitized chassis and what are its advantages over a conventional chassis?

[2+4+5+4+5]

3. (a) Explain the working and performance of a single plate clutch with a suitable sketch. (b) What is the purpose of pressure plate and clutch disc. (c) Explain the working principle of (i) Multiple Clutch, (ii) Cone Clutch, (iii) Semi- centrifugal Clutch.

[7+4+9]

4. (a) Explain the working of a five speed sliding mesh gear box with the help of a diagram. (b) What is an epi-cyclic gear box and mention its application? (c) Explain a Torque Converter. (d) How the torque converter can be used efficiently for higher output speeds?

[8+5+3+4]

5. (a) State and Explain Ackermann steering mechanism with a neat sketch. (b) What is toe-in and toe-out? What is the initial toe-in that is provided and why? (c) What is the necessity of power steering system? (d) What is cornering force and self-righting torque? (e) Define steering ratio

[8+4+2+4+2]

6. Explain the following: (any five) **[4x5 = 20]**

(i) Clutch point

(ii) Automatic transmission

(iii) Live axle

(iv) Sub-frame

(v) Double wishbone suspension system

(vi) Synchromesh Drive

(vii) Electro-magnetic Clutch