



### End Term Examination (December 2019)

**School:** School of Engineering

**Program:** M-Tech- APE

**Course:** Chassis and Powertrain Design

**Course Code:** APE504

**Semester:** I

**Max Marks:** 40

**Duration (mins) :** 90

Note:1) Answers to the questions should be written on the same sheet.

2) Neat Diagrams/ Sketches must be drawn wherever necessary.

3) Answer any 5 questions.

4) Each question carries 8 marks.

**NAME:**

**URN:**

**Signature:**

Q1. Refer the Graph FigNo.1 below and explain it. Explain the aspects that make the current Automatic Transmissions very popular.

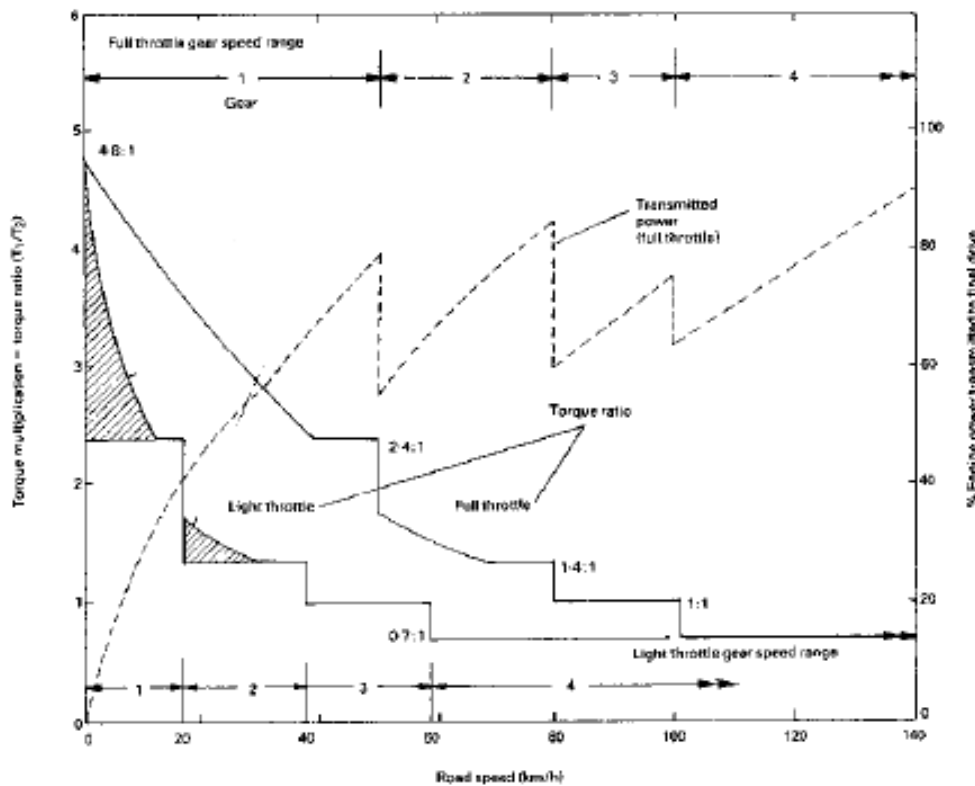


Fig No. 1: Torque multiplication and transmitted power performance relative to vehicle speed for a typical four speed automatic transmission

Q2. Identify the following parts in the Fig.no.2 below and explain how the 1st Gear ratio is achieved in this 4Speed Automatic Gear Transmission.

1. Drive Clutch (DC)
2. High & Reverse Clutch (H&R)C
3. 2nd Gear Band Brake 2GBB
4. Forward Clutch (FC)
5. Overdrive Band Brake (ODB)
6. Low and Reverse Band Brake (L&R) B
7. One way Clutch (OWC).

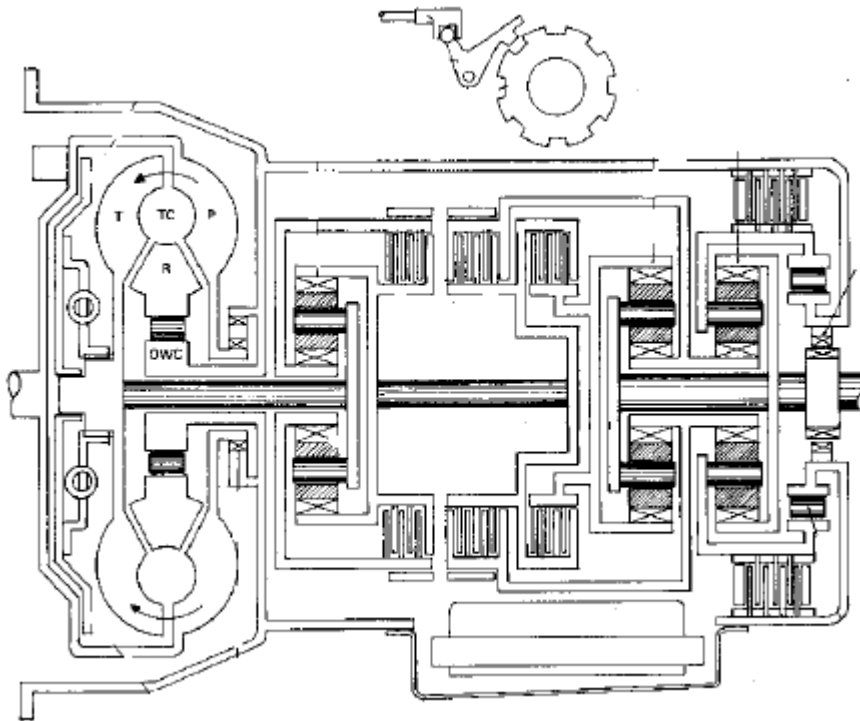


Fig.no.2

Q3. Explain the functioning of the CVT with the Diagram in Fig.No.3 below.

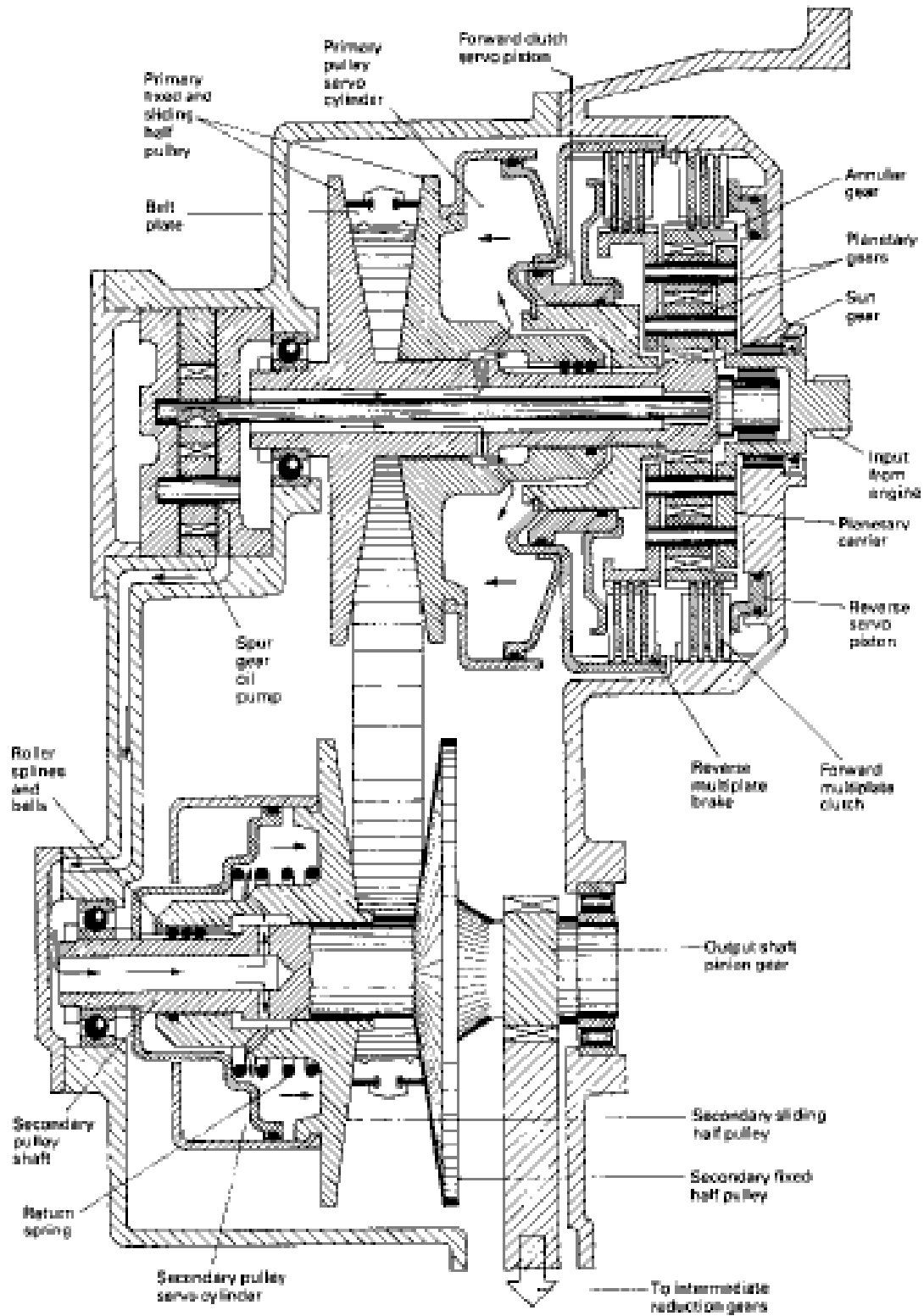
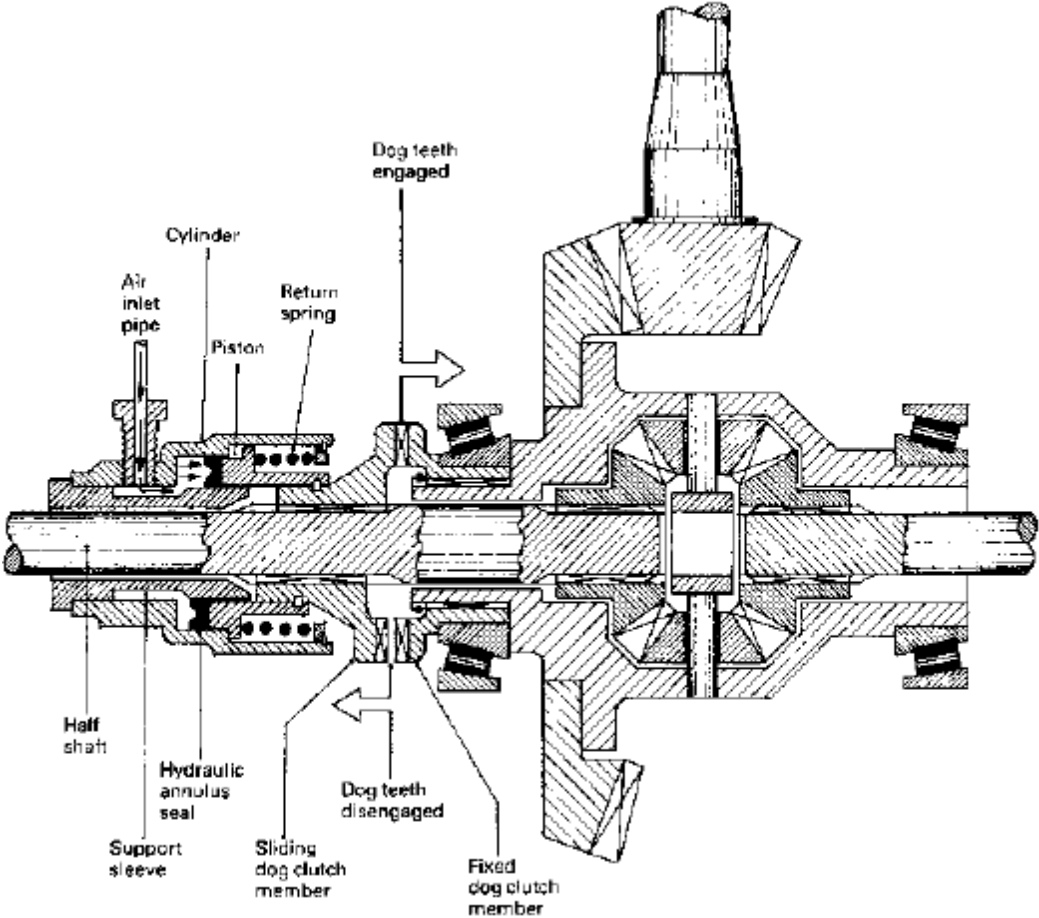


Fig.No.3

Q4. Explain the functioning of Differential Lock System in Fig.No.4. Why such a system is used and which type of Passenger cars use these systems?



) Differential lock mechanism with air control

Fig.No.4

Q5. Explain elaborately the phenomenon understeer and oversteer with diagrams in Fig.No.5 below. Explain the steering parameters affecting these?

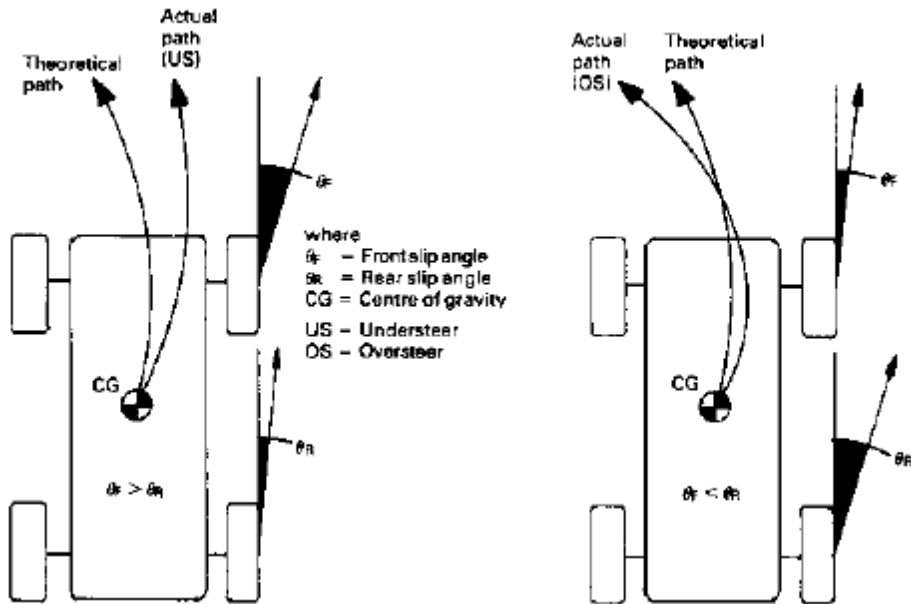


Fig.No.5

Q.6 Explain the operation of the ABS system with the Fig.No.6 given below.

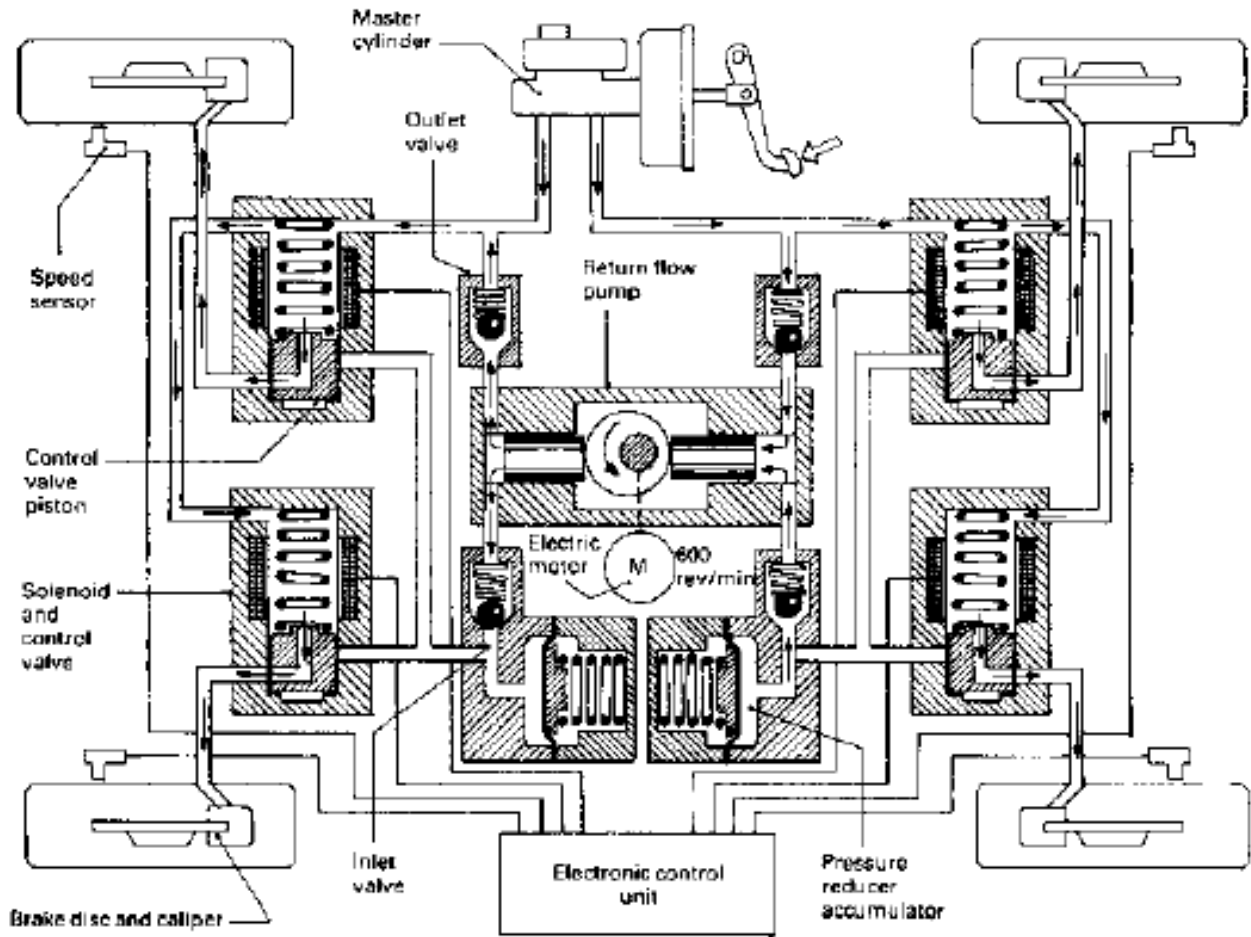


Fig.No.6

Invigilators Name and Signature:

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