

**337711(37)**

**B. E. (Seventh Semester) Examination, April-May/  
Nov.-Dec. 2020**

**(Old Scheme)**

**(Mech. Engg. Branch)**

**AUTOMOBILE ENGINEERING**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Attempt all questions. Part (a) of each question is compulsory carry 2 marks. Attempt any one part from (b) and (c) carry 14 marks.***

**Unit-I**

1. (a) Define Leaf Spring. 2
- (b) Draw a neat sketch of a hydraulic shock absorber and explain its construction and working. 14

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- (c) Explain briefly the various types of chassis construction with the help of suitable diagrams. Make a list of various components mounted on the chassis. 14

### Unit-II

2. (a) Define Multi plate centrifugal clutch. 2
- (b) What is the function of clutch? Derive expression for effective mean radius and torque transmitted in case of single plate clutch assuming :
- (i) Uniform pressure
  - (ii) Uniform wear 14
- (c) A multiple plate clutch design for a motor bike whose engine develops maximum torque of 160 N-m at 400 RPM. The external radius of clutch facing is limited to 120 mm and the internal radius of clutch may be assumed to be 0.7 times the external radius. The maximum intensity of pressure may be taken as  $90 \text{ kN/m}^2$  and  $p = 0.4$ . Calculate the number of plates. 14

### Unit-III

3. (a) Define Sliding mesh Gear box. 2

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- (b) With the help of neat sketch explain construction and working of three phase torque converter. 14
- (c) What is epicyclic gear box? Describe its principle with neat sketch. 14

### Unit-IV

4. (a) Explain Universal Joint. 2
- (b) Explain hydraulic brakes and define master cylinder with neat sketch. 14
- (c) Discuss in detail different method of supporting live rear axle drive and also advantages and disadvantages of each. 14

### Unit-V

5. (a) Define Steering gears. 2
- (b) What is Perfect Steering? Derive expression for the same. 14
- (c) Discuss in detail ackermann steering mechanism. 14