

(2)

Roll No.....

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Printed Pages : 3

BT-7 /D-12
AUTOMOBILE ENGINEERING
Paper--ME-401 E

Time allowed : 3 hours] [Maximum marks : 100

Note : Attempt any five questions. Each question carries equal marks.

1. (i) Define an automobile. What are main components of an automobile ? Describe all of them briefly. 10
- (ii) Describe in detail firing order, power balancing, power overlap and power flow charts related with IC Engines. 10
2. (i) What is the function and types of clutches ? Discuss various factors affecting the torque transmission in these clutches. 10
- (ii) With the help of suitable diagram, describe the constructional features of a diaphragm spring type clutch. Discuss in brief the constructional features of a clutch plate. Also explain clearly the function of each major component of the clutch plate. 10

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3. (a) Explain the construction, working and application of Torque Converter employed in modern vehicles. 10
- (b) Describe briefly various types of gear selector mechanism used in automobile. Explain clearly how it is made sure in gear box that at no time two gears are engaged simultaneously. Illustrate your answer by means of neat sketch of an interlocking device. 10
4. (i) What is the necessity of a differential in automobile ? Discuss briefly the construction and operation of the differential. 10
- (ii) Explain the construction, working and application of Hotchkiss Drive with torque reaction member employed in vehicles. 10
5. (i) What is the purpose of independent suspension ? Explain at least one method each to achieve the same in front and rear axles of cars. What are the advantages of independent suspension over the rigid axle suspension ? 10
- (ii) Explain the function and application of torsion bar and stabilizer bar. Explain clearly how it performs the same in actual practice. 10

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6. (i) Discuss various factors of wheel alignment and explain the terms camber, caster, steering axis inclination and toe-in/out. What are effects of each on the steering characteristics of vehicle?
10
- (ii) Define cornering force. What is the effect of slip angle, inflation pressure and tyre load on cornering force ? What is self-righting torque.
10
7. (i) Discuss the various functions performed by an automobile tyre. Draw cross-section of an automobile tyre and show on it various constructional features. 10
- (ii) Explain various considerations for design of tyre treads. Also discuss in detail various factors affecting tyre life. <http://www.kuonline.in> 10
8. (i) Draw a simple diagram to show the layout of a hydraulically operated four wheel brake system and explain its working in detail. 10
- (b) Briefly describe construction and working of drum brakes. Compare them with the disc type brakes. 10