

(4)

8. (a) Explain clearly the requirement of automobile brakes. Discuss various factors influencing braking effect. 10
- (b) Briefly describe construction and working of disc brakes. Compare them with the conventional drum type brakes. 10

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AUTOMOBILE ENGINEERING

Paper-ME-401-E

Time allowed : 3 hours] [Maximum marks : 100

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

1. (a) Define an automobile. What are main components of an automobile ? Describe all of them briefly. 10
- (b) Describe in detail multi-point fuel injection system and microprocessor based fuel supply systems in modern IC engines. 10
2. (a) What is the function and types of clutches ? Discuss various factors affecting the torque transmission in these clutches. 10
- (b) With the help of suitable diagram, describe the constructional features of a helical 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) What is the necessity of transmission in the vehicle ? Explain clearly. Also describe the working of synchromesh gear box with the help of a sketch. 10
- (b) Describe briefly various types of gear selector mechanism used in automobile. Explain clearly how it is made sure in gear box that no time two gears are engaged simultaneously. 10
4. (a) What is the necessity of a differential in an automobile ? Discuss briefly the construction and operation of the differential. 10
- (b) Explain with the help of neat diagram the construction of propeller shaft, constant velocity joint or universal joint used in automobiles. 10
5. (a) What are the objectives of vehicle suspension ? Differentiate clearly between the function of a spring and a shock absorber. Explain the construction and working of a telescopic type of shock absorber with the help of neat diagram. 10

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(3)

- (b) Explain the function and application of torsion bar and stabilizer bar. Explain clearly how it performs the same in actual practice. 10
6. (a) 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
- (b) Discuss and explain clearly a steering linkage for a vehicle with independent suspension. 10
7. (a) State the various functions performed by an automobile tyre. Discuss the properties expected in the same. Draw cross-section of an automobile tyre and show on it various constructional features. 10
- (b) Discuss different tyre-car carcass types and materials used for them. Explain clearly the radial and bias-ply type carcass tyres. 10

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