



17614

21718

3 Hours / 100 Marks

Seat No.

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- Instructions :** (1) *All questions are compulsory.*
(2) *Illustrate your answers with neat sketches wherever necessary.*
(3) *Figures to the **right** indicate **full** marks.*
(4) *Assume suitable data, if **necessary**.*

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| 1. A) Attempt any three : | 12 |
| a) State the various types of vehicle body. | |
| b) Draw the layout of chassis and enlist components. | |
| c) Explain Toe-in and Toe-out with neat sketch. | |
| d) State the various requirements at clutch. | |
| B) Attempt any one : | 6 |
| a) Explain in detail aerodynamics shape at body. | |
| b) Explain construction and working of epicyclic gear box. | |
| 2. Attempt any four : | 16 |
| a) Explain construction and working of wishbone type suspension with neat sketch. | |
| b) Explain with neat sketch of single plate clutch. | |
| c) Explain with neat sketch steering geometry. | |
| d) Explain pre-stressing and protective coating of leaf spring. | |
| e) Draw and name the types of locators for different types of surfaces and shapes. | |
| 3. Attempt any four : | 16 |
| a) Explain with neat sketch differential. | |
| b) Explain construction and working of telescopic shock absorbers. | |
| c) Explain in detail semi-floating axle. | |
| d) Explain forming and welding processes in car body manufacturing. | |
| e) Write design process for a simple fixture. | |

P.T.O.



4. A) Attempt **any three** of the following : **12**
- a) Compare disc brake and drum brake.
 - b) Give classification of suspension system.
 - c) Explain the features of angle plate jig.
 - d) Explain the construction and working of MCP besson suspension system.
- B) Attempt **any one** of the following : **6**
- a) Explain forging and heat treatment processes in manufacturing of connecting rod with suitable sketches.
 - b) Explain construction and working of power brake.
5. Attempt **any four** : **16**
- a) Explain construction and working of rigid axle.
 - b) Explain construction and working of constant mesh gear box.
 - c) Explain design process for simple jig.
 - d) Explain heat treatment and machining process of cylinder block.
 - e) Give classification of automobile vehicles.
 - f) State the material requirements for the leaf spring.
6. Attempt **any four** : **16**
- a) Explain design consideration for jig and fixture.
 - b) Explain any two manufacturing processes used for production of crankshaft.
 - c) Explain construction and working of rack and pinion steering gear system.
 - d) Write down design procedure for simple fixture used in milling.
 - e) Explain the purpose of universal joints and sliding joints in propeller shaft.
 - f) Explain 6 : 2 :1 principle of jig design.
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