

17614

21415

3 Hours / 100 Marks

Seat No.

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- Instructions :** (1) All Questions are *compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.

Marks

1. [A] Attempt any THREE :

12

- (a) Enlist the main requirements of clutch.
- (b) Define castor and camber with neat sketch.
- (c) Differentiate between framed and frameless vehicles.
- (d) Enlist various types of vehicle layouts.

[B] Attempt any ONE :

6

- (a) Define aerodynamics ? Why aerodynamic aspects are considered while designing the body of vehicle ?
- (b) With neat sketch explain working of overdrive and its advantages.

2. Attempt any FOUR :

16

- (a) Explain the purpose of universal joints and sliding joints in propeller shaft.
- (b) Define the term 'Power brakes'. Enlist types of power brakes and their salient features.
- (c) What is the necessity of suspension system in Automobile ?
- (d) Explain Forming and Welding processes in car body manufacturing.
- (e) State general principles of Jig and Fixture design.
- (f) Write down design procedure for simple fixtures used in milling.

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3. **Attempt any FOUR :** 16
- (a) Explain types of stub axle with neat sketch.
 - (b) Explain with neat sketch of rack and pinion type steering gearbox used in automobile.
 - (c) With neat sketch explain the working of telescopic shock absorber.
 - (d) Explain any two manufacturing processes used for production of crank shaft.
 - (e) State the application of different types of drilling jigs.
4. **[A] Attempt any THREE of the following :** 12
- (a) Explain with neat sketch working of constant mesh gear box.
 - (b) Compare between disc brake and drum brake (any four points).
 - (c) With neat sketch explain the working Mc-pherson type suspension system.
 - (d) Explain bending and pre-stressing processes in manufacturing of leaf spring.
- [B] Attempt any ONE of the following :** 6
- (a) What are the various types of locators ? Explain any two type with neat sketch.
 - (b) Explain forging and heat treatment processes in manufacturing of connecting rod.
5. **Attempt any FOUR of the following :** 16
- (a) Explain construction and working of diaphragm spring type clutch.
 - (b) State advantages of Hydraulic brakes and pneumatic brakes.
 - (c) Explain construction & working of Torsion-Bar suspension.
 - (d) What is dynamic balancing for crank shaft ? State its applications.
 - (e) Write down special clamping devices used in design of milling fixture.
 - (f) Explain process of painting and finishing in car body manufacturing.
6. **Attempt any FOUR of the following :** 16
- (a) Write design process for a simple fixture.
 - (b) Describe construction and working of rigid axle.
 - (c) Explain with neat sketch pneumatic / air braking system.
 - (d) Explain construction and working of propeller shaft.
 - (e) Write down the design procedure for a simple fixture.
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