



# 17614

11819

**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**.*
  - (5) *Use of Non-programmable Electronic Pocket Calculator is **permissible**.*
  - (6) *Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.*

**Marks**

1. A) Attempt **any three** : **12**
  - a) Explain the necessity of a clutch.
  - b) Draw neat labeled sketch of steering linkage.
  - c) State classification of automobiles.
  - d) Explain in brief importance of aerodynamics in automobiles.
  
- B) Attempt **any one** : **6**
  - a) Explain with neat sketch the layout of automobile with components and their function.
  - b) Draw neat sketch of a diaphragm clutch and explain its construction and working.
  
2. Attempt **any four** : **16**
  - a) Explain why synchromesh gearbox is preferred over constant mesh gearbox.
  - b) Explain with sketch construction of rack and pinion steering gear.
  - c) Explain the necessity of suspension.
  - d) Explain in brief various stages of car body manufacturing.
  - e) Sketch any 4 types of locating pins.
  - f) State any eight principles of Jig and fixture design.

**P.T.O.**

**3. Attempt any four :****16**

- a) What is over drive ? State advantages of over drive (any three).
- b) Define camber and caster.
- c) Explain why independent suspension is preferred over rigid axle suspension.
- d) State various stages of cylinder block manufacturing.
- e) Explain with neat sketch a box jig.

**4. A) Attempt any three :****12**

- a) Explain with sketch the necessity of a differential.
- b) Explain with neat sketch working of an electronic power steering.
- c) With neat sketch explain construction of McPherson suspension.
- d) Explain the heat treatment procedure of a connecting rod.

**B) Attempt any one :****6**

- a) Explain with neat sketch construction and working of a milling fixture.
- b) Explain the manufacturing procedure of crank shaft.

**5. Attempt any four :****16**

- a) State various functions of an axle.
- b) Differentiate between a drum and disc brake (any 4 points).
- c) Explain with neat sketch telescopic shock absorber.
- d) List and sequence the machines required for manufacturing of a cylinder block.
- e) Explain the necessity of a tenon and setting block in a fixture.
- f) Explain how leaf springs are manufactured.

**6. Attempt any four :****16**

- a) Differentiate between a jig and a fixture (any 4 points).
  - b) Explain with neat sketch construction and working of a trailing link type suspension.
  - c) State advantages and disadvantages of hydraulic brakes (any 4 points each).
  - d) Sketch and label propeller shaft.
  - e) Explain with sketch construction of a universal jig.
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