



17526

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**.
  - (6) **Use** of non-programmable Electronic Pocket Calculator is **permissible**.
  - (7) Mobile Phone, Pager and any other Electronic Communication devices are **not permissible** in Examination Hall.
  - (8) **Use** of steam tables, logarithmic, Mollier's chart is **permitted**.

MARKS

1. A) Attempt **any three** of the following : 12
- a) What is clutch ? State functions and classification of friction clutches.
  - b) State classification of automobile. List out any four manufactures of automobiles in India.
  - c) Justify aerodynamic shape of body.
  - d) Define following terms :
    - i) Camber
    - ii) Caster
    - iii) Toe in
    - iv) King pin inclination.
- B) Attempt **any one** of the following : 6
- a) Draw a layout of hybrid vehicle and explain its working. State its advantages.
  - b) Explain the working of transfer case with neat diagram and give its application.
2. Attempt **any four** of the following : 16
- a) Differentiate between conventional and unitary body.
  - b) Enumerate the various resistances that have to be overcome by an automobile moving on the road.

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- c) Compare between hydraulic braking system with pneumatic braking system.
- d) Describe with sketch air conditioning system of an automobile.
- e) Why air conditioning is necessary in an automobile ?
3. Attempt **any two** of the following : **16**
- a) Differentiate between disc brake and drum brake.
- b) Describe construction and working of Hooke's type universal joint and slip joint. Also state their necessity.
- c) Describe the working of multiplate dry clutch with diagram. State its applications.
4. A) Attempt **any three** of the following : **12**
- a) State the function of suspension system and classify suspension system.
- b) Describe the working of Mac-Pherson strut type suspension with neat sketch.
- c) Draw a typical wiring diagram of automobile and label it.
- d) Why wheel alignment and wheel balancing is necessary ?
- B) Attempt **any one** of the following : **6**
- a) State the need of steering system. Enlist various steering systems available in market.
- b) Now a days power steering is used in most of vehicle. Why ? State its advantages.
5. Attempt **any four** of the following : **16**
- a) Describe construction of lead acid battery with sketch.
- b) Describe with neat sketch working of telescopic shock absorber.
- c) State various factors affecting tyre life.
- d) Enlist various types of vehicle layouts and explain all wheel drive type.
- e) Describe colour coding used in automobile wiring system.
6. Attempt **any two** of the following : **16**
- a) Why it is necessary to charge automobile battery ? When trickle battery charging method is used ?
- b) Draw neat sketch of radial ply tyres and cross ply tyre and describe their construction.
- c) Compare battery and magneto ignition system.
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