17614

11920

3 Hours / 100 Marks Seat No. | | | | | | | | |

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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (a) Attempt any THREE of the following : **12**

(i) Give one application of following :

(a) Coil spring type single plate clutch

(b) Multiplate – wet type clutch

(c) Semifloating type rear axle

(d) Full floating type rear axle

(ii) State control systems used in automobiles and write their purpose.

(iii) Give classification of automobiles on the basis of :

(a) purpose / use

(b) location of engine and drive given

(iv) List four major components of automobile transmission system and write their location and function.

(b) Attempt any ONE of the following : **06**

(i) Draw a conventional layout of an automobile and label the major components. Write four relative merits of this layout over other types.

(ii) Draw a labelled sketch of constant mesh gear box and write its advantages and draw-backs over other types.

2. Attempt any FOUR of the following : **16**

(a) Differentiate between full floating and semi-floating type rear axle.

(b) Draw a layout of typical mechanical steering system and describe its working.

(c) Compare rigid axle suspension system with independent suspension system.

(d) State the processes involved in manufacturing of crankshaft with proper sequence.

(e) State any four types of locators with their use.

(f) Describe features of : (i) Tumble jig (ii) Universal jig.

3. Attempt any FOUR of the following : **16**

(a) What is overdrive ? Describe its working with schematic diagram.

(b) Describe with sketch construction of internally expanding type drum brakes.

(c) Differentiate between McPherson strut type suspension and Wishbone type suspension.

(d) Describe Heat treatment and Machining operations performed in manufacturing of cylinder block.

(e) State essentials of milling fixtures with their functions.

4. (a) Attempt any THREE of the following : **12**

(i) Describe working of epicyclic gear box with neat sketch.

(ii) What are the effects of incorrect steering geometry on vehicle performance ?

(iii) Sketch and describe working of rigid axle suspension system.

(iv) Describe painting procedure adopted in car body manufacturing.

(b) Attempt any ONE of the following : **06**

(i) Write a design process for a simple fixture.

(ii) Describe step by step manufacturing process of connecting rod.

5. Attempt any FOUR of the following : **16**

(a) Describe with sketch principle of working of differential.

(b) Compare hydraulic brakes with pneumatic brakes.

(c) Draw a sketch of telescopic shock absorber and describe its working.

(d) Describe procedure for dynamic balancing of crankshaft.

(e) What are the special clamping devices used in milling fixture ?

(f) Explain pre-stressing and protective coating operations for leaf spring manufacturing.

6. Attempt any FOUR of the following : **16**

(a) Give applications of following drilling jigs :

(i) Angle plate (ii) Box jig

(iii) Tumbling jig (iv) Universal jig

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(b) Describe with sketch construction of Wishbone type suspension.

(c) State types of steering gear boxes. Draw a neat labelled sketch of any one type of steering gear box.

(d) Draw a neat labelled sketch of diaphragm type single plate clutch in disengaged position. State one application of it.

(e) State general principles of Jig and Fixture design.
