

17453

15162

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) 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.
  - (7) Abbreviations used convey usual meaning.

**Marks**

**1. Answer any TEN :**

**10 × 2 = 20**

- (a) State various sources of farm power.
- (b) Give the classification of wind mills.
- (c) Define heat engine.
- (d) Enlist four strokes of an IC engine.
- (e) Define firing order.
- (f) State the classification of ignition systems in an IC engine.
- (g) State the uses of tractor on farm.
- (h) Enlist any four makes of tractor.
- (i) Explain the function of clutch in an automobile.
- (j) State the necessity of differential in a tractor.
- (k) Define steering geometry.
- (l) Draw a labelled diagram of a brake shoe ?
- (m) Enlist various equipments hitched to a tractor.
- (n) State the use of power take off shaft.

**2. Answer any FOUR :** **4 × 4 = 16**

- (a) Explain different components of bio-gas plant with a diagram.
- (b) Differentiate between diesel engine and petrol engine.
- (c) Draw a diagram of overhead cam valve mechanism. Label the different parts.
- (d) Explain the hit and miss system of governing.
- (e) Justify the need of air cleaning system in an IC engine.
- (f) Explain various factors affecting the decision of tractor selection.

**3. Answer any FOUR :** **4 × 4 = 16**

- (a) Differentiate between fixed drum and floating drum type bio-gas plant.
- (b) Explain the classification of internal combustion engines.
- (c) Draw actual valve timing diagram for a SI engine and show various valve positions on it.
- (d) Why is cooling of engines necessary ? Name various types of cooling systems.
- (e) Explain splash type lubrication system with a diagram.
- (f) Explain Ackerman steering mechanism.

**4. Answer any FOUR :** **4 × 4 = 16**

- (a) Explain working of two stroke cycle engine with a diagram.
- (b) Explain working of battery ignition system with a diagram.
- (c) What is DI system of fuel injection ? State its advantages.
- (d) Explain working of simple carburettor.
- (e) Draw a labelled diagram of sliding mesh gear box.
- (f) What is differential lock ? How is it useful in tractors ?

**5. Answer any FOUR :** **4 × 4 = 16**

- (a) Differentiate between flywheel and governor.
- (b) State the advantages of turbocharger in an IC engine.
- (c) State causes, remedies for any two faults in gears.
- (d) Explain working of single plate clutch system.
- (e) What is brake pedal free play ? How is it removed ?
- (f) Define position control and draft control in hydraulic system of tractors.

**6. Answer any FOUR :****4 × 4 = 16**

- (a) Draw a labelled diagram of an air filter. Explain its function.
  - (b) Differentiate between single plate and multiple plate clutch systems.
  - (c) Describe the working of rear axle in a tractor.
  - (d) Explain working of power steering.
  - (e) State the advantages of hydraulic system over mechanical system in tractors.
  - (f) Enlist various types of power take off systems in tractors.
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