17453

21415

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) Abbreviation used convey usual meaning.
(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.

Marks

1. Attempt any TEN : **10 × 2 = 20**

(a) State the advantages of mobile sources over stationary sources of farm power.
(b) Enlist various ways of collecting solar radiations.
(c) State the classification of IC engines.
(d) Enlist various parts of an IC engine.
(e) Define Firing interval.
(f) State the use of governors in an IC engine.
(g) State the ranges of H.P. available for Mahindra and Mahindra Tractors.
(h) Enlist any four popular models of Tractors available in India.
(i) What is the necessity of gear box in an automobile ?
(j) What is the function of differential unit ?
(k) State the classification of brakes.
(l) State the uses of hydraulic system in tractors.
(m) State any two advantages of implements attached to tractors.
(n) Enlist the types of PTO shafts in tractors.

2. Answer any FOUR : **4 × 4 = 16**

(a) Explain pre-requisites of biogas system.
(b) Differentiate between two stroke and four stroke IC engines.
(c) Differentiate between battery ignition and magneto ignition system.
(d) Explain the throttle system of governing with a diagram.

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(e) Enlist various types of air-cleaners with sketches.
(f) Explain the selection criteria of tractors.

3. Answer any FOUR : 4 × 4 = 16

(a) Explain the working of floating drum type bio-gas plant with a diagram.
(b) Draw a labelled diagram of piston and connecting rod.
(c) Explain valve operating mechanism with a diagram.
(d) What is need of lubrication in an IC engine ? Enlist various methods of lubrication.
(e) Explain air injection method of fuel supply with a diagram.
(f) Explain working of power steering with a diagram.

4. Answer any FOUR : 4 × 4 = 16

(a) State the advantages and disadvantages of petrol engine over diesel engines.
(b) Explain the effect of ignition advance and ignition retard in diesel engines.
(c) Describe the construction of dry type air-cleaner.
(d) What is crank case ventilation ? Why is it necessary ?
(e) Explain transmission efficiency of differential.
(f) Explain principle of operation of clutch to change gears.

5. Answer any FOUR : 4 × 4 = 16

(a) How do flywheel act as a governor ? Explain.
(b) How do a turbocharger improve the efficiency of tractor ?
(c) State the causes and remedies for any two types of faults in a clutch.
(d) Explain working of differential with a diagram.
(e) Explain the principle of working of hydraulic brake with a flow diagram.
(f) State the effect of steering geometry on turning radius.

6. Answer any FOUR : 4 × 4 = 16

(a) Draw a diagram of water cooling system of an IC engine. Explain its working.
(b) Draw a neat sketch of single plate clutch.
(c) What is a differential lock ? How is it useful in tractors ?
(d) Explain various types of controls available for hydraulic system of tractors.
(e) Explain meaning of Steering ratio.
(f) State the uses of power take off shaft in tractors.

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