

Printed Pages : 3



EAG-019

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 180759

Roll No.

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B. Tech.

(SEM. VII) (ODD SEM.) THEORY
EXAMINATION, 2014-15

MECHANICS OF TILLAGE AND TRACTION

Time : 3 Hours]

[Total Marks : 100

Note : Attempt **all** questions.

- 1 Attempt any **five** of the following : **(4×5=20)**
- Define tillage. Name any ten tillage tools ?
 - What is the principle of soil cutting ? Also discuss the factors responsible for it ?
 - What do you understand by traction of a tillage tools ?
 - What do you understand by tyre lug geometry and their effects ?
 - How does a tyre testing is done ?
 - What are the application of GIS in soil dynamics ?
 - What are the soil compaction on plant growth ?

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- 2 Attempt any **four** of the following : (5×4=20)
- (a) Write short note on :
 - (i) Traction efficiency
 - (ii) Rolling resistance.
 - (b) What are the performance characteristics of tractor engines ?
 - (c) What are the engineering properties of soils?
 - (d) With the help of a tillage tool show the forces acting upon it?
 - (e) What do you understand by off road traction and factors affecting on it?
- 3 Attempt any **two** of the following :
- (a) What are the methods for traction improvement?
How traction prediction can be made?
 - (b) What do you understand by mechanics of tillage?
What is the impact of cohesion and adhesion on the draft?
 - (c) Total draft of four bottom, 40 cm M.B. plough when ploughing 17.5 cm deep at 5.5 km/hr speed is 1700 kg. Field efficiency is 75 per cent. Calculate: Unit draft, Actual power requirement and area covered /hr.?
- 4 Attempt any **two** of the following :
- (a) What are the main forces involved for mechanics of tractor chasis?
 - (b) Discuss the various Traction models in detail.
 - (c) What are the principles and concepts of stress-strain relationships?

- 5 Attempt any **two** of the following :
- (a) What are the methods for finding the exact location of centre of gravity of a tractor body ?
 - (b) What are the important test conditions of a tractor? How belt performance test differ from drawbar performance test ?
 - (c) Write short note on the following :
 - (i) Variability and geo-statics.
 - (ii) Design equations.
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