

Code No: RT22355

R13**SET - 1**

II B. Tech II Semester Supplementary Examinations, November-2017
FARM POWER AND TRACTOR SYSTEMS
(Agricultural Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**
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PART -A

1. a) What are the main functions of the fly wheel? (3M)
- b) What do you mean by transmission system of a tractor? What are the functions of the transmission system? (4M)
- c) Why a tractor needs a clutch? what are the essential features of a good clutch (4M)
- d) What do you mean by traction? What are the different factors affecting traction? (4M)
- e) What are the basic principles of hydraulic system? (3M)
- f) What is the function of belt pulley in tractor? Write down the uses of belt pulley in tractor? (4M)

PART -B

2. a) Explain the working of four stroke cycle engine with neat sketches (8M)
- b) Calculate i) IHP, ii) BHP, iii) Stroke bore ratio, iv) compression ratio, v) swept volume of a four stroke cylinder I.C. Engine with the following data: (8M)
Cylinder Size : 12.5 x 15 cm,
Fly wheel speed: 1200 rpm,
Mean effective pressure: 7 kg/cm²,
Mechanical efficiency: 70 %,
Clearance volume: 150 cm³
3. a) What are the different systems of ignition in an I.C.Engine? Describe the working of Battery ignition system with the help of neat sketch (8M)
- b) What is the purpose of lubrication? Explain the forced feed lubrication system with neat diagram? (8M)
4. a) What is the function of gear box and explain the working of selective sliding type gear box with the help of a diagram? (8M)
- b) A 25 hp tractor is running at 1000 rpm, total reduction of speed is 10:1. Find the tractive force at each driving wheel, if the diameter of the driving wheel is 1.32 m. (8M)

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5. a) A traction wheel having 600 mm diameter was tested in soil bin and following data were recorded: (8M)
- i) Angular speed of wheel: 10 rpm ii) Input torque to wheel axle: 60 N-m
 - iii) Draw bar pull : 150 N iv) Normal load on wheel axle : 500 N
 - v) Wheel forward speed : 0.25 m/sec.
- Compute 1) Co-efficient of traction
2) Wheel slippage 3) Tractive efficiency
- b) What is the use of P.T.O. Shaft in tractor? And what are the factors affecting drawbar performance of a tractor? (8M)
6. a) Determination of Center of Gravity of a tractor by weighing method (8M)
- b) How does detonation differ from pre ignition? What do you understand by Octane number and Cetane number? (8M)
7. What are the preparations for tests in tractor testing and explain the different types of tests? (16M)