

Code No: RT22355

R13**SET - 1**

II B. Tech II Semester Supplementary Examinations, April/May - 2019
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) Calculate the BHP of a 4 stroke, 4 cylinder I.C Engine which has cylinder bore of 14 cm, stroke length of 16 cm, crankshaft speed of 1100 rpm, frictional horse power of 30, and mean effective pressure is 8 kg/cm^2 (4M)
- b) What are the methods of controlling Detonation (Knocking) in an IC engine? (3M)
- c) Write briefly about fluid coupling clutch. (4M)
- d) Explain about Hydraulic brake system. (4M)
- e) What are the characteristics of Crawler tractor? (4M)
- f) What are the essential tests to conduct in tractor testing? (3M)

PART -B

2. a) What are the main components of the IC engine? Compare Diesel engine with Spark ignition engine. (8M)
- b) Explain about piston rings and fly wheel in I.C. Engine. (8M)
3. a) With the help of neat diagram, describe the fuel supply system of spark ignition engine. (8M)
- b) What is the principle of Centrifugal governor? Explain its working with the help of a diagram. (8M)
4. a) What is the function of Differential in a tractor? Explain its working with the help of a diagram. (8M)
- b) What is the principle of friction clutch? Explain the working of a single plate clutch with the help of a diagram. (8M)
5. a) What is the working principle of hydraulic control system and explain briefly about different components in hydraulic system. (8M)
- b) What is the function of gear box in a tractor? And explain how a selective sliding and constant mesh type gear boxes works. (8M)
6. a) Write short notes on i) Traction efficiency ii) Coefficient of traction iii) Rolling resistance iv) Slip (8M)
- b) What is the use of P.T.O. Shaft in tractor? And what are the factors affecting drawbar performance of a tractor? (8M)
7. a) A rear wheel drive tractor with a total weight of 23 KN has a wheel base of 2100 mm and centre of gravity is 710 mm ahead of rear axle centre line. The tractor is pulling a level drawbar pull of 15 KN on a concrete surface at forward speed of 6 kmph and drawbar height is 485mm. the axle power is 33.3 KN. Determine: a) Co-efficient of traction b) weight transfer on rear wheel c) tractive efficiency (8M)
- b) What are the performance characteristics of tractor engine? Explain with help of various curves. (8M)