

Note : 1. Solve ANY EIGHT questions from SECTION "A".

2. All questions from SECTION "B" are compulsory.

3. All questions carry equal marks.

4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 Explain the working principle of differential system.

Q.2 Give the classification of brakes. Explain with neat sketch the working of hydraulic

brakes

Q.3 Describe the working of single plate clutch system with neat diagram.

Q.4 What are the different types of gear boxes? Explain the principle of gearing.

Q.5 What are the considerations in Ergonomics design? Explain any one.

Q.6 Write short notes (Any two).

1) Power Take-off Unit (PTO)

2) Differential lock

3) Tractor draw bar.

Q.7 Enlist different types of steering systems. Explain with neat sketch power steering

of a tractor.

Q.8 Explain the principle of working of hydraulic system with neat sketch.

Q.9 Explain in brief about caster angle and camber angle with the help of figure.

Q.10 Enlist different methods of hitching of implements. Explain any one.

SECTION "B"

Q.11 State True or False.

1) Semi mounted implements are pulled by lower links only.

2) The dual plate clutch system is provided with two clutch plates, one for the PTO

and other for the main transmission.

3) The final drive is mounted near the front wheels of the tractor.

4) In case of single acting cylinder, the hydraulic oil pressure acts on both sides of

the piston.

Q.12 Fill in the blanks.

1) In crawler tractors _____ shoe brake system is provided.

2) _____ is used to equalize the speed of the mating parts before they engage.

3) _____ helps in minimizing the number of gears and shaft in the gear box to

achieve higher torque with less speed on driving wheels.

4) _____ pump will deliver the same volume of oil for a given speed.



Semester	: IV (Old)
Course No.	: FMP 248
Credits	: 2 (1+1)
Day & Date	: Thursday, 03.05.2018
Time	: 14.00 to 16.00
Total Marks	: 40

Note : 1. Solve ANY EIGHT questions from SECTION "A".

2. All questions from SECTION "B" are compulsory.

3. All questions carry equal marks.

4. Draw neat diagrams wherever necessary.

Q.1 Give the classification of tractors. Discuss the points to be considered while purchasing a tractor.

Q.2 Give the necessity and working principle of clutches. Explain working of single plate clutch with diagram.

Q.3 Give the types of steering system and types of steering gear boxes. Explain the terms Toe In, Camber angle, Caster angle.

Q.4 Write short notes.

a) Ballasting

b) Front axle

Q.5 Give the classification of Brakes. Enlist the parts of Hydraulic brake and explain its working.

Q.6 A 25 hp tractor is running at 1000 RPM, total deduction of speed is 10:1, find the tractive force at each driving wheel, if the diameter of the driving wheel is 1.32 meters.

Q.7 Enlist the advantages of Hydraulic system in Tractor. Give different types of valves used in hydraulic system with their functions.

Q.8 Write short notes.

a) Differential lock

b) Final drive with planter gears

Q.9 Predict the maximum traction thrust of a track type tractor with two tracks each 360 mm wide by 1680 mm long. The weight of tractor is 31.75 KN. Assume that the lugs on the track are such that the soil is sheared off in a plane area at ends of the lugs. Soil parameters are $c = 14$ Kpa and $\phi = 30^\circ$.

Q.10 Give the necessity of the following.

a) Clutch

b) Gear Box

c) Differential

d) Steering system

Q.11 Fill in the blanks.

1) Dog clutch is mainly used in _____.

2) The gear train used in differential is _____.

3) _____ is a device by which the pulling power of tractor is transmitted to the trailing implement.

4) The Dual plate clutch system is provided with two clutch plates one for the main transmission and other for _____.

Q.12 Define the following terms.

1) Traction

3) Turning circle

2) Coefficient of Rolling resistance

4) Wheel Base

