SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR

Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject : TRACTOR SYSTEMS &CONTROL Course(16AG713)

Branch : B.Tech – AGRI

Year & Sem : III – B.Tech & II –Sem **Regulation :** R16

UNIT – I

1.	Explain the components and function of a drive train with neat sketch.	[12M]
2.	a)Write a note on differential lock	[6M]
	b) What is final drive? Explain in short	[6M]
3.	Explain operational details of differential unit with neat diagram	[12M]
4.	Explain the principle of operation of differential unit with neat diagram	[12M]
5.	a) Explain Constant Mesh Gear Box.	[6M]
	b) Explain synchromesh gear box.	[6M]
6.	a)Explain sliding mesh gear box	[6M]
	b)Explain planetary final drive in short	[6M]
7.	a) What are the essential features of clutch?	[6M]
	b)Explain principal of operation of clutch with neat diagram	[6M]
8.	Explain working of dual plate clutch system.	[6M]
9.	Explain working of single plate clutch system with neat diagram	[6M]
10.	A single plate clutch with both sides effective has an outer diameter of 30 cm and inner diameter of 20 cm. The maximum intensity of pressure at any point in the contact surfaces does not exceed 1 Kg/cm^2. If the coefficient of friction is 0.3, determine the power transmitted by clutch operating at 2000 rpm speed.	[12M]
11.	a) What is clutch?	[2M]
	b) Explain Principle of Gearing	[2M]
	c) Why gear box is needed in tractors?	[2M]
	d) What are the different types of clutch.?	[2M]
	e) What is final drive?	[2M]

UNIT – II

1		Explain internal expanding shoe brakes with neat diagram	[12M]
2		Explain external contracting shoe brakes with neat diagram	[12M]
3		Explain disc brake with neat sketch.	[12M]
4		Explain principle of operation and working of hydraulic brake with neat diagram	[12M]
5		What is steering system? Explain qualities of steering system	[12M]
6		Explain working of mechanical steering system with neat diagram.	[12M]
7		Explain camber angle in relation to definition, need and its effects.	[12M]
8		Explain Toe-in, Toe out and King pin inclination with neat diagrams.	[12M]
9		Explain advantages and working of power steering system with neat diagram	[12M]
10		Explain Caster angle in relation to definition, need and its effects	[12M]
11	**a).**	What is excessive brake pedal free play	[2M]
	b).	What is brake? How brakes are classified?	[2M]
	c).	State the function of Steering arm and Tie rod	[2M]
	d).	State the function of 1. Steering gearbox 2. Drag link	[2M]
	e).	What is Ackerman steering?	[2M]
	f).	Enlist main parts of steering system	[2M]

UNIT - III

1		Explain merits of hydraulic system over mechanical system.	[12M]
2		Explain working of hydraulic system with neat diagram	[12M]
3		Explain different types of hydraulic valves.	[12M]
4		Explain different types of hydraulic system	[12M]
5		a)Explain position control in short. b)Explain draft control in short.	[12M]
6		a)Explain mixed control in short b)Explain basic properties of fluid	[12M]
7		Explain the construction and working of three point linkage mechanism.	[12M]
8		Explain the hitching implements of tractor.	

9		Explain ADDC in detail.	[12M]
10.	**a).**	What is work of relief valve?	[2M]
	b).	What is mixed control system?	[2M]
	c).	What is the function direction control valve?	[2M]
	d).	What is hydraulic system?	[2M]
	e).	What is hitching in tractor?	[2M]

UNIT – IV

1.	What are the different types of PTO? Explain in detail.	[12M]
2.	Explain in detail the hitching implements of tractor	[12M]
3.	a).Explain belt pulley.	[6M]
	b).A belt connects two pulleys. The sum of the diameter of two pulleys is 90 cm and while one makes 50 rpm, the other makes 20 rpm. Find the diameter of Pulleys.	[6M]
4.	a).What are the advantages of three point linkage hitch in a tractor?	[6M]
	b).A tractor has a speed of 1000 m/min at normal engine speed. A feed mill has recommended speed of 2100 rpm. Find the size of pulley, needed on feed mill.	[6M]
5.	What are the factors affecting traction ?.Explain any two factors affecting traction in detail.	[12M]
6.	a)Determine drawbar pull of a track type tractor with 35 cm wide and 160 cm long track. The weight of tractor is 3500 kg. The lugs on the wheel are such that the soil is sheared off in a plane area at the ends of lugs and the soil parameters are: C = 14 KPa, $\emptyset = 30^0$, $K_C = 3$, $K\emptyset = 0.5$ and n =0.2	[6M]
	b)Explain longitudinal stability of tractor at load.	[6M]
7.	a).Explain the types of wheel & tyres of tractor.	[6M]
	b).What is ply rating. Explain lateral stability of tractor	[6M]
8.	In detail explain the methods of determining the C.G measurement of	[6M]

tractor.

9.	a).Explain the types of tractor accident.	[6M]
	b).What are the precautions to be taken to avoid the tractor accident.	[6M]
10	a).What are the conditions to avoid sideways overturning during turning	[7M]
	b).What are the safety devices in tractor.	[5M]
	Define following terms :	
	a) Gross tractive resistance (μg)	[2M]
	b) Dynamic traction coefficient (μd)	[2M]
	c) Net traction coefficient (μ)	[2M]
	d) Coefficient of rolling resistance (ρ)	[2M]
	e) Tractive efficiency(T.E.)	[2M]

UNIT – V

1		Discuss the preparation of test in testing tractor performance.	[12M]
2		Explain the test procedure in detail.	[12M]
		What is power test? Explain.	
3		What is tractor chassis? Explain in detail its function and types.	[12M]
4		Explain Ergonomic consideration and operation safety of tractor	[12M]
5		Explain in detail the safety measurement in tractor ROPS.	[12M]
6		Explain tractor as a spring mass system.	[12M]
7		Briefly describe the importance of moment of inertia of a tractor.	[12M]
8		What are the precautions to be taken for a prolonged life of a tractor chassis.	[12M]
9		Explain the representation of test result and test code in detail.	[12M]
10	**a).**	What is weight transfer?	[2M]
	b).	What is the need for tractor testing?	[2M]
	c).	What is test code?	[2M]
	d).	What is function of tractor chassis?	[2M]
	e).	What are the types of chassis?	[2M]

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