QP Code: RD21BTECH245 | Reg. No | | | | | | | | | | | AY 21

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Fifth Semester Regular) Examinations, December – 2023

21BAGES25001 – Tractor Systems and Controls

(Age)

Time: 3 hrs | Maximum: 70 Marks

Answer all questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. What is function of Gear box?	CO3	K3
b. Enlist Main Components of Clutch System.	CO5	K3
c. Write down advantages of hydraulic brake over mechanical brake.	CO5	K1
d. Write various Precautions required in case of tube.	CO3	K1
e. Enlist various Environmental factors to which operator is directly exposed.	CO4	K2

PART – B **(15 x 4 = 60 Marks)**

Answer ***ALL*** questions	Marks	CO #	Blooms Level
2. a. How much maximum torque can be transmitted by a clutch having 3 friction plate? Each of 200 mm internal diameter & 250 mm external diameter. Assume, Co-efficient of friction as 0.40 & Clamping force to be 100 N.	7	CO3	K2
b. Explain Single Disc or Plate Clutch with help of neat sketch.	8	CO2	K2
(OR)			
c. A single plate clutch with both sides as effective has outer and inner diameters 30 cm & 20 cm respectively. The maximum intensity of pressure at any point on contact surface is not more than 10 N/ cm^2. If co-efficient of friction is 0.3. Find the power transmitted by the clutch at 2000 rpm.	7	CO2	K2
d. Explain Cone Clutch with help of neat sketch.	8	CO3	K2
3.a. Explain Double Drop Steering System with help of neat sketch.	7	CO2	K2
b. A plunger barrel type hydraulic pump is required to deliver fluid at the rate of 91.6 liter/min at a speed of 1500 rpm against a fluid pressure of 15 MPa. Calculate pump efficiency if shaft power needed to operate the pump is 27.5 kW. Also determine torque requirement of the pump.	8	CO6	K1
(OR)			

c.	A hydraulic pump operating at a speed of 2000 rpm at 16 MPa pressure has a displacement of 21 cm^3/min. Calculate the following if mechanical and torque efficiencies of the pump are 87 % and 92 % respectively. Find: Delivery rate of pump in litres/min, Shaft power of the pump, Torque required for driving the pump.	7	CO4	K2
d.	Explain Open Centre Valve with help of neat sketch.	8	CO5	K1
4.a.	Explain Suspension Method II of Determination of location of Centre of Gravity with help of neat sketch.	7	CO4	K2
b.	Explain Assumptions for study the tractor mechanics.	8	CO3	K1
	(OR)			
c.	Explain Construction of pneumatic tyres with help of neat sketch.	7	CO3	K1
d.	Explain Weighing Method of Determination of location of Centre of Gravity with help of neat sketch.	8	CO4	K1
5.a.	Explain Importance of Anthropometric Measurements in Designing Workplace of tractor.	7	CO4	K2
b.	Explain various human factors for design of modern tractor.	8	CO4	K1
	(OR)			
c.	Explain Location of instruments and indicators on tractor dashboard.	7	CO3	K2
d.	Explain acceptable levels of noise level with respect to exposure time.	8	CO5	K2

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