

CRM08	Rev 1.10	<ME>	22/05/21
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CONTINUOUS INTERNAL EVALUATION- 1

Dept:ME	Sem / Div:VI A	Sub:DME II	S Code:18ME62
Date:24/05/2021	Time: 3:00-4:30 pm	Max Marks: 50	Elective:N
Note: Answer any 2 full questions, choosing one full question from each part.			

QN	Questions	Marks	RBT	COs
PART A				
1	a Design a pair of spur gears to transmit 20kW from a shaft rotating at 1000 rpm to a parallel shaft which is to rotate at 300 rpm. Assume number of teeth on pinion 30 and 20° full depth tooth form. The material for pinion is C45 steel untreated and for gear cast steel 0.20% C untreated.	25	L4	CO2
OR				
2	a Design a pair of spur gears to transmit a power of 18kW from a shaft running at 1000 rpm to a parallel shaft to be run at 250 rpm maintaining a distance of 160mm between the shaft centers. Suggest suitable surface hardness for gear member	25	L4	CO2
PART B				
3	a A belt is required to transmit 18.5kW from a pulley of 1.2m diameter running at 250rpm to another pulley which runs at 500 rpm. The distance between the center of pulley is 2.5m. Coefficient of friction =0.25. Safe working stress for leather is 1.75N/mm ² . thickness of belt is 8mm. Determine the width and length of the belt taking centrifugal tension into account. Also find initial tension and absolute power that can be transmitted	15	L3	CO1
	b A leather belt 9mmX250mm is used to drive a CI pulley 90 cm inside diameter at 336 rpm. If the active arc of contact on the smaller pulley is 120° and the stress in the tight side 2MPa, find the power capacity of the belt which weighs 0.00098 kg/cm ³ . Coefficient of friction of leather on CI is 0.35	10	L3	CO1
OR				
4	a For a flat belt drive following data are given: Power transmitted 9kW, speed of motor= 1500 rpm, speed of driven pulley= 550 rpm, velocity of belt= 18m/sec, load factor= 1.2, density of leather= 9.8kN/m ³ , smaller pulley diameter to thickness of belt ratio= 36, Factor of safety=8,ultimate strength of belt material= 24MPa, center distance =2m and coefficient of friction= 0.36. Design belt	13	L4	CO1
	b A nylon core flat belt 200mm wide weighing 20N/m, connecting a 350mm diameter pulley to a 950mm diameter driven pulley at a shaft spacing of 6.5m, transmits 55.2kW at a belt speed of 20m/sec. i) calculate the belt length and the angle of wrap ii) compute the belt tension based on coefficient of friction 0.38	12	L3	CO1