

NETTUR TECHNICAL TRAINING FOUNDATION DIPLOMA IN MECHATRONICS ENGINEERING & SMART FACTORY – CP15 IV SEMESTER REGULAR& SUPPLEMENTARY EXAMINATION-JULY 2023

PART B

Subject: Applied Mechanics Subject Code: CP15406T Total Time: 2 Hr. Total Marks: 50

2*8=16

1.0 ANSWER ANY EIGHT OF THE FOLLOWING

- 1.1 State Theorem of Perpendicular Axis
- 1.2 What you mean by a Beam, Where it is mainly used?
- 1.3 What do you mean by Continuous Beam?
- 1.4 What do you mean by Elastic Limit?
- 1.5 A steel rod 120mm diameter is subjected to an axial pull of 60KN.Find the stress induced in the steel bar
- 1.6 Define Pure Torsion
- 1.7 What is turntable?
- 1.8 What are the types of hoist devices?
- 1.9 What is tractor trailer?
- 1.10 What do you mean by factor of safety?

2.0 ANSWER ANY SIX OF THE FOLLOWING

2.1 Find the moment of inertia of a circular section of a 50 mm diameter about an axis passing through its center

- 2.2 Write the classification of beams with simple sketches.
- 2.3 Define Point load with neat diagram
- 2.4 What do you mean by shear force and bending moment?
- 2.5 Explain Load Deformation Relationship
- 2.6 Write the Differences between a Column and Strut
- 2.7 Explain Hoop Stress (or) Circumferential stress, and Longitudinal Stress
- 2.8 What is the principle used in roller conveyor?

3.0 ANSWER ANY FOUR OF THE FOLLOWING

- 3.1 Write the effect of load on elastic materials
- 3.2 Write down the assumptions made in the Euler's theory of columns
- 3.3 Explain about the types of springs
- 3.4 Explain Chute conveyor with a neat sketch.
- 3.5 Explain the Theory of Simple Bending
- 3.6 Write down the types of end conditions of columns

3*6=18

4*4=16



NETTUR TECHNICAL TRAINING FOUNDATION DIPLOMA IN MECHATRONICS ENGINEERING & SMART FACTORY – CP15 IV SEMESTER SUPPLEMENTARY EXAMINATION-JULY 2023

Subject: Control System	Time: 2 Hr.
Subject Code: CP150401	Marks: 50
PART B	
1.0 ANSWER ANY EIGHT OF THE FOLLOWING	2*8=16
1.1 What is disturbance in a control system?	
1.2 Explain the needs for modulation	
1.3 What is root locus analysis?	
1.4 What do you mean by plant in control system?	
1.5 Draw the block diagram of control system	
1.6 What is the difference between synchro transmitter and synchro co	ontrol transformer?
1.7 Define the term controller	
1.8 What do you mean by Index of performance (IP)?	
1.9 Define Order of a system	
1.10 What are the basic building blocks of mechanical rotational system	ms?
2.0 ANSWER ANY SIX OF THE FOLLOWING	3*6=18
2.1 Sketch the block diagram a communication system.	
2.2 List the Properties of a proportional controller.	
2.3 Depending on the damping ratio how we can classify systems?	
2.4 Compare open loop system and close loop system.	
2.5 What are the advantages of frequency response over time response	analysis?
2.6 Explain how a potentiometer can be used as error detector?	5
2.7 Write short notes on frequency modulation	
2.8 Compare gain margin and phase margin	
3.0 ANSWER ANY FOUR OF THE FOLLOWING	4*4=16
3.1 Write short notes on the basic components of control system	
3.2 Briefly explain about test signals in control system	
3.3 Write short notes on Armature Controlled DC Motor	
3.4 Explain briefly supervisory computer control	
3.5 Describe the five rules of block diagram reduction	
3.6 Briefly explain about the feed water control process	