A **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: U4A04

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Fourth semester

Agriculture Engineering

21UAG404-FUNDAMENTALS OF THEORY OF MACHINES

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. A mechanism is an assemblage of CO1- U

   (a) two links (b) three links (c) four links (d) all of the above

2. Scotch yoke mechanism is the inversion of CO1- U

   (a) Single slider kinematic chain (b) Double slider kinematic chain

   (c) Four bar chain (d) None of the above

3. Co-efficient of rolling friction is _____ than co-efficient of sliding friction. CO1- U

   (a) greater (b) equal to (c) lesser (d) none of the above

4. When a body at motion condition the body said to be CO1- U

   (a) pivot friction (b) sliding friction (c) rolling friction (d) all of the above

5. The angle between the direction of the follower motion and a normal to the pitch curve is called CO1 -U

   (a) pitch angle (b) prime angle (c) base angle (d) pressure angle

6. The cam follower generally used in automobile engines is CO1 -U

   (a) knife edge follower (b) flat faced follower

   (c) spherical faced follower (d) roller follower

7. The size of a gear is usually specified as CO1 -U

   (a) pressure angle (b) circular pitch (c) diametral pitch (d) pitch circle diameter

8. The module of gear be m, the number of teeth T and pitch circle diameter D then CO1- U

(a) m=D/T (b)D= T/m (c) m= D/2T (d) none of the above

9. When the sleeve of a porter governor moves upward, the governor speed CO1 -U

(a) increases (b) decreases (c) remains unaffected (d) moderate

10. A hunting governor is CO1- U

(a) more stable (b) less sensitive (c) more sensitive (d) none of the above

PART – B (5 x 2= 10Marks)

11. Give the Grublers Criterion for plane mechanism CO1- U

12. Classify the types of friction. CO1- U

13. What is a cam? CO1 -U

14. What is an angle of obliquity in gear? CO1 -U

15. What is the function of governors? CO1- U

PART – C (5 x 16= 80Marks)

16. (a) Explain any one type of four bar chain mechanism with neat sketches. CO1- U (16)

Or

(b) Explain in detail and give the examples of types of constrained motion. CO1- U (16)

17. (a) Briefly explain the following: 1) Slip of the belt 2) Creep of the belt. CO1- U (16)

Or

(b) Explain in detail about the sliding and rolling friction. CO1- U (16)

18. (a) A cam is designed for a knife follower with the following data. (i) Cam lift = 40 mm during 90° of cam rotation with SHM (ii) Dwell for the next 30° (iii) During the next 60° of cam rotation, the follower returns to original position with SHM. (iv) Dwell for the reaming 180° Draw the profile of the cam when the line of stoke is offset 20 mm from the axis of the cam shaft CO1- U (16)

Or

(b) Construct a tangent cam and mention the important terminologies on it CO1 -U (16)

19.	(a)	State and prove the law of gearing and thus derive the expression for "Velocity of sliding".	CO1- U	(16)
		Or		
	(b)	Explain the terminology involved in Gears in detail.	CO1- U	(16)
20.	(a)	Explain the turning moment diagram of flywheel in detail.	CO1- U	(16)
		Or		
	(b)	With the neat sketches explain the Porter Governor.	CO1- U	(16)