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Internal Assessment Test - I

Sub:	KINEMATICS OF MACHINES						Code:	15ME42	
Date:	13/03/2018	Duration:	90 mins	Max Marks:	50	Sem:	IV – A, B	Branch:	MECH

Answer any five full questions. Sub – parts of the same question should be written at one place.	Marks	OBE	
		CO	RB T

1 a.	Derive the expression for necessary condition of correct steering.	05	CO1	L2
1 b.	Explain with a neat sketch, the Ackerman steering gear mechanism.	05	CO1	L1
2 a.	What is a quick return motion mechanism? Why is it so called? With a neat sketch explain the working of a Whitworth quick return motion mechanism.	07	CO1	L1
2 b.	A crank and slotted lever quick return motion mechanism used in a shaper has the distance between the fixed centres as 300 mm. The radius of the crank is 120 mm. Find the ratio of time of cutting to the time of return stroke.	03	CO1	L3

3 a.	What is an exact straight line motion mechanism?	02	CO1	L1
3 b.	Draw a neat proportionate Peaucellier’s mechanism. Indicate the geometric relations among the links and show the point tracing the straight line.	03	CO1	L1
3 c.	Prove that the point traces an exact straight line perpendicular to the fixed link.	05	CO1	L2
4 a.	Sketch and explain the working of an elliptical trammel.	05	CO1	L1
4 b.	Prove that it traces an ellipse.	05	CO1	L2
5.	Explain with a neat sketch any two of the following: (i) Ratchet and Pawl mechanism (ii) Geneva wheel mechanism (iii) Gnome Engine mechanism.	10	CO1	L1
6.	Differentiate between the following with examples: (i) Higher pair and lower pair (ii) Machine and Structure (iii) Constrained motion and Un-constrained motion (iv) Degree of freedom and Mobility of Mechanism	10	CO1	L2