DEPARTMENT OF MECHANICAL ENGINEERING

CLASS:- TEME1 and TEME2	SEM:- V
SUBJECT:- TOM II	DATE:- 25/10/2016
DURATION:- 60 min.	MARKS:- 20

CLASS TEST 02

			Marks	CO
Q.01	**Attempt any one (08 Marks)**			
a	i)What do you mean by a gear train. Explain the types of gear train and give one application of each?.		04	04
	ii)Derive the expression to determine Gyroscopic couple.		04	05
b	The turbine rotor of a ship has a mass of 3500 kg. It has a radius of gyrationof 0.45 m and a speed of 3000 r.p.m. clockwise when looking from stern. Determine thegyroscopiccouple and its effect upon the ship:**1.** when the ship is steering to the left on a curve of 100 m radius at a speed of 36 km/h.. **2.**when the ship is pitching in a SHM, the bow falling with its maximumvelocity. The period of pitching is 40 seconds and the total angular displacement between the twoextreme positions of pitching is 12 degrees.		08	05
Q.02 (12 Marks)				
a	The arms of a Porter governor are each 250 mm long and pivoted on the governor axis. The mass of each ball is 5 kg and the mass of the central sleeve is 30 kg. The radius of rotation of the balls is 150 mm when the sleeve begins to rise and reaches a value of 200 mm for maximum speed. Determine the speed range of the governor. If the friction at the sleeve is equivalent of 20 N of load at the sleeve, determine how the speed range is modified.?		08	03
	OR An epicyclic gear consists of three gears A, B and C as shown in Fig. 13.10. The gear A has 72 internal teeth and gear C has 32 external teeth. The gear B meshes with both A and C and is carried on an arm EF which rotates about the centre of A at 18 r.p.m.. If the gear A is fixed, determine the speed of gears B and C			
			08	04
b	Explain the necessity of gear box in automobile.?		04	04