



GOVERNMENT COLLEGE OF ENGINEERING, AMRAVATI
DEPARTMENT OF MECHANICAL ENGINEERING

CLASS TEST – II
 CLASS: B. Tech (VI SEM)

DATE: 12/03/2015
 SUB: M D II (MEU 602)

TIME: 01 Hour
 MAX Marks: 15

Note: Solve One from Q.1 and One from Q.2.

Q.1: A ground steel shaft of 50mm diameter rotates at 1200rpm in a lathe turned bearing which is 40mm long. Bearing is supplied with an oil SAE 20 and had effective operating temperature of 65° C. If the radial clearance is 0.03mm, find the maximum load carrying capacity of bearing so as to run it hydrodynamically. Also determine whether artificial cooling is required, if bearing is normal ventilated and room temperature is 30°C

OR

Q.1) 0306 radial ball bearing with inner ring rotating is subjected to following load cycle of 10 sec. Find average life of bearing

Item	For 2 Sec	For 8 Sec
Fr (N)	4000	3000
Fa (N)	2000	0
Speed (rpm)	900	1200
Load Condition	Light	Steady

Q.2) A Compressor requires a 60horse power running at ²⁵⁰2350rpm. The drive is by V belt from electric motor running at 720rpm. The diameter of pulley on the compressor shaft must not be greater than 1 meter, while the center distance is limited as 1.5 meter. Design suitable V belt drive.

OR

Q.2) An electric motor running at 960rpm drives a line shaft running at 500rpm. During working the line shaft requires average torque of 960Nm. The center distance is 1.8m. Determine the dimension of flat belt and pulley



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DATE: 16/03/2017
 SUB: M D II

TIME: 01 Hour
 MAX Marks: 15

Note: Solve any 02 (Two) questions. All questions carry equal marks.

Q.1: A belt is required to transmit 20kW from a pulley 1.2m diameter running at 250rpm to another pulley which runs at 450rpm. The distance between centres of 2 pulleys is 2.7m. Design a suitable flat leather belt for the drives.

Q.2: Design a single row deep groove ball bearing supporting 1000 rpm shaft has the following loading cycle.

Duration	Fr	Fa
70% of time	3KN	1KN
30% of time	3KN	1.5KN

Q.3: Design a journal bearing for the crankshaft of a four stroke petrol engine to carry a radial load of 10KN. The journal diameter is 50 mm and it rotates at 1000 rpm.