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**BME-056**

# DIPLOMA IN MECHANICAL ENGINEERING (DME) / ADVANCED LEVEL CERTIFICATE COURSE IN MECHANICAL ENGINEERING (DMEVI / ACMEVI)

## Term-End Examination

## December, 2015

## BME-056 : THEORY OF MACHINES

*Time : 2 hours* *Maximum Marks : 70*

***Note :*** *Answer any **five** questions. All questions carry equal marks. Assume any missing data, suitably. Use of scientific calculator is allowed.*

**1.** Define the following terms (any ***four***) : $4 \times 3\frac{1}{2} = 14$

(a) Binary link and Ternary link

(b) Spherical Pair

(c) Double Crank Mechanism

(d) Spur Gears

(e) Simple Gear Train

**2.** Explain the working of an automobile steering gear mechanism with a neat sketch. *14*

3. Give the classification of cams according to the follower movement, with neat sketches. *14*

4. (a) Explain the Laws of dry friction. *7*

(b) The outside diameter of threaded spindle of a screw jack is 60 mm. The screw pitch is 15 mm. If the coefficient of friction between the screw and the nut is 0·25, neglecting friction between the nut and collar, determine :

(i) Force required to be applied at the end of tommy bar 1·2 m in length to raise a load of 25 kN.

(ii) Efficiency of screw. *7*

5. (a) Explain the following types of bearing : *7*

(i) Roller Bearing

(ii) Radial Ball Bearing

(b) Derive an equation for the length of belt in case of open belt drive. *7*

6. Explain the turning moment diagram of a single cylinder four-stroke IC engine with sketches. *14*

7. Describe the working of Watt governor with a neat sketch. *14*

8. Write short notes on any ***two*** of the following : *2×7=14*

(a) Vibration Control

(b) Types of Belts and Pulleys

(c) Hooke's Joint