B. Voc. Automotive Manufacturing/ Mechatronics
Subject: Basics of Mechanical Engineering
Subject Code: BME-105
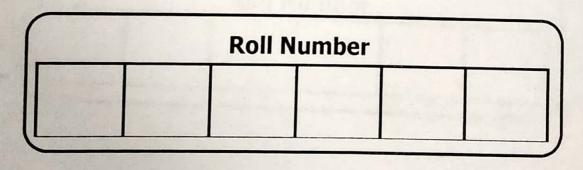## Semester- 1st Semester Re-appear (2017-20)
Theory (External): 70
Time: 03 hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.

2. **Section A** comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 2 mark.

3. **Section B** comprises 6 essay type questions out of which students need to do any 5. Each question carries 10 marks.

4. Read the questions carefully and write the answers in the answer sheets provided.

5. Do not write anything on the question paper.

6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

SECTION –A (OBJECTIVE TYPE QUESTIONS)

(10x2=20 Marks)

1. What is the material of which belts are made?

2. How the slip affects the velocity ratio of belt derive?

3. State first law of thermodynamics.

4. Which types of threads are used in Screw Jack?

5. Draw stress strain diagram for ductile materials.

6. What is difference between NC and CNC machines?

7. Define compression ratio of IC engine.

8. What is a machine?

9. How mechanical advantage is related to velocity ratio for an ideal machine?

10. What is function of carburetor in SI engine?

SECTION –B (ESSAY TYPE QUESTIONS)

(5x10=50 Marks)

1. A belt transmits 10 KW through a pulley 1 m diameter running at 200 rev/min. The coefficient of friction between the belt and pulley is 0.25 and the allowable tension per mm width of belt is 18 N. Presuming an angle of lap on the pulley as 160 degrees, determine the necessary initial tension on the belt and the belt width.

2. Discuss the second law of thermodynamics with suitable example.

3. A simple lifting machine raised a load of 360 N through a distance of 200 mm. The effort a force of 60 N is moved 1.8 m during the process. Calculate velocity ratio, mechanical advantage and efficiency of the machine.

4. State Hooks law and derives the relationship between Elastic constants.

5. What do you mean by manufacturing system? Explain the working of NC machines.

6. With the help of neat sketch explain principle working of four stroke diesel engine.

--------End of Paper----------