

S.B. Roll No.....

**APPLIED MECHANICS**  
**3<sup>rd</sup> Exam/Civil/Mech./Auto/0093/Feb'2021**  
**(For 2018 Batch onwards)**

**Duration: 1.15Hrs.**

**M.Marks:25**

**SECTION-A**

**Q1. Attempt any three questions.**

**3x5=15**

- a. Explain Parallelogram Law of forces.
- b. Write a short note on 'The Balance'.
- c. With sketches show the centroid of the following
  - i) Semicircle
  - ii) Triangle
  - iii) Rectangle
- d. Write a note on Simple wheel & Axle.
- e. Explain Law of Machine.
- f. Friction is a necessary evil. Discuss.
- g. Explain Lami's theorem.
- h. What is a couple give examples & its uses?

**SECTION-B**

**Q2. Attempt any one question.**

**1x10=10**

- i. What do you mean by Force system? Explain various force system.
- ii. The angle between the two forces of magnitude 15N & 20N is  $45^\circ$ . The 20N force being horizontal. Determine the resultant in magnitude and direction.
- iii. In a machine it is observed that an effort of 120N lifts a load of 3000N & an effort of 160N lifts a load of 4000N through same distance. If the V.R. of a machine is 40, Find
  - a. Law of machine
  - b. Effort required to lift a load of 5500
  - c. Maximum Mechanical Advantage
  - d. Maximum efficiency
- iv. What is moment? State some Engineering application of moment with sketches.