S.B. Roll No…….

APPLIED MECHANICS

3rd Exam/Common/0519/0851/0569/0556/0931/5440/May'16

Duration: 3 Hrs **M.Marks=75**

SECTION A

Q1. Fill in the blanks: **1x15=15**

a. Force is a ..... quantity.
b. The force which tends to decrease the length of the body is called ..... force.
c. The angle of friction is always …… then 90^0.
d. The couple produces …… motion.
e. The efficiency of a screw jack may be increased by ……. Its pitch.
f. Centroid is a term used for the bodies having …….. only.
g. Axis passing through the centroid of the plane lamina is called …… axis.
h. Limiting friction is always …… then kinetic friction.
i. In an ideal machine, velocity ratio = …….
j. Coefficient of friction is = ……/……..
k. The unit of moment in SI system is ……
l. In a couple the line of action of the forces are……..
m. A machine is said to be reversible if its efficiency is …… then 50%.
n. One kilogram force is equal to …….. N
o. Efficiency ……. as the load increases.

SECTION B

Q2. Attempt any FIVE questions. **5x6=30**

a. Differentiate between statics and dynamics.
b. Explain law of superposition.
c. What do you mean by concept of rigid body?
d. Where the C.G. does lies of hemisphere, right circular cone, right circular cylinder?
e. What is law of machine?
f. Define friction. Give merits and demerits of friction.
g. Establish a relation between efficiency, mechanical advantage and velocity ratio of a machine.

SECTION C

Q3. Attempt any THREE questions **10x3=30**

a. Find the magnitude and direction of the resultant of the following force system.
  i. 10 N due north.
  ii. 8 N due north-west.
  iii. 5 N due east.
  iv. 4 N due 35^0 west of south
  v. 12 N due 65^0 North West.
b. A string ABCD is suspended from two fixed points A and D. It carries two weights of 800 N and W at B and C respectively. The inclination of DC to vertical is 600 and AB is 300. Angle ABC is 1500. Find the tension in different parts of the string and magnitude of W.
c. What do mean by force? Explain Force system.
d. Derive an equation for equilibrium of a body lying on a rough inclined plane when the motion is in upward direction and force is acting horizontally.