Question Bank (I scheme)

Name of subject: APPLIED MECHANICS **Unit Test :I**

Subject code: 22203 **Course : CH/ME**

Semester: II

Chapter 1 MECHANICS AND FORCE SYSTEM

1) State the principle of transmissibility of a force (2M)

2) State the necessity of knowledge of mechanics for engineers. (2M)

3) Define the force and its unit. (2M)

4) Give the different types of coplanar force systems. (2M)

5) Differentiate between Scalar and vector quantities. (4M)

6) State the derived units of the following physical quantities. (4M)

i) Velocity ii) Acceleration iii) Weight iv) Force

Chapter 2 SIMPLE LIFTING MACHINES

1) Define Mechanical Advantage, Velocity Ratio.(2M)

2) Differentiate between ideal machine and actual machine. (2M)

3) State the formula for efforts lost in friction. (2M)

4) State the law of machine and its significance. (2M)

5) Define the term Self-locking machine and give it's condition? (2M)

6) A screw jack lifts a load of 30 KN with an effort of 400 N at the end of the handle of 60 cm. If the pitch of the screw is 15 mm. Calculate the velocity ratio, M. A. and efficiency of the machine.(4M)

7) In a worm and worm-wheel, number of teeth on worm wheel is 80. If effort wheel and load drum having diameters 200 mm and 100mm respectively. Find velocity ratio of worm and worm-wheel. (4M)

8)A machine has a V.R. of 250 and has its Law, P= 0.01W+5 express in Newtons. Find i) M.A. ii) Efficiency iii) Effort lost in friction at load of 1000 N. State whether the machine is reversible or not.(4M)

9) For a certain machine , the law is P = (0.09 W+ 6)N. Calculate the effort required to lift a load of 6KN. Also calculate maximum MA and identify type of machine if VR=20. Also find load lost in friction. (4M)

Chapter 3 RESOLUTION AND COMOSITION

1) Find the components of force of 50 N acting from (2, 2) towards (2,-4). (2M)

2) A loaded wagon is at rest on railway track. It is pulled by force of 1.5 KN applied at an angle of 45^0 to the railway line. Find the force tending to move the wagon forward. (4M)

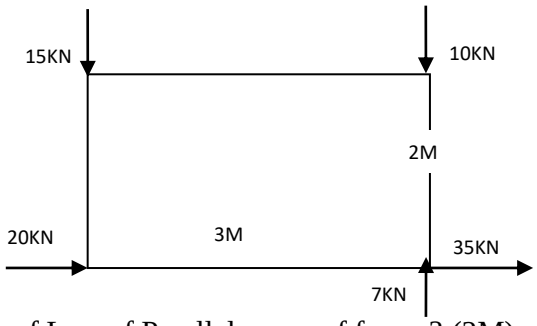
3) Resolve a force of 300 N acting N-W in to two components such that one acts along N-E and other acts along 30^0 S-W. (4M)

4) A man pulls a hand roller on a cricket pitch and in doing so exerts pull of 150 N inclined at an angle of 30^0 to the horizontal. Find the force tending to move the roller forward. (4M)

5) Resolve a force of 20N into two components that are at right angles and in the ratio 3:4 . (4M)

6) Three forces 20N, 40N and 50N act along AB, BC and AC sides respectively of an equilateral triangle of side 60mm .Determine the resultant moment about 'A'. (4M)

7)Calculate the moment about point B force system as shown in fig. (4M)



8) Give the limitations of Law of Parallelogram of forces? (2M)

9) Define Resultant Force. (2M)

10) Define the terms resolution and composition of force? (2M)

11) Four forces 10 N , 20 N , 30 N , 40 N acting in upward direction, horizontal distance between 10 N and 20 N is 2m, 10N and 30 N is 4m and 10 N and 40 N is 6m. Calculate resultant and its location by analytical method. (4M)

12) Two forces acting at and away from the point have magnitude of 10KN and 20KN respectively., having an included angle of 60^0. Find their resultant.(4M)

13) Forces of 2KN, 3KN, 4KN, and 5KN act along the sides of a rectangle taken in order. Find the the resultant in magnitude and direction.(4M)

14)Four forces of magnitude 10N, 25N, 30N, and 50N are acting at angles of 0^0, 30^0, 90^0, and150^0respectively with positive X-axis. Find their resultant Graphically. Show it on the sketch. .(4M)