

( 4 )

6. (a) Define M.A. and V.R. 2
- (b) A simple lifting m/c is self-locking if it's efficiency is below 50%. Justify. 5
- (c) When an effort of 280 N is applied to a m/c it is found that 25% of the effort is lost in friction. The velocity ratio is 16. Find the load which can be lifted and the efficiency at this load. 7
7. (a) What do you mean by elastic collision? 2
- (b) From a ballon ascending with a velocity 981 cm/s a stone was set to fall and it reaches the ground in 10 seconds. Find how high the ballon was when the stone was dropped. 5
- (c) A long jumper running at 6 m/sec. springs into the air so that he rises to a height of 2 m. What is the length of his jump? 7



Full Marks : 70

Time : 3 hours

Answer any five questions

Figures in the right-hand margin indicate marks

1. (a) State polygon law of forces. 2
- (b) Two forces act on a particle one is doubled and other is increased by 20 N. Find the latter force if the direction of the resultant remains unaltered. 5
- (c) The system shown in the figure is in equilibrium. If  $Q = 10$  N find the magnitude of weight  $P$ . 7

