注意事項：
（1）本試題共有 4 題，合計一百分。
（2）請依序作答於答案卷上並註明題號。
（3）可使用計算機　close book

1. A bicycle moves along a straight road such that its position is described by the graph shown in Fig. 1   Construct the v–t and a–t graphs for $0 \leq t \leq 30$ s.

20%

Fig 1.
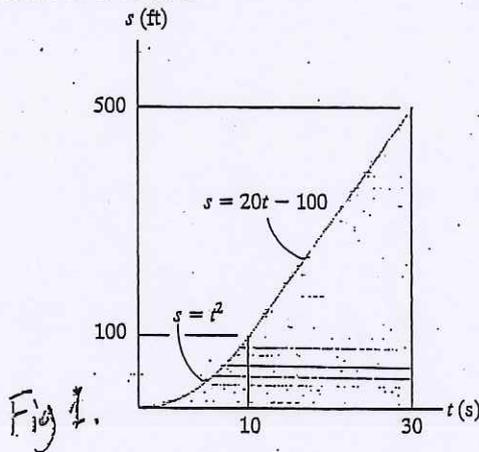
2. The 100-kg block A shown in Fig. 2   is released from rest. If the masses of the pulleys and the cord are neglected, determine the velocity of the 20-kg block B in 2 s. $(g = 10 \ m/s^2)$ (25%)

Fig 2
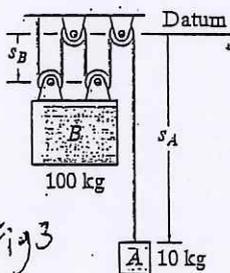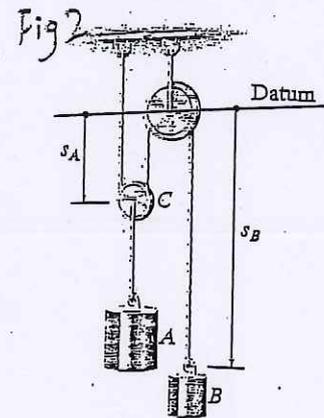
3. Blocks A and B shown in Fig. 3   have a mass of 10 kg and 100 kg, respectively. Determine the distance B travels when it is released from rest to the point where its speed becomes 2 m/s. $(g = 10 \ m/s^2)$ (25%)

Fig 3
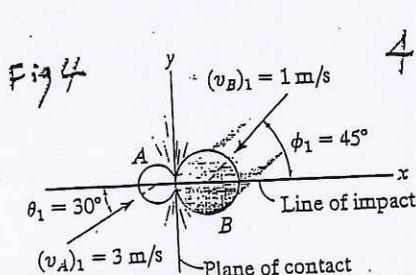
4. Two smooth disks A and B, having a mass of 1 kg and 2 kg, respectively, collide with the velocities shown in Fig. 4   . If the coefficient of restitution for the disks is $e = 0.7$, determine the x and y components of the final velocity of each disk just after collision. (35%)

Fig 4