# 臺灣綜合大學系統112學年度學士班轉學生聯合招生考試試題

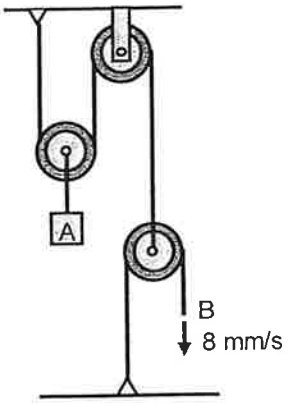
| 科目名稱 | 動力學 | 類組代碼 | D37 |
|---|---|---|---|
| | | 科目碼 | D3794 |

※本項考試依簡章規定所有考科均「不可」使用計算機。　　本科試題共計 2 頁

第 1~6 題若答錯，倒扣該題配分的五分之一，未作答則不得分也不倒扣

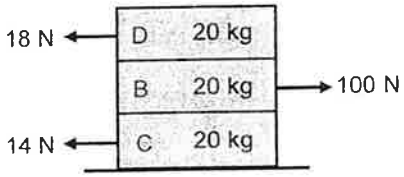
1. The cable at B is pulled downwards at a velocity of 8 mm/s, and is slowing at 4 mm/s$^2$. What is the acceleration and its direction of block A at this instant? (10%) (倒扣) 單選

   (A) 1 mm/s$^2$↑　(B) 1 mm/s$^2$↓　(C) 2 mm/s$^2$↓　(D) 2 mm/s$^2$↑



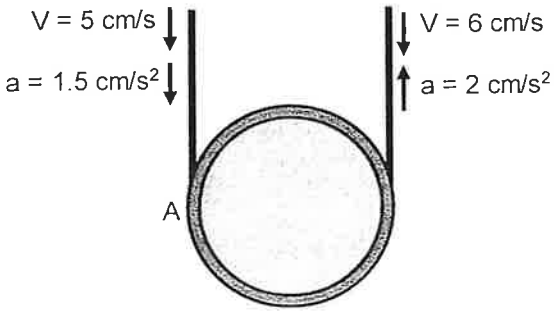

2. Consider three plates each has a mass of 20 kg. If the coefficients of the static and kinematic friction at each surface of contact are $\mu_s$=0.15 and $\mu_k$=0.1, respectively. What is the acceleration of plate D when the three horizontal forces are applied? (15%) (倒扣) 單選

   (A) 1.017 m/s$^2$　(B) 1.069 m/s$^2$　(C) 0.8 m/s$^2$　(D) 0 m/s$^2$




3. The cables supporting the pipe with a radius of 2 cm have the motion shown below at a given instant. What is the acceleration at point A located on the pipe? (20%) (倒扣) 單選

   (A) 1.50 cm/s$^2$　(B) 0.875 cm/s$^2$　(C) 5 cm/s$^2$　(D) 1.51 cm/s$^2$



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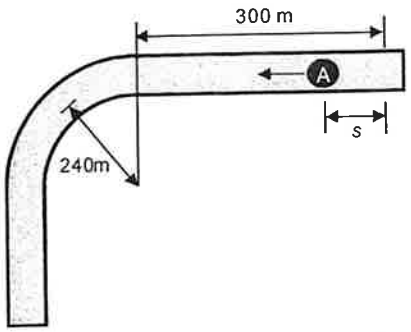
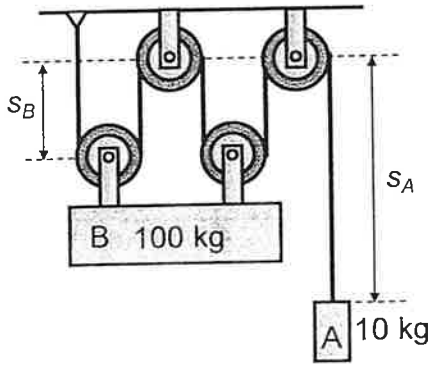
4. The particle A is originally at rest at $s = 0$. If its speed is increased by $0.05t^2$ m/s$^2$, where $t$ is in seconds, what is the magnitudes of its acceleration when $t = 18$s? (20%) (倒扣) 單選

(A) 16.2 m/s$^2$ (B) 97.2 m/s$^2$ (C) 42.6 m/s$^2$ (D) 0 m/s$^2$




5. The blocks A and B have a mass of 10 kg and 100 kg, respectively. What is the distance B travels from the point where it is released from rest to the point where its speed becomes 2 m/s? (20%) (倒扣) 單選

(A) 0.883 m (B) 0.442 m (C) 1.766 m (D) 0.697 m




6. A ball has a mass of 30 kg and traveling at a speed of 4 m/s at its lowest point ($\theta = 0^\circ$). What is the tension in the cord when $\theta = 20^\circ$? ($\cos 20^\circ = 0.9397$) (15%) (倒扣) 單選

(A) 84.5 N (B) 361 N (C) 277 N (D) 113 N