國立暨南國際大學 108 學年度碩士班入學考試試題   第 2 節

科目：材料力學   適用：土木系(結構與應力組)

編號：331

考生注意：
1.依次序作答，只要標明題號，不必抄題。
2.答案必須寫在答案卷上，否則不予計分。
3.限用藍、黑色筆作答；試題須隨卷繳回。

本 試 題
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第 ／ 頁

(1) Find the centroid $\bar{x}$ (8%) and the moment of inertia I_x (12%) for of the spandrel of nth degree $(f(x) = \dfrac{hx^n}{b^n},\ n > 0)$ as shown in the Figure 1.
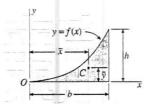

Figure 1

(2) A fixed-end beam AB supports a uniform load of intensity q acting over part of the span. Determine the reactions of this beam (see Figure 2). (32%, 8% for each reaction)
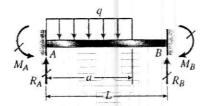

Figure 2

(3) A rigid bar AB of a length L is hinged to a support A and supported by two vertical wires attached at points C and D (see Figure 3). Both wires have the same cross-sectional area S and are made of the same material (modulus E). Determine the tensile stresses σ_c (8%) and σ_D (8%) in the wires due to the load P. Also find the downward displacement δ_B (8%) at end B of the bar.
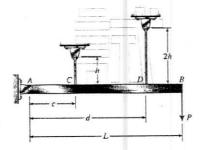

Figure 3

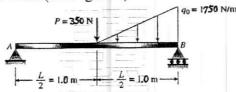(4) Draw the shear force diagram (12%) and bending moment diagram (12%) for this beam (see Figure 4).

Figure 4