

**ME 222- DYNAMICS**

**QUIZ 3**

Fall Semester 2016-2017

Name, Family Name : \_\_\_\_\_

ID # : \_\_\_\_\_ Section # : \_\_\_\_\_ Signature : \_\_\_\_\_

**Marks**

10

Date: 21/11/2016

Max. Marks: 1 x 10 = 10

Answer the following question.

Q.1 The man having the weight of 120 lb is able to run up a 10-ft-high flight of stairs in 2 s as shown in Figure Q.1. Determine the power generated. How long would a 60-W light bulb have to burn to expend the same amount of energy?

①  $P = Fv = \frac{Fd}{t}$

$\frac{120 \times 120}{2} = 7200 \text{ Ib.ft/s}$

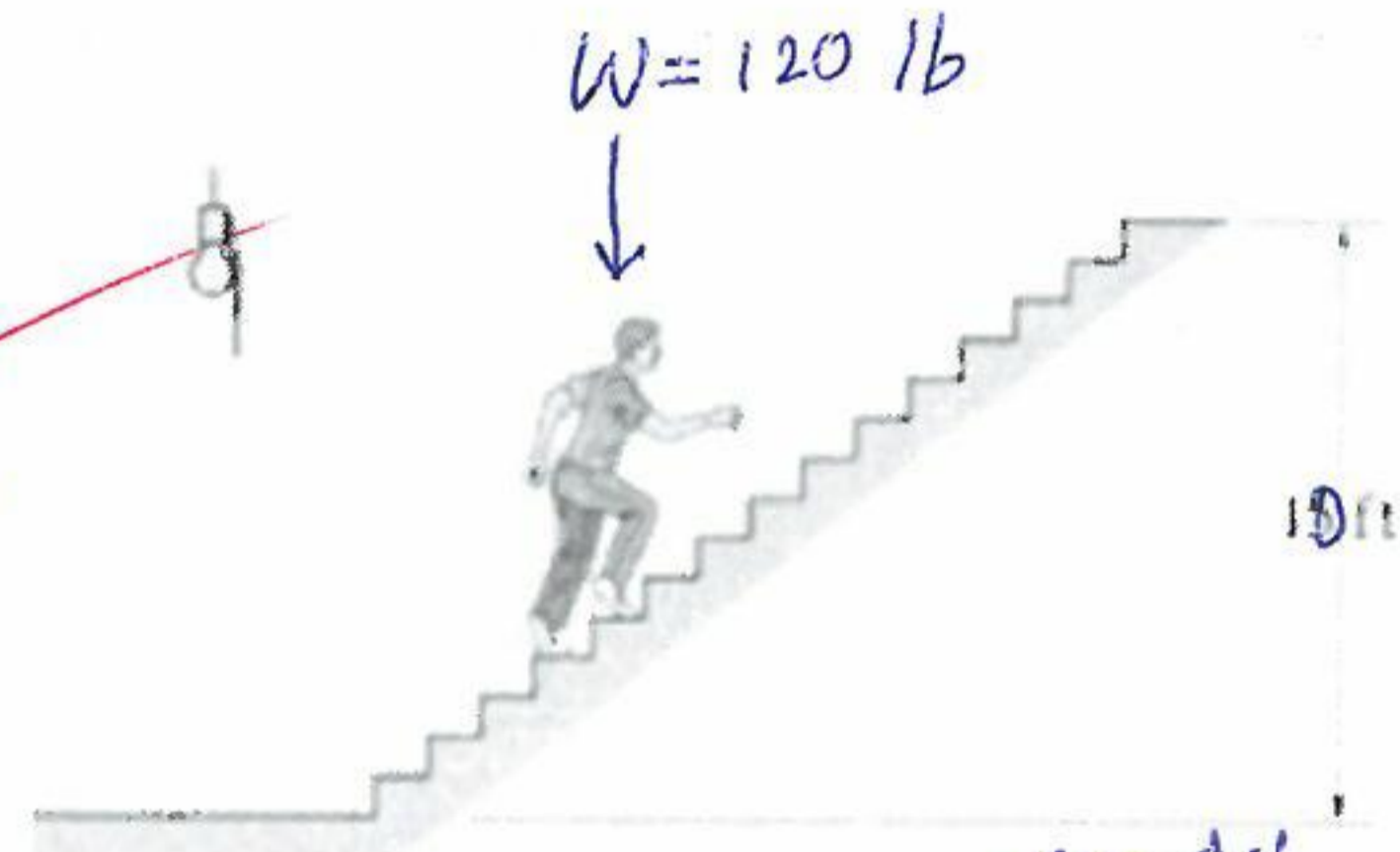


Fig. Q.1

②  $60W = 44.24 \text{ Ib.ft/s}$ ,  $P = \frac{Fd}{t}$

$1 \text{ hp} = 550 \text{ Ib.ft/s}$

$44.24 = \frac{120 \times 10}{t} \Rightarrow t = \frac{120 \times 10}{44.24} = 27.12 \text{ s}$

$\frac{60W}{746} = 0.08 \text{ hp}$

$0.08 \text{ hp} \times 550 = 44.24 \text{ Ft.Ib/s}$

10

*\* For Instructor use only*

SO - E	An ability to identify, formulate, and solve engineering problems
CO - 5	Describe and solve problems involving work and energy.
PI_5_10	Apply concepts of work, power and energy to engineering problems