Question 1 → (OPTION - C)

$$\text{Power} = \frac{\text{work}}{\text{Time}} = \frac{800}{8} = 100\ \text{W}$$

Question 2 → (option b)

$$K.E = \frac{1}{2} m v^2 = 960$$

$$\frac{1}{2}(m)(81) = 960$$

$$m \simeq 24\ \text{kg}$$

Question 3 (option a)

$$\text{Power} = \frac{\text{work}}{\text{Time}} \quad \therefore \text{Time} = \frac{4000}{20}$$

$$= 200 \text{ seconds}$$

Question 4 (option d)

$$\text{work} = \text{force} \times \text{distance}$$

$$= 23 \times 0.98$$

$$\simeq 23\ \text{J}$$

Question 5 (option d)

$$\text{Energy} = \frac{1}{2} k x^2 = \frac{1}{2} \times 890 \times (0.44)^2 = 86\ \text{J}$$

Question 6 (option e)

$$a = \frac{v-u}{t} = \frac{26}{t} \qquad f = ma = \frac{(4)(26)}{t}$$

$$d = \frac{1}{2}\left(\frac{26}{t}\right) t^2 = \frac{(26)t}{2} = 13t$$

$$w = (13t) \cdot \left(\frac{26}{t}\right) \simeq 1400\ \text{J}$$

Question 7 (option e)

Energy = Power x time
= 5 x (746) x 50
= 1.9×10^5 J

Question 8 (option e)

Potential energy = mgh

$8mg = 150 \quad mg = (150/8)$

$mg(8+3) = 11mg = 11 \times \frac{150}{8} = 210$ J

Question 9 (option d)

relative height of ball from bottom of hole
= 12m + 3m = 15m

Potential energy = mgh
= (4) x 15 x 9.81
≈ 590 J

Question 10 (option a)

Energy = force x distance
$140 = F(25)$
$F = \frac{140}{25} = 5.6$ N

Question 11 (option a)

Work of gravity = work of pump
$(8)(9.81)\,h = 190\,t$
$h/t = \frac{190}{(9.81)} \times \frac{1}{8} \approx 2.4$ m/s