SORU 1: Rüzgar Türbininin Verimi

a) $1-2n$

b) $2\rho S{v_1}^3 n(1-n)^2$

c) $4n(1-n)^2$

d) $16/27$

SORU 2: Eliptik Yörünge Denklemi

a) $r_{max} = a + \sqrt{a^2 - b^2}$ $\qquad r_{min} = a - \sqrt{a^2 - b^2}$

b) $\rho = \frac{GM^2m^2}{L^2(M+m)}$, $\varepsilon = \sqrt{\frac{G^2M^4m^4}{L^4(M+m)^2} + \frac{2EMm}{L^2(M+m)}}$, $\qquad \theta_0 = 0$

c) $Eliptik\ için \quad -\frac{G^2M^3m^3}{2L^2(M+m)} < E < 0 \qquad Dairesel\ için \quad E = -\frac{G^2M^3m^3}{2L^2(M+m)}$

SORU 3: Halka Üstünde Titreşim

a) $\vec{F} = -\frac{GMmz}{(z^2+r^2)^{\frac{3}{2}}}\,\hat{k}$

b) $F_{max} = \frac{2GMmz}{3\sqrt{3}R^2}$

c) $V(z) = -\frac{GMmz}{(z^2+r^2)^{\frac{1}{2}}}$

d) $T = 2\pi\sqrt{\frac{R^3}{GM}}$

SORU 4: Görüntü Yükler

a) $\frac{qR^3}{D^2}$

b) $\frac{3q.cos\alpha}{4\pi D^2}$

c) $\frac{q^2R^3}{2\pi\varepsilon_0 D^5}$

d) $\frac{q^2Rx}{4\pi\varepsilon_0(R^2-x^2)^2}$

e) $\sqrt{\frac{q^2}{60\pi\varepsilon_0 mR}}$

SORU 5: İçiçe Küreler

a) $-8\pi\varepsilon_0 RV_0;\quad 24\pi\varepsilon_0 RV_0$

b) $0;\quad 16\pi\varepsilon_0 RV_0$

c) $2V_0;\quad V_0(2-ln2)$

SORU 6: Gazların Enerji Seviyeleri

a) $N_1 = \frac{N}{1+e^{-\frac{10E}{kT}}+e^{-\frac{100E}{kT}}}$, $N_2 = \frac{Ne^{-\frac{10E}{kT}}}{1+e^{-\frac{10E}{kT}}+e^{-\frac{100E}{kT}}}$, $N_3 = \frac{Ne^{-\frac{100E}{kT}}}{1+e^{-\frac{10E}{kT}}+e^{-\frac{100E}{kT}}}$

b) $\frac{10Ee^{-\frac{10E}{kT}}+100Ee^{-\frac{100E}{kT}}}{1+e^{-\frac{10E}{kT}}+e^{-\frac{100E}{kT}}}$

c) $\frac{100E}{k.lnN}$

SORU 7: Sıkıştırılan Gaz

1) $P_0V_0\ln(n)$

2) $\frac{3P_0V_0}{2}[(n)^{\frac{2}{3}}-1]$