2017-2018-O’quv yili uchun 7-sinf Fizika fanidan imtihon savollariga Javoblar:

1-bilet.

1. Berilgan: $m = 3\,kg$, $a = 2\,\frac{m}{s^2}$, $A = 96\,J$; $t = ?$

Yechilishi: $A = FS = ma \cdot \frac{at^2}{2}$

$2A = ma^2t^2$

$t = \sqrt{\frac{2A}{m}} \cdot \frac{1}{a} = \sqrt{\frac{2 \cdot 96\,J}{3\,kg}} \cdot \frac{1}{2\,\frac{m}{s^2}} = 4\,s$

J: $t = 4\,s$

2. Berilgan: $m = 0{,}78\,kg$, $F_1 = 7\,N$, $\rho_t = 7800\,\frac{kg}{m^3}$, $\rho_s = 10^3\,\frac{kg}{m^3}$; $\rho_1 = ?$

Yechilishi: $F = mg - F_A$ $\quad F_A = mg - F = \rho_s V g$

$V = \frac{F - mg}{\rho_s g}$

$V = \frac{7{,}8\,N - 6{,}8\,N}{10^3\,\frac{kg}{m^3} \cdot 10\,\frac{m}{s^2}} = 10^{-4}\,m^3$

$F_1 = mg - F_{A_1}$ $\quad F_{A_1} = mg - F_1$

$\rho_1 V g = mg - F_1$ $\quad \rho_1 = \frac{mg - F_1}{Vg} = \frac{(7{,}8 - 7)\,N}{10^{-4}\,m^3 \cdot 10\,\frac{m}{s^2}} = 800\,\frac{kg}{m^3}$

J: $\rho = 800\,\frac{kg}{m^3}$

3. Berilgan: $m_1 = 0{,}7\,kg$, $m_2 = 0{,}4\,kg$, $v_2 = 300\,m/s$; $v_1 = ?$

Yechilishi: $(m_1 - m_2)\,v_1 = m_2 v_2$

$v_1 = \frac{m_2 v_2}{m_1 - m_2}$

$v_1 = \frac{0{,}3 \cdot 0{,}7}{0{,}3}\,\frac{m}{s} = 0{,}7\,\frac{m}{s}$

J: $v_1 = 0{,}7\,\frac{m}{s}$.

4. Berilgan: $g = 10\,\frac{m}{s^2}$, $g_1 = 2{,}45\,\frac{m}{s}$, $R = 6{,}4 \cdot 10^6\,m$; $h = ?$

Yechilishi: $g = G\frac{M}{R^2} \Rightarrow gR^2 = GM$

$g_1 = G\frac{M}{(R+h)^2} = \frac{gR^2}{(R+h)^2}$

$\frac{g_1}{g} = \left(\frac{R}{R+h}\right)^2$

$\frac{R}{R+h} = \sqrt{\frac{g_1}{g}} = \sqrt{\frac{2{,}45}{10}} \approx 0{,}5$

$R = 0{,}5R + h \cdot 0{,}5$

$R - h = 6{,}4 \cdot 10^6\,m$

J: $h = 6{,}4 \cdot 10^6\,m$

6. Berilgan: $t = 60\,s$, $v_0 = 40\,\frac{km}{soat} = 11{,}11\,\frac{m}{s}$, $v_2 = 7{,}8\,\frac{m}{s}$; $a = ?$

Yechilishi: $a = \frac{v_2 - v_0}{t} = \frac{(7{,}8 - 11{,}1)\,\frac{m}{s}}{60\,s} = -0{,}055\,\frac{m}{s^2}$

$t = \frac{v_0}{|a|} = \frac{11{,}1\,\frac{m}{s}}{0{,}055\,\frac{m}{s^2}} = 200\,s$

J: $a = -0{,}055\,\frac{m}{s^2}$

$t = 200\,s$.

7. Berilgan:
$l_1 = 0{,}05\ m$
$l_2 = 0{,}3\ m$
$F_1 = 12\ N$
$F_2 = ?$

Yechilishi:
$M_1 = M_2 \Rightarrow F_1 l_1 = F_2 l_2$
$F_2 = \frac{F_1 l_1}{l_2} = \frac{12N \cdot 0{,}05m}{0{,}3m} = 72\ N$
J: $F = 72\ N$

8. Berilgan:
$m = 1{,}2\ kg$
$l = 0{,}8\ m$
$h = 0{,}2\ m$
$F = 5{,}4\ N$
$\eta = ?$

Yechilishi:
$\eta = \frac{A_f}{A_b} \cdot 100\% = \frac{mgh}{Fl} \cdot 100\% =$
$= \frac{1{,}2\ kg \cdot 10\frac{m}{s^2} \cdot 0{,}2\ m}{5{,}4N \cdot 0{,}8\ m} \cdot 100\% = 55{,}6\ \%$
J: 55,6 %

10. Berilgan:
$m_1 = 1\ kg$
$m_2 = 2\ kg$
$v_1 = 1\ m/s$
$v_2 = 2\ m/s$
$\Delta E_k = ?$

Yechilishi:
$m_2 v_2 - m_1 v_1 = (m_1 + m_2) u$
$u = \frac{m_2 v_2 - m_1 v_1}{m_2 + m_1} = \frac{2 \cdot 2 - 1 \cdot 1}{2+1} \cdot \frac{m}{s} = 1\ \frac{m}{s}$
$E_{k_1} = \frac{m_1 v_1^2}{2} + \frac{m_2 v_2^2}{2} = \frac{m_1 v_1^2 + m_2 v_2^2}{2} = \frac{1\frac{m^2}{s^2} \cdot 1kg + 4\frac{m^2}{s^2} \cdot 2kg}{2} = \frac{9}{2}\ J$
$E_{k_2} = \frac{(m_1 + m_2) u^2}{2} = \frac{3kg \cdot 1\frac{m^2}{s^2}}{2} = \frac{3}{2}\ J$
$\Delta E_k = E_1 - E_2 = \left(\frac{9}{2} - \frac{3}{2}\right) J = 3J$
J: $\Delta E_k = 3J$

11. Berilgan:
$m_2 = 5\ kg$
$m_1 = 5 \cdot 10^{-3}\ kg$
$v_1 = 600\ \frac{m}{s}$
$v_2 = ?$

Yechilishi:
$m_1 v_1 = m_2 v_2$
$v_2 = \frac{m_1 v_1}{m_2} = \frac{5 \cdot 10^{-3} kg \cdot 600\ \frac{m}{s}}{5\ kg} = 0{,}6\ \frac{m}{s}$
J: $v_2 = 0{,}6\ \frac{m}{s}$

12. Berilgan:
$m = 12\ kg$
$F = 6\ N$
$t = 8\ s$
$v = ?\ a = ?$

Yechilishi:
$a = \frac{F}{m} = \frac{6N}{12kg} = 0{,}5\ \frac{m}{s^2}$
$v = at = 8s \cdot 0{,}5\ \frac{m}{s} = 4\ \frac{m}{s}$
J: $a = 0{,}5\ \frac{m}{s}$
$v = 4\ \frac{m}{s}$

13-bilet

Berilgan:
$a = 4{,}9 \frac{m}{s^2}$
$N_1 = N_2 = \frac{N}{4}$

Topish kerak:
$\mu = ?$

Formulalar:
$t_1 = t_2$
$N_1 = N_2 = \frac{N}{4}$
$\frac{R_1}{r_1} = \frac{R_2}{r_2}$
$R_1 = R_2$
$m\vec{a}_2 S = \mu m \vec{g} S$
$\vec{a} = \mu \vec{g}$
$\mu = \frac{\vec{a}}{\vec{g}} = \frac{4{,}9 \frac{m}{s^2}}{10 \frac{m}{s^2}} = 0{,}49$

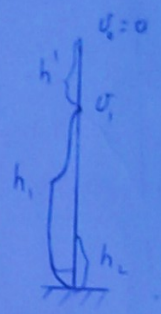
Javob: $\mu = 0{,}49$

14- bilet

Berilgan:
$h_1 = 1100m$
$t = 10s$
$h_2 = 120m$

Topish kerak:
$h = ?$

Formulalar:
$\Delta h = h_1 - h_2 = (1100 - 120)m =$
$= 980m$
$\Delta h = v_1 t + \frac{gt^2}{2}$
$980 = 10v_1 + 490$
$490 = 10v_1$
$v_1 = 49 \frac{m}{s}$
$t = \frac{v_1}{g} = 5s$
$h' = \frac{9{,}8 \cdot 25}{2} m = 122{,}5m$
$h = (122{,}5 + 1100)\, m = 1222{,}5m$



16- bilet

Berilgan:
$t_1 = 5s$
$S_1 = 25m$
$S_2 = 400m$

$t_2 = ?$

Formulalar:
$a = \frac{2S}{t^2} = \frac{2 \cdot 25m}{25s^2} = 2 \frac{m}{s^2}$
$t_2 = \sqrt{\frac{2S_2}{a}} = \sqrt{\frac{2 \cdot 400\, m}{2 \frac{m}{s^2}}} = 20s$

J: $t = 20s$.

17. Berilgan:

$r = 0{,}25\ m$

$\nu = 4\ s^{-1}$

$\vartheta = ?\quad \omega = ?$

Formulasi:

$\vartheta = 2\pi r \nu = 2 \cdot 3{,}14 \cdot 0{,}25\ m \cdot 4\ s^{-1} =$

$= 6{,}28\ \frac{m}{s}$

$\omega = 2\pi R = \frac{\pi}{2} = \frac{3{,}14}{2} = 1{,}57\ \frac{rad}{s}$

J: $\vartheta = 6{,}28\ \frac{m}{s}$

$\omega = 1{,}57\ \frac{rad}{s}$

18. Berilgan:

$S = 4000\ m^2$

$h = 1{,}5\ m$

$\rho_s = 1030\ \frac{kg}{m^3}$

$m = ?$

Formulasi:

$F_A = F_{og}$

$\rho_s V g = mg$

$\rho_s S h = m$

$m = 1030\ \frac{kg}{m^3} \cdot 4000\ m^2 \cdot 1{,}5\ m = 6000 \cdot 1030\ kg =$

$= 618 \cdot 10^4\ kg = 6180\ t$

J: $m = 6180\ t$

19. Berilgan:

$\rho_y = 700\ \frac{kg}{m^3}$

$n = 12$

$\rho_s = 10^3\ \frac{kg}{m^3}$

$a = 4\ m$

$b = 0{,}3\ m$

$d = 0{,}25\ m$

$F = 10^4\ N$

Kötaro oladimi?

Formulasi:

$P_1 = F_A - mg = (\rho_s - \rho_y) n \cdot Vg =$

$= (\rho_s - \rho_y) n\, abdg = 300\ \frac{kg}{m^3} \cdot 12 \cdot 4\ m \cdot 0{,}3\ m \cdot$

$\cdot 0{,}25\ m \cdot 10\ \frac{m}{s^2} = 10800\ N$

$P_1 > F$

J: kötaro oladi.

20. Berilgan:

$F_1 = 10\ kN = 10^4\ N$

$F_2 = 30\ kN = 3 \cdot 10^4\ N$

$a_1 = 0{,}5\ \frac{m}{s^2}$

Topish kerak

$a_2 = ?$

Yechilishi:

$F_1 = m_1 a_1$

$F_2 = m_2 a_2$

$m_1 = \frac{F_1}{a_1} \quad m_2 = \frac{F_2}{a_2}$

$\frac{F_1}{a_1} = \frac{F_2}{a_2} \quad a_2 = \frac{F_2 a_1}{F_1} = \frac{3 \cdot 10^4\ N \cdot 0{,}5\ \frac{m}{s^2}}{10^4\ N} = 1{,}5\ \frac{m}{s^2}$

J: $a_2 = 1{,}5\ \frac{m}{s^2}$

21. Berilgan

$t = 10\ s$

$S = 150\ m$

$\vartheta_m = 3\vartheta_0$

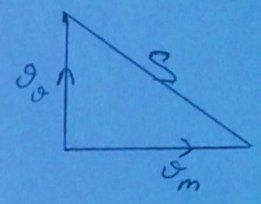
$\vartheta_m = ?$

Yechilishi:

$S = \vartheta \cdot t$

$\vartheta = \sqrt{\vartheta_0^2 + \vartheta_m^2} = \sqrt{\frac{\vartheta_m^2}{9} + \vartheta_m^2} =$

$= \frac{\sqrt{10}\,\vartheta_m}{3}$



$150\ m = \frac{\sqrt{10}}{3}\vartheta_m \cdot 10s$

$45 = \sqrt{10}\,\vartheta_m$

J: $\vartheta_m = \frac{45m}{\sqrt{10}s}$

22. Berilgan:

$CB = 30\ km$

$AD = 18\ km$

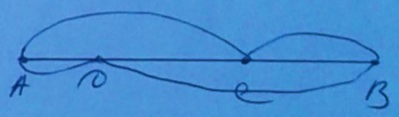
$S = ?$

$S = x$

$t_1 = t_2 \Rightarrow \frac{x-30}{\vartheta_1} = \frac{30}{\vartheta_2}$

$t_1' = t_2' \Rightarrow \frac{30+x-18}{\vartheta_1} =$

$= \frac{x^2 - 30 + 18}{\vartheta_2}$



$\frac{x-30}{x+12} = \frac{30}{x-12}$

$x^2 - 42x + 360 = 30x + 360$

$x^2 - 72x = 0$

$x = 0 \qquad x = 72\ km$

J: $x = S = 72\ km$

24. Berilgan:

$S_1 = 8\ sm^2 = 8 \cdot 10^{-4}\ m^2$

$S_2 = 800\ sm^2 = 8 \cdot 10^{-2}\ m^2$

$F_1 = 600\ N$

$F_2 = 54\ kN = 54 \cdot 10^3\ N$

$n_1 = ?\quad n_2 = ?$

Yechilishi:

$P_1 = P_2$

$\frac{F_1}{S_1} = \frac{F_2'}{S_2}$

$F_2 = \frac{F_1 S_2}{S_1} = \frac{600\ N \cdot 8 \cdot 10^{-2}\ m^2}{8 \cdot 10^{-4}\ m^2} =$

$= 60000\ N$

$n_1 = \frac{F_2'}{F_1} = \frac{60000\ N}{600\ N} = 100$

$n_2 = \frac{F_2}{F_1} = \frac{54 \cdot 10^3}{600} = 90$

J: $n_1 = 100$

$n_2 = 90$

25. Berilgan:

$h_1 = 408\ m$

$h_2 = 192\ m$

$h_3 = 100\ m$

$\Delta p = 9\ mm\ Hg$

$P_0 = 760\ mm\ Hg$

$P_1 = ?$

Yechilishi:

$\Delta P_1 = \frac{h_1 + h_2}{h} = \Delta p = 54\ mm\ Hg$

$P_1 = P_0 - \Delta P_1 = 706\ mm\ Hg$

J: $P_1 = 706\ mm\ Hg$

26. Berilgan:

$h_1 = 13,6\ sm =$

$= 13,6 \cdot 10^{-2}\ m$

$\rho_{sim} = 13,6 \cdot 10^3\ kg$

$\rho_{suv} = 1000\ \frac{kg}{m^3}$

Topish kerak

$h_2 = ?$

Formulasi:

$P_1 = P_2$

$\rho_{sim} \cdot g h_2 = \rho_{suv} \cdot g h_1$

$h_2 = \frac{\rho_{suv} \cdot h_1}{\rho_{sim}} = \frac{10^3\ \frac{kg}{m^3} \cdot 13,6 \cdot 10^{-2}\ m}{13600\ \frac{kg}{m^3}} =$

$= \frac{136}{13600}\ m = 10^{-2}\ m = 1\ sm$

Javob: $h_2 = 1\ sm$

27. Berilgan:

$m = 10\ kg$

$F = 30\ N$

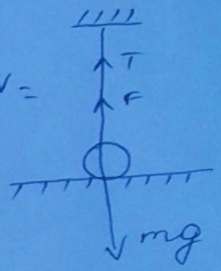
$T = ?$

$mg = T + F$

$T = mg - F = 100\ N - 30\ N =$

$= 70\ N$

Y: $T = 70\ N$



28. Berilgan:

$m_1 = 500\ kg$

$m_2 = 300\ kg$

$m_3 = 700\ kg$

$\rho_m = ?$

Formulasi:

$m_1 + m_2 = m_3 + m_s$

$m_s = m_1 + m_2 - m_3$

$m_s = 800\ kg - 700\ kg = 100\ kg$

$m_s = \rho_s \cdot V_s$

$V_s = \frac{m_s}{\rho_s g} = \frac{100\ kg}{10^3\ \frac{kg}{m^3}} = 10^{-1}\ m^3$

$V_s = V_m$ $V_m = 10^{-1}\ m^3$

$m_2 = \rho_m V_m$ $\rho_m = \frac{m_2}{V_m} = \frac{300\ kg}{10^{-1}\ m^3} = 3000\ \frac{kg}{m^3}$ Y: $3000\ \frac{kg}{m^3}$

30 Berilgan:

$m_1 = 7,2 \cdot 10^6 kg$

$h_1 = 300 m$

$\rho_2 = \frac{\rho_1}{2}$

$h_2 = 0,3 m$

$m_2 = ?$

Formulasi:

$\frac{V_1}{V_2} = \left(\frac{h_1}{h_2}\right)^3 \cdot \frac{m_1}{m_2} = \frac{\rho_1 V_1}{\rho_2 V_2} =$

$= \frac{\rho_1 V_1}{\frac{\rho_1}{2} V_2} = 2 \cdot \frac{V_1}{V_2} = \left(\frac{h_1}{h_2}\right)^3 \cdot 2 =$

$= \frac{7,2 \cdot 10^6 kg}{m_2}$

$m_2 = \frac{7,2 \cdot 10^6 kg}{2 \cdot 10^9} = 3,6 \cdot 10^{-3} kg =$

$= 3,6 g$

Y: $m_2 = 3,6 g$

IMTIHON JAVOBLARINI @IMTIHONUZ2018 KANALI TAYYORLADI.
IMTIHON JAVOBLARINI OLISH UCHUN: @IMTIHONCHIUZ
TELEGRAMDAGI MANZILLARIMIZ: @IMTIHONUZ2018

@DTMTEST_UZ
TAM-TAM MANZILIMIZ: HTTP://TT.ME/DTMTESTUZ
KANALDA UZOQLASHMANG SIZLARGA IMTIHON JAVOBLARINI BERISHDA DAVOM ETAMIZ.