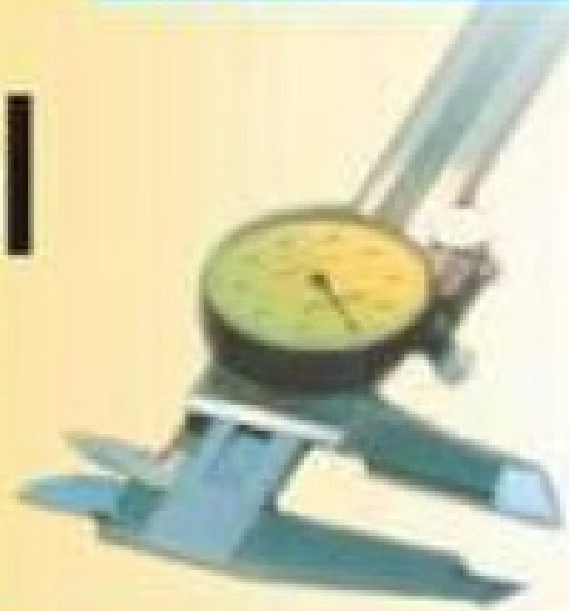
NEW EDITION

Numerical Problems in Physics



For Class 9

House of Physics Publications

NUMERICAL 9TH

CHAPPTER # 01

(a) 5000g 1.1
$5x10^3g = 5kg$
(b) 2000000W
$= 2x10^6W = 2MW$
(c) $52x10^{-10}kg$
$= 52x10^{-10}x10^3g$
$= 52x10^{-7}g$
$= 5.2x10^{-6}g$
=5.2ug
(d) $225x10^{-10}s$
$= 2.25x10^{-6}s$
= 2.25us

$1p=10^{-12}$ / $1n=10^{-9}$
$1u=10^{-6}$ / $1u=10^3n$
$1n=10^3$ / $1u=10^6p$

بال بڑھنے کی شرح 1.3
= V = d/t
= 1mm/1 day
$= 1x10^{-3}/86400$
$= 1.157x10^{-5}x10^{-3}$
$= 1.157x10^{-8}$
$= 11.57x10^{-9}$
= 11.57nm/s

(a) $1168x10^{-27}$ 1.4
$= 1.168x10^{-27+3}$
$= 1.168x10^{-24}$
(b) $32x10^5$
$= 3.2x^{5+1} = 3.2x10^6$
(c) $725x10^{-5}kg$
$= 725x10^{-5}x10^3g$
$= 725x10^{-2}g$
= 7.25g
(d) $0.02x10^{-8} =$
$2x10^{-8-2} = 2x10^{-10}$

(a) 6400km 1.5
$=6.4x10^3km$
(b) 380000km
$=3.8x10^5km$
(c) 300000000m/s
$=3x10^8m/s$
(d) ایک دن میں سیکنڈ =
=24x60x60s
=86400s
$=8.64x10^4s$

زیرو ایرر =0.01x4 1.6
= 0.04cm
زیرو کوریکشن = -0.04cm

درجوں کی تعداد = 50 1.7
سکریو کی پچ = 0.5mm
L.C = pitch/darje
= 0.5/50 = 0.01cm

0.00309kg = 3 1.8
$5.05x10^{-27} = 3$

1.009m 4 1.9
0.00450kg=3
$1.66x10^{-27}kg=3$
2001s=4

لمبائی = 6.7cm 1.10
چوڑائی = 5.4cm
رقبہ = LxW =6.7x5.4
$36.78cm^2=36cm^2$

CHAPPTER # 02

V=36km/h 2.1
=36x1000m/3600
V =10m/s
t = 10s
S = Vxt
=10x10=100m

$V_i = 0$ 2.2
S = 1000m
t = 100s
V_f =?
$S = V_it + ½ at^2$
$1000 = 0x100 + ½ x a x (100)^2$
$a = 0.2m/s^2$
$V_f = Vi + at$
=0+0.2x100=20m/s

V_i = 10m/s 2.3
$a = 0.2m/s^2$
t = 30s
S = ?
V_f = ?
$V_f = V_i + at^2$
= 10+0.2x30
= 10+6=16m/s
$S = V_it + ½ at$
$=10x30+½0.2(30)^2$
$=300+½0.2x900$
=300+90=390m

V_i = 30m/s 2.4
$V_f = 0$
$g = -10m/s^2$
h = ?
$2gh = V_f^2 – V_i^2$
$2(-10)h=(0)^2-(30)^2$
-20h = -900
h = -900/-20
h = 45m
واپسی کا ٹائم =t=3s

پانچ سیکنڈ میں طے فاصلہ 2.5
V_i = 40m/s
t = 5s
$S_1 = Vxt$
$S_1 = 40x5=200m$
دس سیکنڈ میں طے فاصلہ
V_i = 40m/s
$V_f = 0$
t = 10s
$V_{av}=V_f–V_i/2$
= 0+40/2 = 20m/s
$S_2 = Vxt$
$S_2 = 20x10=200m$
کل فاصلہ = S_1+S_2
=200+200=400m
Retardation
$a_{av} = V_f–V_i/t$
=0-40/10=-40/10
$=-4m/s^2$

Vi = 0 2.6
a = 0.5m/s2
S = 100m
V_f = ?
$2aS = V_f^2 – V_i^2$
$2(0.5)100=V_f^2-(0)^2$
$V_f^2 = 100$
$V_f = 10m/s^2$
V_f = 10x3600/1000
V_f = 36km/h

دو منٹ میں طے فاصلہ 2.7
$V_i = 0$
V_f = 48km/h
=13.33m/s
t = 2mint=2x60
= 120s
$V_{av} = V_f-V_i/2$
= 0+13.33/2
=6.66m/s
$S_1 = V_{av}xt$
=6.66x120
=800m
پانچ منٹ میں طے فاصلہ
V = 13.33m/s
t = 5mint=5x60
= 300s
$S_2 = Vxt$
=13.66x300
=4000m
تین منٹ میں طے فاصلہ
V_i = 13.66m/s
$V_f = 0$
t = 3mint=3x60
= 180s
$V_{av} = V_f-V_i/2$
=0+13.66/2
=6.66m/s
$S_3 = V_{av}xt$
=6.66x180
=1200m
کل فاصلہ = $S_1+S_2+S_3$
=800+4000+1200
=6000m

اوپر جانے کا وقت = 2.8
t = 6/2 = 3s
$g = -10m/s^2$
$V_f = 0$
h = ?
V_i = ?
$V_f = V_i + gt$
$0 = V_i + (-10)x3$
V_i = 30m/s
$2gh = V_f^2-V_i^2$
$2(-10)h=(0)2-(30)2$
-20xh=-900
h=-900/-20=45m

S = 800m 2.9
V_i = 96km/h
= 26.67m/s
V_f = 48km/h
= 13.33m/s
a = ?
$2aS = V_f^2-V_i^2$
$2xax800 = (13.33)^2-(26.67)^2$
1600xa =
177.68-711.28
a = -533.6/1600
$= -0.3335m/s^2$
اس ایکسلریشن سے طے فاصلہ
V_i = 13.33m/s
$V_f = 0$
$a = -0.3335m/s^2$
S = ?
$2aS = V_f^2-V_i^2$
$2x(-0.3335)xS = (0)^2-(13.33)^2$

0.667xS = -177.66
S = -177.66/-0.667
S = 266.4m

V_i = 26.67m/s 2.10
V_f = 0
$a = -0.3335m/s^2$
$V_f = V_i + at$
t = Vf-Vi/a
t = 0-26.67/-0.3335
t = 80s

CHAPPTER # 03

F = 20N 3.1
$a = 2m/s^2$
F = ma
m = F/a
= 20/2 = 10kg

W = 147N 3.2
$g = 10m/s^2$
W = mg
m = W/g
= 147/10=14.7kg

m = 10kg 3.3
$g = 10m/s^2$
W = mg => F
= 10x10 = 100N

F = 100N 3.4
m = 50kg
F = ma
a = F/m
$= 100/50 = 2m/s^2$

W = 20N 3.5
$a = 2m/s^2$
$g = 10m/s^2$
W = mg
m = W/g
= 20/10 = 2kg
F = ma
= 2x2 = 4N
ساری فورس = W+F
F = 20+4 = 24N

m_1 = 52kg 3.6
m_2 = 48kg
$g = 10m/s^2$

$$a = \frac{(m_1-m_2)g}{m1+m2}$$

=(52-48)x10/52+48
=4x10/100=40/100
$a = 0.4m/s^2$

$$T = \frac{2m_1m_2g}{m_1+m_2}$$

=2x52x48x10/100
=49920/100
T = 500N

m_1 = 24kg 3.7
m_2 = 26kg
$g = 10m/s^2$

$$a = \frac{m_1g}{m_1+m_2}$$

= 24x10/24+26
$a=240/50=4.8m/s^2$

$$T = m_1m_2g/m_1+m_2$$

=24x26x10/24+26
T= 6240/50=125N

ΔP = 22Ns 3.8
F = 20N
F = ΔP/t
t = ΔP/F = 22/20
t = 1.1s

m = 5kg 3.9
μ = 0.6
F_s = μF = μmg
F_s= 0.6x5x10=30N

m = 0.5kg 3.10
r = 50cm
r = 50/100 = 0.5m
v = 3m/s
$F_c = mv^2/r$
$= 0.5x(3)^2/0.5=9N$

CHAPPTER # 04

F_x = 10-4 = 6N 4.1
F_y = 6N
$F = \sqrt{Fx^2 + Fy^2}$
$F = \sqrt{6^2 + 6^2}$
$F = \sqrt{72}$ = 8.5N
$\theta = \tan^{-1}(F_y/F_x)$
$\theta = \tan^{-1}(6/6)$
$\theta = \tan^{-1}(1) = 45^0$

F = 50N 4.2
$\theta = 30^0$
F_x = Fcos θ
$= 50\cos30^0$
$=50x0.866=43.3N$
F_y = Fsin θ
$= 50\sin30^0$
= 50x0.5 = 25N

F_x = 12N 4.3
F_y = 5N
$F = \sqrt{Fx^2 + Fy^2}$
$F = \sqrt{12^2 + 5^2}$
$F = \sqrt{169}$ = 13N
$\theta = \tan^{-1}(F_y/F_x)$
$\theta = \tan^{-1}(5/12)$
$= 22.6^{0=}$

F = 100N 4.4
r = 10cm = 0.1m
τ = rF
= 0.1x100 = 10Nm

F_x = 20N 4.5
$\theta = 30^0$
F_x = Fcos θ
F = F_x/cos θ
$= 20/\cos30^0$
= 20/0.866
= 23.1N

F = 50N 4.6
r = 16cm = 0.16m
کپل کا ٹارک =
τ = 2rF
=2x0.16x50=16Nm

T_1 = 3.8N 4.7
T_2 = 4.4N
$W = T_1 + T_2$
= 3.8+4.4 = 8.2N

m_1 = 3kg 4.8
m_2 = 5kg
T_1 = mg
= 3x10 = 30N
$T_2 = (m_1+m_2)g$
= (3+5)x10
= 80N

F_1 = 200N 4.9
r_1 = 20cm = 0.2m
F_2 = 150N
r_2 = ?
$τ_1 = τ_2$
$F_1r_1 = F_2r_2$
$r_2 = F_1r_1/F_2$
= 0.1x200/150
=0.133m=13.3cm

m = 10kg 4.10
F_1 = mg
F_1=10x10=100N
r_1 = 20cm = 0.2m
r_2 = 50cm = 0.5m
F_2 = ?
انٹی کلاک وائز = کلاک وائز
$F_2r_2 = F_1r_1$
$F_2 = F_1r_1/r_2$
= 100x0.2/0.5
= 20/0.5=40N

CHAPPTER # 05

m_1 = 1000kg 5.1
m_2 = 1000kg
d = 0.5m
$G = 6.67x10^{-11}$ Nm²kg⁻²
$F = Gm_1m_2/d^2$
$=Gx10^3x10^3/(0.5)^2$
$=\mathbf{6.67x10^{-11}x10^6/0.25}$
$= 26.7x10^{-11+6}$
$= 26.7x10^{-5}$
$= 2.67x10^{-4}$ N

m = m_1 = m_2 =? 5.2
F = 0.006673N
d = 1m
$G = 6.67x10^{-11}$ Nm²kg⁻²
$F = Gm_1m_2/d^2$
$m^2 = Fxd^2/G$

$$= \frac{0.006673(1)^2}{6.673x10\text{-}11}$$

$$= \frac{\cancel{6.673}x10^{-3}}{\cancel{6.673}x10^{-11}}$$

$m^2 = 1x10^{-3+11}$
$= 10^8$
$\sqrt{m2} = /(10^4)^2$
m = 10000kg

$M_m = 6.42x10^{23}$kg
R_m = 3370km 5.3
$= 3.370x10^6$m
$G = 6.67x10^{-11}$ Nm²kg⁻²
$g_m = GM_m/R^2$

$$= \frac{\mathbf{6.673x10^{-11}x6.42x10^{23}}}{\mathbf{(3.370x10^6)^2}}$$

$$= \frac{42.84x10^{23-11}}{11.35x10^{12}}$$

$= 3.77x10^{12-12}$
$= 3.77x10^0$
$g_m = 3.77m/s^2$

$g_m = 1.62m/s^2$ 5.4
R_m = 1740km
$= 1.740x10^6$m
$G = 6.67x10^{-11}$ Nm²kg⁻²
$M_m = g_mR^2/G$

$$= \frac{1.62x(1.74x10^6)^2}{6.673x10^{-11}}$$

$$= \frac{1.62x3.027x10^{12}}{6.673x10^{-11}}$$

$$= \frac{4.904712}{6.673}x10^{12+11}$$

$= 0.735x10^{23}$
$M_m = 7.35x10^{22}$kg

h = 3600km 5.5
$= 3.6x10^6$m

$R = 6.4x10^6m$
$M_e = 6x10^{24}kg$
$g_m = GM/(R+h)^2$
$= \frac{6.67x10^{-11}x6x10^{24}}{(6.4x10^6+3.6x10^6)^2}$
$= \frac{40.038x10^{24-11}}{[(6.4+3.6)x10^6]^2}$
$= \frac{40.038x10^{13}}{(10x10^6)^2}$
$= \frac{40.038x10^{13}}{100x10^{12}}$
$= 0.4x10^{13-12}$
$= 0.4x10^1$
$g_m = 4m/s^2$

R = 48700km 5.6
$= 48.7x10^6m$
$g = GM/R^2$
$= \frac{6.67x10^{-11}x6x10^{24}}{(48.7x10^6)^2}$
$= \frac{40.038x10^{24-11}}{2371.69x10^{12}}$
$= 0.017x10^{13-11}$
$= 0.017x10^1$
$g = 0.17m/s^2$

R = 10000km 5.7
$= 10^7m$
$g = 4m/s^2$
$M_e = gR^2/G$
$= \frac{4x(10^7)^2}{6.67x10^{-11}}$
$= 0.599x10^{14+11}$
$= 0.599x10^{25}$
$M = 5.99x10^{24}kg$

$g_h = ¼ g$ 5.8
$g_h = GM/(R+h)^2$
$(R+h)^2 = GM/g_h$
$= GM/ ¼ g$
$(R+h)^2 = 4GM/g$
دونوں طرف جذر لی
$/(R+h)^2 = /4GM/g$
$R+h = /4R^2$
$R+h = 2R$
$h = 2R-R$
$h = R$

h = 850km 5.9
$h = 0.85x10^6m$
$V_0 = (GM/R+h)^{1/2}$
$= \frac{(6.673x10^{-11}x6x10^{24})^{1/2}}{(0.85x10^6+6.4x10^6)^{1/2}}$
$= \frac{(40.038x10^{13})^{1/2}}{[(0.85+6.4)10^6]^{1/2}}$
$= \frac{(40.038x10^{13-6})^{1/2}}{(7.25)^{1/2}}$
$= (5.522x10^7)^{1/2}$
$= (55.22x10^6)^{1/2}$
$= 7.431x10^3$
$V_0 = 7431m/s$

h = 42000km 5.10
$= 42x10^6m$
$V_0 = (GM/R+h)^{1/2}$
$= \frac{(6.673x10^{-11}x6x10^{24})^{1/2}}{(42x10^6+6.4x10^6)^{1/2}}$
$= \frac{(40.038x10^{24-11})^{1/2}}{[(42+6.4)10^6]^{1/2}}$
$= \frac{(40.038x10^{13-6})^{1/2}}{(48.4)^{1/2}}$
$= (0.8272x10^7)^{1/2}$
$= (8.272x10^6)^{1/2}$
$= 2.876x10^3$
$V_0 = 2876m/s$

CHAPPTER # 06

F = 300N 6.1
d = 35m
W = Fd
= 300x35 = 10500J

W = mg = 20N 6.2
h = 6m
P.E = mgh
= 20x6 = 120J

W = 12kN 6.3
= 12000N
V = 20m/s
m = W/g (w=mg)
=12000/10=1200kg
$K.E = ½ mV^2$
$= ½ x1200x(20)^2$
$= 600x400$
$= 240000$
$= 240x10^3 = 240kJ$

m = 500g 6.4
= 0.5kg
V = 15m/s
$K.E = ½ mV^2$
$= ½ x500x(0.5)^2$
$= 0.5x225/2$
K.E = 56.25J
کنزرویشن آف انرجی کے قانون کے مطابق
P.E = 56.25J

h = 6m 6.5
V = 1.5m/s
m = 40kg
P.E = mgh
= 40x10x6 = 2400J
$K.E = ½ mV^2$
$= ½ 40x(1.5)^2$
$= 20x2.25 = 45J$

V = 4m/s 6.6
F = 4000N
P = W/t = F.d/t
P = F.V = 4000x4
= 16000W = 16kW

F = 300N 6.7
d = 50m
t = 60s
P = W/t = F.d/t
P = 300x50/60
= 250W

m = 50kg 6.8
t = 20s
سیڑھی کی لمبائی = 16cm
= 16/100 = 0.16m
سیڑھیوں کی تعداد = 25
h = 25x0.16 = 4m
P = W/t = mgh/t
= 50x10x4/20
= 100W

m =200kg 6.9
h = 6m
t = 10s
P = W/t = mgh/t
= 200x10x6/10
= 1200W

P = 1hp = 746W
t = 10mint = 600s
m = 800kg 6.10
h = 15m
W = Pxt (P=W/t)
= 746x600
input = 447600J
W = mgh
= 800x10x15
output = 120000J
E_f = (output/input)100
$= \frac{120000}{447600} x100$
$E_f = 26.8\%$

CHAPPTER # 07

m = 850g 7.1
=850/1000=0.85kg
V =40cmx10cmx5cm
$= \frac{40m}{100} x \frac{10m}{100} x \frac{5m}{100}$
= 0.4m x 0.1m x 0.05m
$V = 0.002m^3$
$\rho = m/V$
= 0.85/0.002
$= 425kg/m^3$

m = 1L = 1kg 7.2
ρ = 0.92kg/L
V = m/ρ
= 1/0.92 = 1.09L

(a) m = 5kg 7.3
$\rho = 8200kg/m^3$
$V = m/\rho = 5/8200$
$= 6.01x10^{-4}m^3$
(b) m = 200g
= 200/1000 = 0.2kg
$\rho = 11300kg/m^3$
$V = m/\rho=0.2/11300$
$= 1.77x10^{-5}m^3$
(c) m = 0.2kg
$\rho = 19300kg/m^3$
$V = m/\rho=0.2/19300$
$= 1.04x10^{-5}m^3$

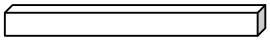
$\rho = 1.3kg/m^3$ 7.4
V = 8m x 5m x 4m
$= 160m^3$
m = ρ x V
= 160x1.3
=208kg

F = 75N 7.5
$A = 1.5cm^2$
$= \frac{1.5m}{100} x \frac{1.5m}{100}$
= 0.015m x 0.015m
$= 0.000225m^2$
P = F/A
= 75/0.000225
$= 3.33x10^5Pa$

L = 10mm 7.6
= 10/1000 = 0.01m
A = LxL=0.01x0.01
$= 1x10^{-4}m^2$
F = 20N
$P = F/A = 20/10^{-4}$
$= 2x10^5N/m^2$

m=1000g=1kg 7.7
A = 7.5cm x 7.5cm
$= \frac{7.5m}{100} x \frac{7.5m}{100}$
= 0.075m x 0.075m
$A = 0.005625m^2$
F = mg
= 1x10 = 10N
P = F/A

= 10/0.005625
= 1778N/m^2



$V = \frac{20cm}{100} \times \frac{7.5\ cm}{100} \times \frac{7.5cm}{100}$
= 0.2m x 0.075m x 0.075m
V = 0.001125m^3
ρ = m/V
= 1/0.001125
= 888.89kg/m^3

کیوب کے ماس اور ڈینسٹی کے لحاظ سے اس کا اصل والیوم 7.8
m = 306g
ρ = 2.55g/cm^3
V_0 = m/ρ
= 306/2.55
= 120cm^3
کیوب کی شکل کی وجہ سے اس کا والیوم
V_s =5x5x5=125cm^3
کیویٹی کا والیوم =V_c=V_s-V_o
V_c =125-120=5cm^3

W_{air} = 18N 7.9
W_{water} = 11.4N
D=(W_{air}/W_{air}-W_{wat})ρ
D = (18/6.6)x1000
= 2727kg/m^3 **(Al)**

W = 3.06N 7.10
m = W/g = 3.06/10
= 0.306kg = 306g
ρ = 0.6g/cm^3
(a) V = m/ρ
= 306/0.6 =510cm^3
(b) V = m/ρ
= 306/0.9 =340cm^3

F_2 = 20000N 7.11
پریس کے پسٹن کا ایریا
D = 30cm
R = D/2 = 30/2
= 15cm = 0.15m
A = πR^2
= 3.14x(0.15)^2
= 0.07065m^2
پمپ کے پسٹن کا ایریا
d = 3cm
r = d/2 = 3/2
= 1.5cm=0.015m^2
a = πr^2
= 3.14x(0.015)^2
= 0.0007065m^2
$F_2/A = F_1/a$
$F_1 = F_2xa/A$
$=\frac{20000x0.0007065}{0.07065}$
F_1 = 14.13/0.07065
F_1 = 200N

A = 2x10^{-5}m^2 7.12
F = 4000N
اصل لمبائی = L = 2m
ΔL = 2mm
= 2/1000 = 0.002m
Y = FxL/AxΔL
=4000x2/2x10^{-5}x.002
= 8000/4x10^{-8}
Y = 2x10^{11}N/m^2

CHAPPTER # 08

C = 50^{0}C 8.1
F = 1.8^{0}C+32
= 1.8x50+32
F = 122^{0}F

F = 98.6^{0}F 8.2
C = (F-32)/1.8
= (98.6-32)/1.8
= 37^{0}C
K = C+273
= 37+273
= 310K

L_0 = 2m 8.3
T_1 = 0^{0}C = 273K
T_2 = 20^{0}C = 293K
α = 2.5x10^{-5}K^{-1}
ΔL = αL_0(T_2-T_1)
= 2.5x10^{-5}x2(293-273
= 2.5x10^{-5}x2(20)
= 2.5x40x10^{-5}
= 100/10^5
= 0.001m = 0.1cm

V_0 = 1.2m^3 8.4
T_1 = 15^{0}C = 288K
T_2 = 40^{0}C = 313K
β = 3.67x10^{-3}K^{-1}
V = V_0(1+βΔT)
=1.2[1+3.67x10^{-3}(313-288)]
= 1.2[1+3.67x10^{-3}(25)]
= 1.2[1+0.09175]
V = 1.3m^3

m = 0.5kg 8.5
T_1 = 10^{0}C = 283K
T_2 = 65^{0}C = 338K
C = 4200J/kgK
ΔQ = CmΔT
= 0.5x4200(338-283)
= 05x4200x55
ΔQ = 115500J

ΔQ = 1000J/s 8.6
m = 200g = 0.2kg
T_1 = 20^{0}C = 293K
T_2 = 90^{0}C = 363K
Q = CmΔT/t
t = 4200x0.2(363-293)/Q
t = 840(70)/1000
t = 58800/1000
t = 58.8s

ΔQ = 50000J 8.7
H_f = 336000K/kg
m = ΔQ/H_f ($\Delta Q = H_f m$)
m = 50000/336000
= 0.149kg
=150g

m = 100g = 0.1kg
برف کو گرم کرنے کے لیے درکار حرارت
Q_1 = CmΔT (-10→0)
= 2100x0.1[0-(-10)]
Q_1 = 2100J 8.8
برف کو پگھلانے کے لیے درکار حرارت
Q_2 = mH_f (@ 0^{0}C)
= 0.1x336000
Q_2 = 33600J
پانی کو گرم کرنے کے لیے درکار حرارت
Q_3 = CmΔT (0→10)
= 4200x0.1(10-0)
Q_3 = 4200J
کل حرارت = Q_1+Q_2+Q_3
=2100+33600+4200
Q = 39900J

m = 100g = 0.1kg
T = 100^{0}C 8.9
H_v = 2.26xx10^{6}J/kg
ΔQ = mH_v
= 0.1x2.26x10^6
= 2.26x10^{5}J

m_{steam} = 5g 8.10
= 5/1000 = 0.005kg
m_{water} = 500g
= 500/1000 = 0.5kg
پانی کی پہلے ٹمپریچر سے آخری ٹمپریچر تک اپنے ماس کے لحاظ سے جذب کردہ حرارت
Q_p = CmΔT
= Cm(T_2-T_1)
= 2100x0.5(T_2-10)
= 2100T_2-21000
ماس کے لحاظ سے بھاپ کی خارج کردہ حرارت
Q = mH_v
= 0.005x2.26x10^6
= 11300J
بھاپ کی پہلے ٹمپریچر سے آخری ٹمپریچر تک جاتے ہوئے خارج کردہ حرارت
Q = CmΔT
= 4200x0.005(100-T_2)
= Q = 2100-21T_2
= پانی کی جذب کردہ حرارت
بھاپ کی خارج کردہ حرارت
2100T_2-2100=
11300+2100-21T_2
2100T_2+21T_2=
11300+2100+21000
2121T_2 = 34400
T_2 = 34400/2121
T_2 = 16.21^{0}C

CHAPPTER # 09

A = 200m^2 9.1
L = 20cm = 0.2m
T_1 = 15^{0}C = 288K
T_2 = 35^{0}C = 308K
k = 0.65 W/mK
Q/t = k(T_2-T_1)/L
$=\frac{0.65x200(308-288)}{0.2}$
= 130x(20)/0.2
= 13000J/s

A = 2x2.5 = 5m^2 9.2
L = 0.8cm =0.008m
t = 1hr = 3600s
T_1 = 5^{0}C = 278K
T_2 = 25^{0}C = 298K
k = 0.8 W/mK
Q = k(T_2-T_1)xt/L
$=\frac{0.8x5(298-278)x3600}{0.008}$
= 4(20)3600/0.008
= 288000/0.008
= 36000000
Q = 3.6x10^{7}J

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