

छत्तीसगढ़ माध्यमिक शिक्षा मण्डल, रायपुर



Hkkfrodh

d{k k XI oha



i z u cfd

1/0 | k\$pr bdkb1/2

NÜkhl x<+ek/; fed f'k{k k e.My] jk; i j

vkedk

jk"Vh; i kB; p; kZ dh : i js[kk 2005 eaftu fpUrkvka dk mYys[k fd; k x; k gSml dsrkjrE; eain'sk dsgkbZdny , oagk; j l dsMjh eav/; ; u djusokysfo | kffkz ka ds l aak eafopkj djus , oa mudh l eL; kvka dk l ek/kku djus grq NRRhl x<+ek/; fed f'k{kk e.My iz Ru'khy g\$ rkd 'k\$kf.kd y{; ka dh i kflr gks l ds , oa f'k{kk dh xqkoRrk ea l qkkj gks l da


ijh{kkvka ds l e; fo | kffkz ka ds eu eafpUrK , oa Hk; mRiUu gsrk gSfd ijh{kk ds h gksch\ ijh{kk eafdl idkj izu i Ns tk; a\$ dks l k izu ijh{kk dsfy, egROIwKz gks l drsg\$ bl grq foxr o"kk\$ ea e.My iz kl jr jgk g\$ fo"K; okj ekMy izu i = dks vc NRRhl x<+ek/; fed f'k{kk e.My ds ekU; rk i klr fo | ky; ka ea Hkstus ds l kFk&l kFk mUga e.My ds os l kbV ea ykM fd; k tk; xkA ijh{kk ds Hk; , oaruko l seDr j [kus dsfy, e.My }kjk gkbZLdny , oagk; j l dsMjh ds fo | kffkz ka ds fy, fo"K; okj d{kk 9oha l s 12ohard izu cid r\$ kj fd; k x; k g\$ izu cid ea ijEijxR izuka ds vrfjDr uohu izuka dk l eko\$K fd; k x; k g\$ izu cid bdkbdkj , oae.My dh ijh{kk ; kstuk ds vuq kj r\$ kj fd; k x; k g\$ ftl l s vPNs vad i klr djus ds l kFk&l kFk ijh{kkfFkz ka ea fo"K; ds ifr : fp mRiUu gkschA

izu cid ds vHkko eaf'k{kdk\$ i kf'udka vK\$ fo | kffkz ka dks i kB; i qrd ds vUr eafn; s x, ijEijxR izuka ij fuHk\$ jguk i M\$K g\$ bl l sfo"K; dk eW; ka du 0; fDrijd (Subjective) gks tkrk g\$ rFk fofHkUu 'k\$kf.kd mI\$; ka ds vk/kkj ij eW; ka du ugha gsrk g\$ bl h vko'; drk dks /; ku ea j [krs gq e.My us gkbZdny 1/9oh\$ 10oh\$ rFk gk; j l dsMjh 1/11oh\$ 12oh\$ ds l Hkh fo"K; ds izu cid dk fuekZk fd; k g\$ bl izu cid l s f'k{kdk\$, oa fo | kffkz ka ea fur uohu izuka ds fuekZk dh vHk: fp mRiUu gkschA

izu cid ea fo"K; dh mi yC/k 'k\$kd l kexh dks 'kkfey fd; k x; k g\$ bl ea uohu ek\$yd izuka dK\$ fo"K; oLrj f'k{k.k dsmI\$;] dfBukbZLrj vK\$ vadu dh xqkoRrk ds vuq kj l q afBr djdsj [kk x; k g\$ izu cid ea e.My dh ijh{kk ; kstuk ds vuq kj vfry?kq\$Ukjh;] y?kq\$Ukjh; , oa nh?k\$Ukjh; izuka dk l eko\$K fd; k x; k g\$ ifr; ksch ijh{kk dsfy, vH; kl grqoLrqu"B izuka dk Hkh l eko\$K izu cid eafd; k x; k g\$ ftl l s ifr; ksch ijh{kkvka ds vH; kl ea l gk; rk feyschA ifrfnu] ifr l l rkg] ifrekg vK\$ ifro"Kz uohu izuka ds ckjs ea fo | kffkz k\$ f'k{kdk\$ i kf'udk\$ ijh{kdk\$ vK\$ l keU; tu l sfo"K; okj e.My uohu izuka dks vkef=r fd; k tkoskA vki ds }kjk i\$kr fo"K; okj uohu izuka dks tkM\$elj ifro"Kz izu cid dk l a k\$ku e.My }kjk fd; k tkosk] ftl l s izu cid vf/kd ifjiwKz vK\$ vk/k\$udre gks\$ jg\$

ep\$svk'kk gSfd e.My }kjk tkjh izu cid fo | kffkz k\$ f'k{kdk\$ i kf'udka , oa ijh{kdk\$ dsfy, mi; ksch fl) gkskA

'k\$kdkeukvka l fgr---


1/4s feat 1/2
vkbz, -, l -

I fpo

N-x- ek/; fed f'k{kk e.My] jk; ij

fo"K; %& Hkkf'rd 'kkL=

bdkbZ & 1

vfr y?kpnÜkj h; izu

izu 1& fo|q tujuj fdl oKkfud fu;e ij vk/kkfjr ;@Dr gS \

izu 2& jkNjV uknu fdl oKkfud fu;e ij vk/kkfjr ;@Dr gS \

izu 3& I kož=d xq Rokd"izk dk fu;e fdl oKkfud us [kkstk Fkk \

izu 4& U; wNdh dh [kkst fdl oKkfud us dh \

izu 5& Hkkf'rd ea ukcy ijLdkj ikr djus okys oKkfud dk uke crkb;s \

izu 6& ;fn $A=45^\circ$ rc $\tan 2A$ dk eku crkb;s A

izu 7& $\sin 75^\circ$ dk eku crkb;s A

izu 8& $\cos 105^\circ$ dk eku crkb, A

izu 9& $\frac{\sqrt{x}}{7}$ dk x ds I kišk vodyu Kkr dlft;s A

izu 10& $\frac{1}{\sqrt{x^3}}$ dk x ds I kišk vodyu Kkr dlft;s A

izu 11& $x^{\frac{3}{2}}$ dk x ds I kišk I ekdyu dlft;s A

izu 12& $\sqrt{1+\cos 2x}$ dk x ds I kišk I ekdyu dlft;s A

izu 13& ;fn $\sin \theta = \frac{4}{5}$ rc $\tan \theta$ dk eku Kkr dlft, A

izu 14& I fn'k jkf'k dks ifjHkkf'kr dlft;s A

izu 15& I fn'k rFkk vfn'k ea nks egRo iwZ varj fyf[k;s A

izu 16& fuEu ea I s I fn'k rFkk vfn'k jkf'k NkfV;s %&

$\frac{1}{2}$ cy vk?iwZ $\frac{1}{2}$ dk;l

$\frac{1}{3}$ 'kDr $\frac{1}{2}$ Roj.k

- izu 17& 'k; I fn'k dks ifjHkkf"kr dhft;s A bl s fdl izlkj ikr dj I drs gā A
- izu 18& nks ijLij yEcor- I fn'kka dk vfn'k xqkuQy fdruk gksxk A
- izu 19& nks ijLij I ekarj I fn'kka dk I fn'k xqkuQy fdruk gksxk A
- izu 20& ;fn $\vec{a} = 3i - 4j$ rc I fn'k \vec{a} dk ifjek.k Kkr dfj;s A
- izu 21& ;fn $\vec{F} = 2i - 2j + 2k$ rFkk $\vec{d} = i - j + k$ rc oLrq ij fd;k x;k dk;Z Kkr dhft;s A
- izu 22& ,d 0; fDr $r = f = T$; k ds oRrh; iFk ij 4 pDdj iwZ djrk gS A 0; fDr dk foLFkkiu ,oa ngh fyf[k; s A
- izu 23& ,d vkneh 8 fdeh iwZ ,oa 6 fdeh mRrj dh vkj tkrk gS rc ml dk foLFkkiu fdruk gksxk \
- izu 24& nks ijd ey ek=d dks dks dks I s gā \
- izu 25& ,d izk'k o"z dks ifjHkkf"kr dhft;s A bl dk ek=d I fgr eku fyf[k; s A
- izu 26& ey ek=d dh ifjHkkf"kk fyf[k; s A ey ek=d dks dks I s gā \
- izu 27& 0; iUu ek=dks dks ifjHkkf"kr dhft;s A nks mnkgj.k fyf[k; s A
- izu 28& foHkkvka ds I ekxrk dk fl)kr fyf[k; s A
- izu 29& ,d h rhu Hkkf"rd jkf'k; kw fyf[k; s ftuds folkh; I = I eku gS A
- izu 30& izk'k o"z dks ifjHkkf"kr dhft;s A bl dk eku ehVj ea fyf[k; s A

y?kqUkj; izu

izu 31& iks|kfxdh ,oa Hkkf"rd ea I c'k n'kb; s A

izu 32& fl) dhft;s $\tan 60^\circ = \frac{2 \tan 30^\circ}{1 - \tan^2 30^\circ}$

izu 33& ;fn $\sin A = \frac{3}{5}$ rFkk $\cos B = \frac{12}{13}$ rc $\sin(A+B)$ dk eku Kkr dhft;s A

izu 34& fl) dhft;s $\frac{\sin 2A + \sin 2B}{\cos 2A + \cos 2B} = \tan(A+B)$

izu 35& eku fudlfy; s &

$$\frac{1}{2} \tan 15^\circ \quad \frac{1}{2} \tan 105^\circ$$

izu 36& ; fn $\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} = \sqrt{3}$ rc θ dk U; wire eku Kkr dlft; s A

izu 37& $\sqrt{\frac{1}{1+x}}$ dk eku Kkr dlft; s ; fn $x = 0,001$

izu 38& fl) djks % $\log 105 = \log 3 + \log 5 + \log 7$

izu 39& x ds I ki \int k vodyu dlft; s &

$$\frac{1}{2} \frac{\sin x}{1+\cos x} \quad \frac{1}{2} e^{\sin x}$$

izu 40& x ds I ki \int k vodyu dlft; s &

$$\frac{1}{2} e^{ax} \sin(3x+c) \quad \frac{1}{2} e^x \cdot \log \sin 2x$$

izu 41& oØ $y = 3x^2 - 7x + 5$ ds fcnq \int 1½ ij [kph x ; h Li'kz j \int k $x - v$ k dh /kukRed fn'kk I s fdruk dksk cukrh gS \

izu 42& gok ds , d cyrcys dh f=T; k $\frac{1}{2}$ I e \int dh nj I s c \rightarrow jgh gS A tc xkys dh f=T; k 1 I e \int gS rc fdl nj I s cyrcys dk vk; ru c \rightarrow jgk gS A

izu 43& x ds I ki \int k I ekdyu dlft; s &

$$\frac{1}{2} \sqrt{1+\cos 2x} \quad \frac{1}{2} \frac{1-\cos 2x}{1+\cos 2x}$$

izu 44& x ds I ki \int k I ekdyu dlft; s &

$$\frac{1}{2} \frac{\cos \sqrt{x}}{\sqrt{x}} \quad \frac{1}{2} x^2 \sin x^3$$

izu 45& eku Kkr dlft; s &

$$\frac{1}{2} \int_0^{\frac{\pi}{4}} \sec x \cdot \tan x dx \quad \frac{1}{2} \int_R^\infty \frac{Gm_1 m_2}{r^2} dr$$

izu 46& fl) dhft; s $\vec{a} \times \vec{b} = \begin{vmatrix} i & j & k \\ a_x & a_y & a_z \\ b_x & b_y & b_z \end{vmatrix}$

izu 47& fdlh lfn'k dk rhu l edkf.kd ?kVdka ea fo; kstu dks l e>kb; s A

izu 48& ;fn $\vec{a} = 2i + 2j + p\hat{k}$ rFkk $\vec{b} = 2i - j + k$ ijLij yEcor gks rc p dk eku Kkr dhft; s A

izu 49& ;fn $\vec{a} = i + j + k$ rFkk $\vec{b} = 2i - 2j - 2k$ rc \vec{a} rFkk \vec{b} ds e/; dk dsk Kkr dhft; s A

izu 50& ;fn $|\vec{a} + \vec{b}| = |\vec{a} - \vec{b}|$ rc fl) dhft; s \vec{a} rFkk \vec{b} ijLij yEcor- gS A

izu 51& l ehdj.k $T = 2\pi \sqrt{\frac{l}{g}}$ rFkk $V^2 = u^2 + 2as$ ds 'k) rk dh tlp dhft; s A

izu 52& folkh; fof/k l s LFkfr dhft; s $V = k\sqrt{\frac{E}{D}}$ $V = 0$; q ea /ofu dk ox] $E =$ i R; kLFkrk xqkcd] $D =$?kuRo gS A

izu 53& mks i) fr ea dk; l ds ek=d "ty" dks c.g.s. i) fr ds ek=d "vx" ea ifjofr' dhft; s A

izu 54& folkh; fo'y'sk.k dh l hek; a fyf[k; s A

izu 55& ,d pkyd rkj ds fljka ds e/; folkokrj ekiu es 5 ifr'kr rFkk /kjk ds ekiu es 2 ifr'kr dh =qV gsrh gS A rc ifrjkk ds ekiu es ifr'kr =qV Kkr dhft; s A

izu 56& ;fn $g = 4\pi^2 \frac{l}{T^2}$ gS A rFkk l ds ekiu es 0.4% rFkk T ds ekiu es 0.6% dh =qV gsrh rc g ds ekiu es ifr'kr =qV Kkr dhft; s A

izu 57& l kfkid val Kkr dhft; s %

$\frac{1}{2}$ 0.006 eVj² $\frac{1}{2}$ 3.64×10^{24} fdxk

nh?kz mRrjh; izu

izu 58& ;fn $\frac{g^1}{g} = \frac{R^2}{(R+h)^2}$ gks rc f}in iæš dh l gk; rk l s fl) dhft; s &

$$g^1 = g \left(1 - \frac{2h}{R}\right) \quad h = \text{iFoh ry l s } \hat{A} \text{pkbl rFkk } R = \text{iFoh dh f=T;k gS A}$$

izu 59& x ds l ki {k vodyu dhft; s &

$$e^x \sin x + x^p \cdot \cos x$$

izu 60& x ds l ki {k l ekdyu dhft; s &

$$\int \log_e x \, dx$$

izu 61& ;fn $\vec{a} + \vec{b} = \vec{c}$ rFkk $a^2 + b^2 = c^2$ rc fl) dhft; s \vec{a} rFkk \vec{b} ijLij yEcor gS A

izu 62& l jy ykyd dk vkorZky $T = 2\pi \sqrt{\frac{l}{g}}$ t gkll $l =$ ykyd dh iHkkodkj h yEckbl gS rFkk $g =$ xq Roh; Roj.k gS A

foHkh; fof/k l s mijkDr l = dh LFkkiuk dhft; s A

izu 63& nD dh nks ijrka ds e/; dk; j r ' ; ku cy $F = 6\pi n a v_{ta}$ dks foHkh; fof/k l s LFkkr dhft; s A tcfD $n = nD$ dk ' ; kurk xqkkr $a = cm$ dh f=T;k $V_{ta} =$ l hekr ox gS A

izu 64 $V = at + \frac{b}{t+c}$ }kj k 0; Dr fd; k tkrk gS A $a \int_b$

rFkk c fu; rkrd gA buds ek=d Kkr dhft; s A

1/2 okBUMj okYI dk xñ voLFkk l ehdj.k gS

$$\left(P + \frac{a}{V^2}\right)(V - b) = RT$$

rc fu; rkrd a rFkk b dh foHkh; a Kkr dhft; s A

izu 65& , d nD dk ' ; kurk xqkkr $\eta = \frac{\pi h d g r^4 t^7}{8 V l}$ }kj k Kkr fd; k tkrk gS A ; fn

$$h = (20 \pm 0.2) \text{ l eh-} \quad r = (0.06 \pm 0.001) \text{ l eh-} \quad t = (300 \pm 3) \text{ l d.M} \quad V = (30 \pm 0.2)$$

feyh- rFkk $l = (40 \pm 0.3) \text{ l eh-}$ gkš rc η ds eki u ea l Hkkfor vf/kdre =V Kkr dhft; s A

&&00&&&

bdkbZ & 2

vfr y?kpnÜkjh; izu

izu 1& ifjHkkf"kr dhft;s &

$\frac{1}{2}$ fLFkj oLrq $\frac{1}{2}$ xfr'khy oLrq

izu 2& ,d folkh; xfr fdl s dgrs gñ A ,d mnkgj.k fyf[k;s A

izu 3& njih dks ifjHkkf"kr dhft;s A bl dk ek=d fyf[k;s A

izu 4& foLFkki u fdl s dgrs gñ \ ;g l fn'k jkf'k gS vFkok vfn'k A

izu 5& njih ,oa foLFkki u ea nks varj fyf[k;s A

izu 6& ox rFkk pky ea nks varj fyf[k;s A

izu 7& ,d l eku xfr rFkk ifjorhZ xfr dks ifjHkkf"kr dhft;s A

izu 8& xfr ,oa fojke vki f{kd gS vFkok fuji f{k \

izu 9& ,d l eku xfr ea oLrq dk Roj.k fdruk gksrk gS ,oa D; ka \

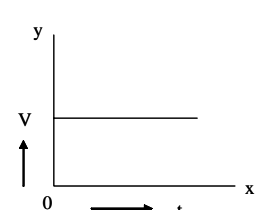
izu 10& ,d oLrq orrh; iFk ij rhu pØz iwñZ djrh gS oLrq dk foLFkki u ,oa njih fyf[k;s \

izu 11& ;fn fdl h d.k dk ox fu;r gS rks D;k ml dh pky ifjofrZr gks l drh gS \

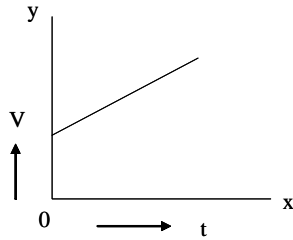
izu 12& D;k ;g l Hko gS fd oLrq ds ox dh fn'kk ml ds Roj.k dh fn'kk l s fHkuu gks \

izu 13& D;k ;g l Hko gS fu;r pky l s xfreku oLrq ea Roj.k fLFkj gks \

izu 14& ;fn ,d d.k dk rkr{kf.kd ox 'kñ; gks rks D;k bl dk rkr{kfod Roj.k Hkh 'kñ; gksuk pkfg;s A

izu 15&  iLrq xtQ dks l h xfr dk gS D; ka \

izu 16&



iLrqr xtQ dks l h xfr dk gS D; ka \

izu 17&

va½ $\vec{A} = 60 \text{ km/h}$

vb½ $\vec{A} = 60 \text{ km/h}$

$\vec{B} = 80 \text{ km/h}$

$\vec{B} = 80 \text{ km/h}$

va½ rFkk vb½ ea A rFkk B dk ,d n½ js ds l ki {k ox fyf[k; s A

izu 18&

izkt; ,oa izkt; xfr dks ifjHkkf"kr dhft; s A

izu 19&

izkt; ds {kfrt ijkl dk D;k rkrh; l gS

izu 20&

izkt; ds A/ol ijkl dks ifjHkkf"kr dhft; s A

izu 21&

mMM;u dky fdl s dgrs gS \ bl dk 0; atd fyf[k; s A

izu 22&

vf/kdre A/ol ijkl ,oa vf/kdre {kfrt ijkl ds fy; s oLrq dks fdl dks l s Qadk tkuk pkfg; s A

izu 23&

D;k xfr f}folhh; ,oa Roj.k dby ,d folhh; gkrk gS \

izu 24&

D;k ; g l lko gS fd fdl h d.k dk ox rks 'k; gS fdrq fQj Hkh og Rojfr gS \

izu 25&

iM+ ij cBh fpM+k ij fu'kkuk l k/rs l e; xtyh y{; l s FkkMk Aij NkMk tkrh gS D; ka \

y?kqUkjh; izu

izu 26&

xfr ds iFke l ehdj.k $V = u \pm at$ dh 0; qi fRr dhft; s A

izu 27&

xfr ds f}rh; l ehdj.k $s = ut \pm \frac{1}{2}at^2$ dh 0; qi fRr dhft; s A

izu 28&

fl) dhft; s ,d l eku xfr ea fLFkr&l e; xtQ dh iD.krk] oLrq ds ox ds cjkj gkrh gS

izu 29&

fl) dhft; s ,d l eku Rojfr xfr ea ox] l e; xtQ dh iD.krk Roj.k ds

cjkj gkrh gA

izu 30& I ekdyu fof/k }kjk fuxeu dhft;s &

$$V^2 = u^2 \pm 2as$$

izu 31& ,d oLrq dks Å/ol Åij dh vkt ikr ox 4 Is Å/ol Åij dh vkt Qadk tkrk gS A rc oLrq }kjk ikr egRre Åpkbz dh x.kuk dhft;s A

izu 32& ,d dkj iFke vk/kh njh V_1 ox Is rFkk 'kSk vk/kh njh V_2 ox Is r; djrh gS A rc n'kbb;s dkj dh vkt r pky $\frac{2V_1V_2}{V_1+V_2}$ gkxh \

izu 33& nks fi.Mka dks h_1 rFkk h_2 Åpkbz Is iFohry ij fxjk;k tkrk gS A iFoh rd igpus ea mlga t_1 l d.M rFkk t_2 l d.M dk le; yxrk gS A rc fl)

$$\text{dhft;s } \frac{h_1}{h_2} = \frac{t_1^2}{t_2^2}$$

izu 34& fl) dhft;s fdl h i(kt; dk iFk ijoy;kdkj gkrk gS A

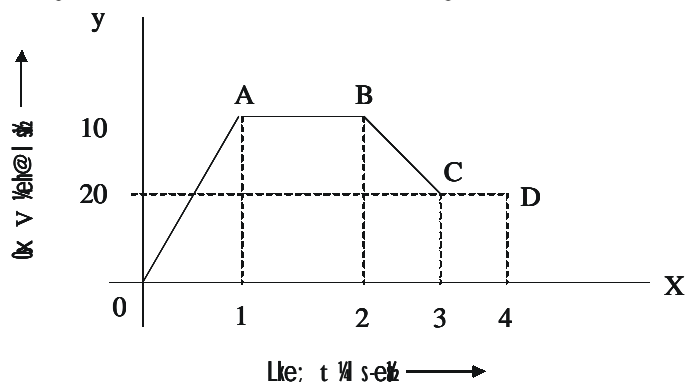
izu 35& dskh; ox ,oa jskh; ox dks ifjHkr'kr dj muea l cark Kkr dhft;s A

izu 36& ,d dkj nks LFkkuka ds e/; dh vk/kh njh 40 fdeh-@?k/k rFkk 'kSk vk/kh njh 60 fdeh-@?k/k dh pky Is r; djrh gA dkj dh vkt r pky Kkr dhft;s A

izu 37& ,d dkj ,d leku ox 36 fdeh-@?k/k Is py jgh gS A cdl yxkus ij 10 ehVj pydj : d tkrh gA enu dh x.kuk dhft;s rFkk dkj dks : dus ea yxk le; Kkr dhft;s A

izu 38& ,d fi.M dks Åph ehukj Is iFoh rd fxjus ea 4 Is dk le; yxrk gA ehukj dh Åpkbz Kkr dhft;s \ $\frac{1}{2}g = 9.8$ eh@l 3/2

izu 39& ,d folkh; xfr djus okys d.k ds ox le; xtQ dks inf'kr fd;k x;k gS A d.k }kjk 4 Is ea r; dh x;h njh dh x.kuk dhft;s A



izu 40& ,d foeh; xfr djus okys d.k dk foLFkki u dk l eh dj.k gS $t = Jx + 3, t\lambda$
 l s ea gA tc ml dk ox 'k'; gskc rc foLFkki u fdruk gskc \

izu 41& nks xns ,d l kfk] A] 20eh@l s ds ox l s Åij dh vj rFkk B] 40eh-
 @l s dh Åpkbz l s ml h ox l s uhps dh vj Qrdh tkrh gA crkb;s os dc
 vj dgka feyakh \

izu 42& ,d ok; q ku {kfrt l s 30° ds dsk ij mM+ jgk gA ;fn ml ds ox dk
 Å/okzkj ?kVd 100eh@l s gk} rc ml dk okLrfod ox rFkk {kfrt ?kVd
 Kkr dhft;s A

izu 43& ,d lRFkj ehukj dh pkVh l s 30° dk dsk cukrs gq 16eh@l s ds ox l s
 Qrdk tkrk gS A Qrdus ds 4 l s i'pkr- og iFoh l s Vdjkrk gS A iFoh l s
 ehukj dh Åpkbz rFkk {kfrt ijkl Kkr dhft;s A

izu 44& ,d cnrd l s 1000 eh@l s ds ox l s xkyh fudyrh gS A bl l s 100 eh-
 dh njh ij y{; dks nkxus ds fy;s fu'kkuk y{; l s fdruk Åij l k/kuk
 gskc\ $\frac{1}{2}g = 10$ eh@l s

izu 45& ,d l eku oRrh; xfr ea dkbz d.k 12 l eh- f=T;k ds iFk ij ifr l s 3
 pDdj yxkrk gS A d.k dk dskh; ox rFkk j[th; ox Kkr dhft;s A

nh?kz mRrjh; izu

izu 46& ,d d.k }kjk t_0 l s ea r; dh x;h njh ds l = dks 0; QiUu dhft;s A

izu 47& l ekdyu fof/k }kjk fl) dhft;s &

$$\frac{1}{2} V = V_0 \pm at$$

$$\frac{1}{2} S = V_0(t) \pm \frac{1}{2} at^2 \quad \text{tgka l adrka ds l kekl; vFkz gS A}$$

izu 48 ,d d.k dk ox $V = 10 + 3(\alpha_1 + \alpha_2 t)$ gS A tgka α_1 rFkk α_2 fu;r gA
 $t = 1$ e; gS A d.k dk Roj.k Kkr dhft;s A

izu 49& ,d d.k ,d l eku Roj.k l s xfr'khy gS A og 70a rFkk 90a l s ea Øe'k%
 20 ehVj rFkk 24 ehVj dh njh r; djrk gS A crkb;s og 150a l s ea
 fdruh njh r; djsk A

izu 50& ,d oLrq 50 eh@l s ds ox l s $\hat{A}/\omega \hat{A}ij$ dh vij NkMh tkrh gS A ,d l sM ds i'pkr nih oLrq ml h ox l s $\hat{A}/\omega \hat{A}ij$ Qdih tkrh gS A os dc vij dgla feykh A $\frac{1}{g} = 10$ eh@l $\frac{3}{2}$

izu 51& jk; Qy l s NkMh x; h xlyh }kjk ikr vf/kdre $\hat{A}ij$ 25 ehVj gS A ; fn ml dk ijkl 200 ehVj gS rks i'k; dsk Kkr dhft; s A ($\tan 26^{\circ}36' = 0.5$)

izu 52& ,d xn {krt l s 60° ds dsk ij 40 eh@l s dh pky l s Qdih tkrh gA ; g vf/kdre fdruh $\hat{A}ij$ rd tkoxh \ bl dk {krt ijkl fdruk gkxk \ $\frac{1}{g} = 10$ eh@l $\frac{3}{2}$

izu 53& ,d ok; q ku {krt ry ea 600 fdeh@?k/k ds ox l s 1960 ehVj dh $\hat{A}ij$ ij mM+jgk gA tc ; g iFoh ds fcng A ds Bhd $\hat{A}ij$ gkrk gS bl l s ,d oLrq fxjk; h tkrh gS tks iFoh ij fcng B ij fxjrh gA njih AB dh x.kuk dhft; s A

izu 54& ,d l eku oRrh; xfr djus okys d.k ds fLFkr l fn'k dk l ehdj.k gS &

$$\vec{r}(t) = R \cos wt \hat{i} + R \sin wt \hat{j}$$

tgla R rFk w fu; rkd gS A fdl h {k.k t ij d.k dk Roj.k Kkr dhft; s A

&&&00&&&

bdkbZ & 3

vfr y?kqñÜkjh; izu

izu 1& cy fdl s dgrs gā \ bl dk ,e-ds,l- ek=d fyf[k;s A

izu 2& tMRo fdl s dgrs gā \ ;g fdl ij fuHkj djrk gā

izu 3& fojke tMRo rFkk xfrd tMRo dks ifjHkkf"kr dhft;s A

izu 4& U;Wu ds xfr dk iFke fu;e fyf[k;s A

izu 5& dEcy dks NMh ls ihVus ij /ny ds d.k >M+ tkrs gā D;ka \

izu 6& pyrñ gq h jyxkMh ls dñus okyk 0;fDr pyrñ jyxkMh dh fn'kk ea fxj
tkrk gā D;ka \

izu 7& l ðx dks ifjHkkf"kr dhft;s A bl dk e-d-l- i)fr ea ek=d fyf[k;s A

izu 8& fØdV dk f[kykMh rstñ ls vkrñ gq h xn dks idMfs le; f[kykMh vius
gkFk ihNs dh vtj [khp yrk gā D;ka \

izu 9& jk;Qy ls xkyh ntxrs le; jk;Qy pykus okys dks ihNs dh vtj /kDdk
yxrk gā D;ka \

izu 10& 5 fdxt nð;eku dh oLrq ij cy yxkus ls ml ea 10eh@l ð dk Roj.k
mRilu gks tkrk gā oLrq ij vtjksir cy dh x.kuk dhft;s \

izu 11& 0-02 fdxt dk ,d xkyk 100 fdxt dh cñd ls 80eh@l s ds ox ls NMh
tkrk gā cñd dk ifr{ki ox Kkr dhft;s A

izu 12& jš[kh; l ðx l j(k.k dk fl)kr fyf[k;s A

izu 13& l akñ cy l rñy ea dc dgs tkrs gā A

izu 14& ?k"zk fdl s dgrs gā A

izu 15& LFkrd rFkk xfrd ?k"zk ea nks vrj fyf[k;s A

izu 16& tMRoh; rFkk vtMRoh; Qæ dks ifjHkkf"kr dhft;s A

izu 17& ?k"zk ls gkus okyh rhu gkfu;ka crkb;s A

izu 18& Nne cy fdl s dgrs gā \

izu 19& feDI h }kjk ntk l s Øhe ds d.k fdl izlkj i Fkd fd;s tkrs gā \

izu 20& vidlnz cy dks ifjHkkf"kr dhft;s A

y?kqUkjh; izu

izu 21& U;Wu ds xfr ds fu;eka dks fyf[k;s A

izu 22& U;Wu ds xfr ds f}rh; fu;e dks fyf[k;s rFkk n'kkb;s cy = n0; eku ×
Roj.k A

izu 23& j{kh; l 0x l j{k.k dk fl) kr fyf[k;s rFkk fl) dhft;s A

izu 24& vkox fdl s dgrs gā \ n'kkb;s vkox oLrq ea l 0x ifjorZu ds cjkcj gkrk
gā

izu 25& 20 fdxt n0; eku dk fi .M 20 eh@l s ds ox l s xfr'khy g\$ ml ij 50_N
dk end cy yxk;k tkrk gā fi .M fdrus l e; i'pkr : dxt \

izu 26& j{kh; l 0x l j{k.k ds fu;e l s U;Wu ds xfr ds r}rh; fu;e dh 0; i fRr
dhft;s A

izu 27& jkyj dks <dyus ds ctk, [khpuk vkl ku gkrk g\$ D;ka \

izu 28& ,d l eku ox l s xfr'khy ,d fi .M dks 200_N dk cy yxkdj 0-25 l s
ea jkd fn;k tkrk g\$ fi .M ds i jkdk l 0x dh x.kuk dhft;s \

izu 29& nks xkys ftudk n0; eku 40 fdxt o 10 fdxt g\$ Øe'k% 10 eh@l s rFkk
50 eh@l s ds ox l s ,d n0 js dh vj vk jgs gā A ;fn os Vdjkdj tM+
tkrs rc l a 0r fi .M fdl ox l s vixs pysk \

izu 30& ,d dkj ftl dk n0; eku 1000 fdxt g\$ 10 eh@l s ds ox l s xfr'khy gā
ml ij batu ds dkj.k vixs dh vj 1000_N dk cy rFkk ?'k% ds dkj.k
ihNs dh vj 500_N dk cy yxrk gā 10 l s i'pkr- dkj dk ox Kkr
dhft, A

izu 31& fojkekoLFkk ea 5 fdxt n0; eku ds fi .M ij fdrus cy vkjki r fd;k
tkos fd ml dk ox 3 l dsM ea 9eh@l s gks tkos \

izu 32& 75 fdxt- n0; eku dk ,d 0; fDr fyIV ij [kMk g\$ \ fyIV 2 eh@l s²

Roj.k l s Åij dh vki py jgh gS A Q'kz dh ifrfØ; k Kkr dhft; s \
¼g = 10 eh@l ¾

izu 33& ,d xkyk 500_N dk cy yxkus ij 0-06 l dsM ea : d tkrk gS \ xkys
ds l dx dh x.kuk dhft; s \

izu 34& LFkrd ?'k'k ds fu; e fyf[k; s A

izu 35& ?'k'k dsk fdl s dgrs gā \ fl) dhft; s LFkrd ?'k'k xqkād] ?'k'k dsk
dh Li 'kT; k ds cjkj gkrk gS A

izu 36& fojke dsk fdl s dgrs gā \ fl) dhft; s LFkrd ?'k'k xqkād fojke dsk
dh Li 'kT; k ds cjkj gkrk gS A

izu 37& 10 eh@l s dh pky l s xfr'khy oLrq fdruh nj pydj : d tkoxh \
;fn telu o oLrq ds e/; ?'k'k xqkād 0-4 gS \

izu 38& ,d 2 fdxt nØ; eku dk x/dk {kr t l s 30° ij >ps ,d ur&l ery ij
fLkr gS A x/ds rFk ry ds e/; ?'k'k xqkād 0-7 gS A x/ds ij ?'k'k
cy dk eku Kkr dhft; s \

izu 39& vflkdlnz Roj.k fdl s dgrs gā \ bl dk 0; atd Kkr dhft; s A

izu 40& oRrh; l ery l M-d ij dkj dh xfr dks l e>kb; s rFk l ðkkfor
vf/kdre pky Kkr dhft; s A

izu 41& oRrh; l Fk ij l k; dy l okj dh xfr dks l e>kb; s A l M-d l jf{kr l j
djus ds fy; s fdu crka dk gkuk vko'; d gS A

izu 42& 4 fdxt nØ; eku dk ,d fi.M 8 ehVj 0; kl ds oRrh; ekxZ ij 600eh@l s
dh ,d l eku pky l s ?ne jgk gS A vflkdlnz cy ,oa vflkdlnz Roj.k dh
x.kuk dhft; s A

izu 43& ,d yMelk 40 l eh yEch Mjgh ds ,d fl js ij 0-5 fdxt dk iRFj crkdj
ml s Å/ol oRr ea ?kkrk gS \ oRr ds fuEure fcnq ij iRFj dh pky 3
eh@l s gS A bl fcnq ij Mjgh ea ruko Kkr dhft; s A

izu 44& ,d ekVj l k; dy l okj {kr t l s oRrh; iFk ij 36 fdeh@?k'k dh pky
l s ?ne jgk gS A viuk l aryu cukus ds fy; s og vnj dh vki fdruk
>psk \ oRrh; iFk dh ifj/k 800 eh- gS A

- izu 45& ,d ok; qku ,d oØ iFk ij {lfrt l s 30° dk dksk cukrk gqk 500×10³
fdeh@?k/k dh pky l s pyrkh gqk xfr'khy gS A oRrh; iFk dh f=T;k
Kkr dhft;s A
- izu 46& ,d jyxkMh 98 eh f=T;k ds oØ iFk ij 49 eh@l s dh pky l s pyrkh
gA cfdR dksk Kkr dhft;s A
- izu 47& ,d jkMhV dk nØ; eku 10|000 fdxt gA bl l s fudyus okyh xJ dk ox
1000 eh@l s gS A bñku fdl ox l s tyk;k tkos fd jkMhV Bhd Aj mB
l ds \

nh?kZ mRrjh; izu

- izu 48& jkMhV uknu fdl s dgrs gA ;g fdl fl)kr ij vk/kfjr gS A jkMhV ij
izkkn dh x.kuk dhft;s A
- izu 49& l ox l j{k.k dk fu;e fyf[k;s A bl s n d.k fudk; ds fy;s fl) dhft; A
- izu 50& 5 fdxt nØ; eku dk ,d iRFkj 1000 ehVj Ajh ehukj dh pkmh l s fxj dj
jr ea 2 ehVj /td tkrk gS A iRFkj dks jr l ikus ea fdruk l e; yxsk \
- izu 51& 200 eh@l s dh pky l s pyrkh gq h ,d xksh ckyw dh ,d Fksh ea /td dj
jg tkrh gA xksh vj Fksh ds nØ; eku Øe'k% 0-50 fdxt rFk 4-50 fdxt
gS A ;fn Fksh xfr djus ds fy;s Lore= gks rks ml dh pky D;k gksh \
- izu 52& 3000 fdxt dh ,d Vd 10 eh@l s ds ox l s py jgh gS A ml ij
bñku ds dkj.k vks dh vj 1000_N dk cy ,oa ?'kZk ds dkj.k 400_N
dk cy iNs dh dk;Z djrk gS &
½ fdl nj l s Vd dk ox c<+jgk gS \
½ 10 l s es og fdruh njh r; dj ysk \
- izu 53& A/okZkj oRr ea fi.M dh xfr dks l e>kb;s rFk n'kZb;s mPpre fcng ij
Mkjh ea ruko 'k; gks rks fuEure fcng ij Mkjh ea ruko fi.M ds Hkj dk
Ng xpk gsrk gS \
- izu 54& cfdR l Md ij dkj dh xfr dks l e>kb;s \ l Md dh <yku l s yksh
fyf[k;s A

izu 55& 80 l e h ych Mijh ds ,d fl js ij iRFkj ckkdj ml s {krt orr ij ,d
l eku pky l s ?kpk;k tkrk gS A iRFkj 25 l s ea 14 ifjØek djrk gS A
iRFkj ds Roj.k ds ifjek.k vjg fn'kk dh x.kuk dhft;s A

izu 56& ,d {krt l Mel ij ,d l k;dy l okj 18 fd-eh@?k/k dh pky l s pyrs
gq s 3 eh f=T;k dk orrh; ekM+ gkrk gA l Mel vjg Vk;jha ds e/; "k?k k
xqkkad 0-1 gS A crkb;s l k;dy l okj fQl yxk ;k ugha \

&&&00&&&

bdkbz & 4

vfr y?kqñÜkjh; izu

izu 1& dk;Z fdl s dgrs gā \ ;g l fn'k jkf'k gš vFkok vfn'k \

izu 2& dk;Z ds C.G. S. ,oa M.K.S. i)fr ds ek=dka dks fy[kdj muea l æåk crkb; A

izu 3& /kukRed dk;Z rFkK __.kkRed dk;Z l s D;k vñkik; gš \

izu 4& Åtkl D;k gš \ mnkgj.k nhft; s A

izu 5& Åtkl ,oa dk;Z dk ek=d l eku gkrk gš D; ka \

izu 6& Åtkl l j{k.k dk fu;e fyf[k; s A

izu 7& 'kfDr dks ifjHkkf'kr dhft; s A bl dk S.I. ek=d fyf[k; s A

izu 8& okW ,oa v'o'kfDr ea l æåk fyf[k; s A 'kfDr dk folkh; l = fyf[k; s A

izu 9& nñ; eku Åtkl rñ; rk l ehdj.k D;k gš \ bl s fdl us ifrikfnr fd;k gš A

izu 10& fLFkfrt Åtkl fdl s dgrs gā \ bl dk mnkgj.k nhft; s A

izu 11& ,d folkh; iR; kLFk l d n` dks ifjHkkf'kr dhft; s A

izu 12& ;fn ,d oLrq ds nñ; eku dks vk/kk ,oa ox dks nœqk dj fn;k tkos rc xfrt Åtkl ij D;k iHkko iMæk \

izu 13& okW ?k.Vk fdl s dgrs gā \ bl dk tñy l s l æåk crkb; s A

izu 14& ,d oLrq ij 15_N dk cy yxkus l s ml ea 10 eh@l s dk ox mRiUu gks tkrk gā oLrq ij vkjksir 'kfDr dh x.kuk dhft; s \

izu 15& ,d rkj ea 5_A dh /kjk iœkfr djus l s ml ds fljka ds e/; 20 Volt dk folkokarj mRiUu gks tkrk gš A ifjiFk ea vkjksir 'kfDr dh x.kuk dhft; s

izu 16& 5 okV ds folkokarj l s Rofjr byDVññ dh xfrt Åtkl dh x.kuk dhft; s

izu 17& ;fn 1 fdxk nñ; eku dh oLrq dh xfrt Åtkl 1 tñy gš rc oLrq dk ox Kkr dhft; s A

izu 18& l j{th cy fdl s dgrs gā \ ,d mnkgj.k fyf[k; s A

- izu 19& $\hat{A}tkz$, oa 'kfDr ea nks vrj fyf[k; s A
- izu 20& ,d okV ds folhokarj }kjk Rofjr byDVtW dh xfrt $\hat{A}tkz$ dh x.kuk dhft; s \
- izu 21& xfrt $\hat{A}tkz$ fdl s dgrs gâ \ bl dk 0; atd Kkr dhft; s \
- izu 22& dk; l $\hat{A}tkz$ iæ; fy[kdj fl) dhft; s A
- izu 23& fLFkfrt $\hat{A}tkz$ fdl s dgrs gâ A xq Roh; fLFkfrt $\hat{A}tkz$ dk 0; atd Kkr dhft; s A
- izu 24& fliæ dh fLFkfrt $\hat{A}tkz$ dks ifjHkkf"kr dhft; s A fliæ dk cy fu; rkd dk ek=d ,oa folhk; l = fyf[k; s A
- izu 25& ,d folhk; iR; kLFk l ækn` dks ifjHkkf"kr dhft; s rFkk n'kkb; s fi .Mka ds iki vkus dk vkis{kd ox = fi .Mka ds nj tkus dk vis{kd ox A
- izu 26& ,d gYdh ,oa ,d Hkkjh oLrq ds l ox l eku gS A fdl dh xfrt $\hat{A}tkz$ vf/kd gkxh \
- izu 27& ,d gYdh ,oa ,d Hkkjh oLrq dh xfrt $\hat{A}tkz$ l eku gS \ fdl dk l ox vf/kd gkxk A
- izu 28& 5 fdxt n0; eku dh ,d oLrq fojkekoLFk ea gS \ bl ij 20_N dk cy yxk; k tkrk gA 10 l s i'pkr- oLrq dh xfrt $\hat{A}tkz$ D; k gkxh \
- izu 29& 10_N dk cy fdl h fi .M ij 60° ds dsk ij yxk; k tkrk gS A oLrq ea mRiUu foLFkki u 2 ehVj gS A dk; l dh x.kuk dhft; s A
- izu 30& ,d iEi dh 'kfDr 10_{Kw} gS A og ifr feuV fdruk ty vius l s 24 ehVj dh $\hat{A}tkz$ rd mBk l drk gS \ $\frac{1}{2}g = 10$ eh@ l 3½
- izu 31& ;fn fdl h fliæ dh yækbz ea 0-1 ehVj dk ifjorU djus l s fliæ dh fLFkfrt $\hat{A}tkz$ ea 0-5 tÿ dk ifjorU gk tkos rc fliæ dk cy&fu; rkd Kkr dhft; s A
- izu 32& ,d d.k ij cy $\vec{F} = (4\hat{i} + \hat{j} + 3\hat{k})N$ dk vkjksi r djus l s ml ea foLFkki u $\vec{a} = (2\hat{i} - \hat{j} + k)$ eh- mRiUu gk tkrk gS A oLrq ij fd; s x; s dk; l dh x.kuk dhft; s A

izu 33& m nð; eku dh dkbz oLrq v ox l s xfr dj jgh gS A ;fn oLrq dk l ox p rFkk xfrt $\dot{A}tkz_K$ gks rc fl) dhft; s $p = \sqrt{2mk}$

izu 34& ,d xin 10 eh- dh $\dot{A}tkz$ l s fxjk; h tkrh gA ;fn iFoh ij Vdjkus l s ml dh 40 ifr'kr $\dot{A}tkz$ u"V gks tkos rc xin fdruk $\dot{A}ij$ mBxh \

izu 35& m nð; eku ,d xfreku d.k $2m$ nð; eku ds fLFkj d.k l s Vdjkrk gS A fl) dhft; s fd Vdjkus ds i'pkr iFke d.k viuh ikj~~h~~kd xfrt $\dot{A}tkz$ dk 8@9oka Hkkx [kks nsx \

izu 36& fdl h Hkou ds Hk&ry ij yxk dkbz iEi 50 ?ku ehVj vk; ru dh fdl h Vadh dks 25 fe- ea Hkjr gS A ;fn Vadh tehu l s 30 ehVj $\dot{A}ij$ gks rFkk iEi dh n{krk 30 ifr'kr gks rks iEi }kjk fdruh fo|q 'kfDr [kpl dh tkosx \

nh?kz mRrjh; izu

izu 37& fl) dhft; s xq Ro ds v/khu fxjrh gq h dkbz oLrq dh dgy $\dot{A}tkz$ l nð l jf{kr jgrh gA

izu 38& ,d folkh; viR; kLFk VDdj dks l e>kb; s rFkk $\dot{A}tkz$ gkfu dk 0; atd Kkr dhft; s A ;g $\dot{A}tkz$ gkfu fdu : ika ea gkrh gS A

izu 39& ,d ce tks fojkekoLFk ea g\$ foLQksVr gkdj 6-0 vj\$ 2-0 fdxk ds nks [k.Mka ea folkDr gks tkrk gS A nksula fi .Mka dh l a q r xfrt $\dot{A}tkz$ 4.8×10^3 tny gS A x.kuk dhft; s &

$\frac{1}{2}$ iR; d [k.M dk l ox $\frac{1}{2}$ Nk/s [k.M dh xfrt $\dot{A}tkz$

izu 40& ,d ty iEi tks iVky l s pyr g\$ 30 eh- dh xgjkz l s 0-50 eh³@fe- dh nj l s ty fudkyrk gA ;fn iEi dh {kerk 70 ifr'kr g\$ rks batu }kjk fdruh 'kfDr mRiUu dh tkosx \

izu 41 $\frac{1}{2}$ l eku l ox okyh nks oLrq/ka ds nð; eku $\dot{O}e'k\%$ m o $2m$ gA mudh xfrt $\dot{A}tkz$ ka dk vuqkr Kkr dhft; s A

$\frac{1}{2}$;fn fdl h oLrq ds l ox es 20 ifr'kr of) gks tkos rc xfrt $\dot{A}tkz$ ea ifr'kr of) Kkr dhft; s A

&&&00&&&

bdkbZ & 5

vfr y?kqñÜkjh; izu

izu 1& nñ; eku dñnz fdl s dgrs gñ \

izu 2& n<+ fi .M dks ifjHkkf"kr dhft; s A

izu 3& cy; ðe dk vk?kñkZ fdl s dgrs gñ \ bl dk ek=d rFkk foHkh; I = Hkh
fy[kkñ

izu 4& ipdl dk gRFkk pkMk cuk; k tkrk gñ D; ka \

izu 5& ikus dh I gk; rk I s uV [kkyuk vkl ku gkrk gñ D; ka \

izu 6& dkskh; I ðx dks ifjHkkf"kr dhft; s A bl dk ek=d fyf[k; s A

izu 7& tMRo vk?kñkZ dh ifjHkkf"kk fyf[k; s A bl dk ek=d Hkh fyf[k; s A

izu 8& 10 U; wu dk ,d cy ,d fdokM+ ij dçts I s 50 I eh dh njh ij yxk; k
tkrk gñ A cy vk?kñkZ dh x.kuk dhft; s A

izu 9& ,d fi .M dk tMRo vk?kñkZ 1-2 fdxk eh² gñ A bl ea 25 eh@I s dk
dkskh; Roj .k mRi Uu djus ds fy; s vko' ; d cy vk?kñkZ dh x.kuk
dhft; s A

izu 10& dkskh; I ðx dk HkkSrd egRo fyf[k; s A

izu 11& ?kñkZ xfr ,oa oRrh; xfr ea vñj fyf[k; s A

izu 12& ty iEi dk gRFkk yEck gkrk gñ D; ka \

izu 13& dkskh; I ðx I j{k.k dk fu; e fyf[k; s A

izu 14& fdl h xfr ikyd dk vf/kdkñk nñ; eku bl dh ifjf/k ij dñnr jgrk gñ
D; ka \

izu 15& tMRo vk?kñkZ dk HkkSrd egRo fyf[k; s A

y?kqñÜkjh; izu

izu 16& nñ; eku dñnz fdl s dgrs gñ \ nks d.k fudk; dk nñ; eku dñnz Kkr
dhft; s A

izu 17& dkskh; I ðx ,oa tMRo vk?kñkZ ea I çñk Kkr dhft; s A

- izu 18& ?kukū xfrt Åtkz dks ifjHkkf"kr dhft;s A bl dk 0; atd Kkr dhft;s A
 - izu 19& dskh; l oax ,oa ?kukū xfrt Åtkz ea l æak Kkr dhft;s A
 - izu 20& fl) dhft;s oLrq ds dskh; l oax ifjorū dh nj ml ij vkjksir cy vk?kukz ds cjkcj gkrh gA
 - izu 21& tMRo rFkk tMRo vk?kukz ea rhu varj fyf[k;s A
 - izu 22& tMRo vk?kukz l æakh yEc&v{k iæş fyf[k;s rFkk fl) dhft;s A
 - izu 23& js[kh; Roj.k ,oa dskh; Roj.k dks ifjHkkf"kr dj muea l æak LFkkfir dhft;s A
 - izu 24& fdl h orrh; oy; ds ry ds yEcor yEc dñnz l s gkdj xqtjus okyh v{k ds ifjr tMRo vk?kukz dh x.kuk dhft;s A
 - izu 25& fdl h l mth NM+ dk yEckbz ds yEcor dñnz l s xqtjus okyh v{k ds ifjr% tMRo vk?kukz dh x.kuk dhft;s A
 - izu 26& ,d xfrikyd dk dskh; ox 60rmp l s 360rmp djus ea 484 tny Åtkz [kpl gkrh gS A xfrikyd dk tMRo&vk?kukz Kkr dhft;s A
 - izu 27& 900 fdxk- nñ; eku dh ,d dkj 300 ehVj f=T;k ds orrh; iFk ij 72 fdeh@?kuk dh pky l s ?ne jgh gS A bl dk dskh; l oax Kkr dhft;s A
 - izu 28& ,d Bkl cyu ftl dk nñ; eku 20 fdxk gS 100 ifjHkæ.k ifr l s dh dskh; pky l s vius v{k ds ifjf/k% ?ne jgk gS A cyu dh f=T;k 0-25 eh gS A fuEu dh x.kuk dhft;s &
- ¼½ ?kukū xfrt Åtkz ¼½ dskh; l oax

nh?kz mRrjh; izu

- izu 29& tMRo vk?kukz l æakh l ekUrj v{k iæş fyf[k;s rFkk ml s fl) dhft;s A
- izu 30& fdl h orrh; pdrh dk ¼½ ry ds yEcor dñnz l s xqtjus okys v{k ds ifjr% tMRo vk?kukz ¼½ 0; kl ds ifjr% tMRo v?kukz dh x.kuk dhft;s A
- izu 31& 50 xte nñ; eku ,oa 20 l eh 0; kl dk ,d xkyk 5 l eh@l s ds ox l s cxj fQl ys yæ-el jgk gS A bl dh dny xfrt Åtkz fdruh glxh \

izu 32& ;fn iFoh vptud vius emy vk; ru ds 1@64oa Hkkx rd fl dM+ tkos
rFkk ml dk n0; eku vijofr7 jgs rc 1 fnu dh yEckbz D;k gkxh \

izu 33& nks d.k ftuds n0; eku Øe'k% 100 xte rFkk 400 xte gS buds fLFkfr
I fn'k Øe'k% $2j + 4j + 12k$ rFkk $-6i + 3j + 2k$ gA buds n0; eku d0nz
dk fLFkfr I fn'k Kkr dhft; s A

&&&00&&&

d{k&11 Okha

HkkSRkdh izu cfd

bdkbz Ø-1

HkkSRkd Tixkrk , Oka EkkIUK

vFRkYk?kqRRkjh,k Ikz Uk

- Ikz1- ,kfn vkOks'k dks Q EkYk Ekk«kd EkkUkk Tkk,ks Rkks /kkjk I dh fokEkk, j D,kk gkXkh\
- Ikz2 , &ks nks fuk,kekka ds UkkEk fYkf[k,ks Ttkk LkHkh Ikfj fLFkrk, kka Eka YkkXkw gkBkk gS
- Ikz3- Okk,kg Eka v.kq/ka ds Ek/,k vk&krk njih fdRkUkh gkBkh gS
- Ikz4- nks fukdVRkEk XkYkDLkh dh njih fdRkUkh gkBkh gS
- Ikz5- YkkYk j DRk df.kdkvka dk O,kkLk CrkKkb,ks
- Ikz6- 'kq) TYk dk fgEkkad RkFkk DOKFukkad CrkKkb,ks
- Ikz7 fukEu [kkS'k fdUk OkS'kfukdka dh gS-
1- Ikzk'k dk }Bkh Ikfjfrk 2- Rkkjka dk TkhokUk-PkØ
- Ikz8- Ekk«kd] Lkq,kkREkd EkkUk Lks fdLk Ikzdkj Lkka/kRk gS CrkKkb,ks
- Ikz9 ÅTkkz dks æ0,k Eka æ0,k dks ÅTkkz Eka Ikfj OkfRkRk fd,ks Tkk LkdUks OkkYks LkEkhdj .k dks fYkf[k,ks bLk LkEkhdj .k dks fdLk UkkEk Lks TkkUkk Tkk LkdRkk gS
- Ikz10 OkS'kfukd fokf/k fdLks dgRks gS. bLkds Ekq, k Pkj .k fYkf[k, \
- Ikz11 OkS'kfukd fokf/k ds EkgRok dks fYkf[k, \
- Ikz12 [kXkks'k fokKkuk ds vURkZkrk HkkSRkdh ds fuk,kekka , Oka mLkdh RkdUkhdkka dk mlk,kkXk gkBkk gS bLk dFkuk dh Ikq"V dhfTk, \
- Ikz13- HkkSRkdh Uks j Lkk,kuk fokKkuk dh RkdUkhdkka dk YkkHk mBk,kk gS. bLk dFkuk dh Ikq"V dhfTk, \
- Ikz14- HkkSRkdh }kjk [kkS'k dk XkYkrk bLRkEkYk fd,kk Xk,kk Rkks fuk%kangj {k.kHkj Eka Ikj h EkkUkok Lkh,krkk Uk"V gks LkdRkh gS LIk"V dhfTk, \

Ikz15- , dkh nks jkf'k, kka dks fykf[k, ks fTKUkdh foek Ukgba gkRkh\

Yk?kqñRRkj h, k Ikz Uk –

Ikz14- , kg fn [kkb, ks fd EkQRk fXkjRks gg flk. M }kjk t LkEk, k Eka RK, k dh Xk, kh njh s dk LkEkhdj. k $s = \frac{1}{2}gt^2$ fokEk, k fok'Yksk. k dh nf"V Lks Bhd gS

Ikz15- fLk) dhfTk, fd nks HkSRkd jkf'k, kka dk XkqkUKQYk mUk jkf'k, kka ds vYkXk–vYkXk fHKUUKREkd «kqV, kka ds ,kkkQYk ds CkjkCkj gkRkk gS.

Ikz16- s.I. lk) frk dh D, kk fok'kSRkk gS

Ikz17- fdLkh EkkUK Eka gkSks OkYkh N% LkRkkfORk «kqV, kka ds UKkEk fykf[k, \

Ikz18- fokEk, k LkRk ML⁻¹T⁻² fdUk RkhUk HkSRkd jkf'k, kka dk gS

Ikz19- D, kk HkSRkdh ds fLk) kRk LFkk, kh : lk Lks EkkU, k gkRks gS. D, kka , d mnkgj. k ndj Lk"V dhfTk, \

Ikz20- Xkf. kRk ds fCkUk HkSRkdh LkLk, kj dk IkLk, kj gks lkkUk dfBUk gS bLk dFkUk dh Ikq"V dhfTk, \

Ikz21- TkHk fokKkUk Eka HkSRkdh ds fu, kEkka dk mLkdh RkdUkhdka dk mlk, kRk fd, kk TkRkk gS bLk dFkUk dh Ikq"V ds fy, dkbZ RkhUk mnkgj. k IkLkRk dhfTk, \

Ikz22- jLk, kUk fokKkUk Eka HkSRkdh ds fu, kEkka vksj RkdUkhdh dk mlk, kRk CkgRk, kRk : lk Lks fd, kk TkRkk gS. bLk dFkUk dh Ikq"V ds fy, dkbZ RkhUk mnkgj. k IkLkRk dhfTk, \

Yk?kqñÜkj h, k Ikz Uk

Ikz23- vk/kqUkd lksj kSxkdh dk fokdkLk HkSRkdh dh nsk gS bLk dFkUk dh Ikq"V gRkq dkbZ RkhUk mnkgj. k IkLkRk dhfTk, \

Ikz24- HkSRkdh Uks EkUk, kka dh TkHkUk lk) frk vksj fokPkj /kkjk Eka ØkRkdkj h Ikfj OkRkUk Ykk fn, kk gS. O, kk [, kk dhfTk, \

Ikz25- fdLkh d. k dk Okk v, LkEk, k t lkj fUkEu LkEkhdj. k }kjk O, kDRk fd, kk TkRkk gS $v = A + Bt + Ct^2$

Tgkq A, B vksj C fu, kRkhd gS A, B vksj C dh fokEk, ks KkRk dhfTk, \

lkz26 nks vkOks'k q_1 vkj q_2 Tkks , d-nitkjs Lks r nijh lkj fLFkrk gS ds CkhPk YkXkUks OkkYks CkYk F fUkEUk Lkuk ds }kjk fd₃kk Tkk LkdRkk gS $F = \frac{1}{4\pi\epsilon_0} \frac{q_1q_2}{r^2}$ rks ϵ_0 dk fOkeh₃k Lkuk Kkrk dhfTk, \

nh?kznRRkj₃k lkz Uk -

lkz1 ,kfn $X = \frac{A^p B^q}{C^r}$ gks Rkks fLk) dhfTk, fd&

$$\frac{\Delta_X}{X} = p \frac{\Delta_A}{A} + q \frac{\Delta_B}{B} + r \frac{\Delta_C}{C}$$

lkz2 LkjYk vkORkZ Xkfrk Lks nky'kuk djUks OkkYks fik. M dh ÅTkkZ E , mLkds æ0₃kEkkuk m , vkORkfrk n RkFkk vk₃kkEk a lkj fukHkj djRkk gS fOkeh₃k fok'YkSk.k LkEkhdj.k dh LFkkkUkk dhfTk, A

lkz3- ,kfn fukORkRk dh fok | Bk' khYkRkk [ϵ_0] RkFkk PkqCkd' khYkRkk μ_0 gks Rkks fLk) dhfTk, fd $\frac{1}{\sqrt{\epsilon_0 \mu_0}}$ jkf'k dh fOkek Okk dh fOkek vkrkh gS

lkz Xkfrk ds RkhLkjs LkEkhdj.k dks fykf [k, , Oka 'kq) Rkk dh TkkPk dhfTk, A

lkz æOk dh , d Nks/h Ckm dks fgYkkUks lkj lk"B RkUkkOk ds dkj.k ,kg Ckm nky'kuk djRkh gS ,kfn buk nky'kukka ds vkORkZdkYk T mLk Ckm ds æOk ds /kUROk d Ckm dh f«kT₃kk r RkFkk lk"B RkUkkOk s lkj fukHkj djRkk gS Rkks fOkek dh Lkg₃kRkk Lks vkORkZdkYk T dk buk jkf'k₃ka Lks Lk«k«k Kkrk dhfTk, \

lkz Tkck , d BkLk XkksYkk fdLkh æOk Eka Xkfrk djRkk gS Rkck æOk mLkdh Xkfrk dk ' ,kkuk CkYk f Lks fokjks'k djRkk gS CkYk f dk lkj.kkEk æOk ds ' ,kkukRkk Xkqkk«d n XkksYks dh f«kT₃kk r RkFkk XkksYks ds Okk v lkj fukHkj djRkk gS Rkks fOkek dh Lkg₃kRkk Lks CkYk f dk buk jkf'k₃ka Eka Lk«k«k Kkrk dhfTk, \

lkz TkYk ds HkhRkj fOLQks/ Lks CkUk XkLk dk CkYkCkYkk vkORkZdkYk -Lks nky'kuk djRkk gS Tkks $p^a d^b E^c$ ds vUkqEkkukkkRkh gS Tgkj p LFkSRkd nitk] d TkYk dk /kUROk RkFkk E fOLQks/ dh dyk ÅTkkZ gS a, b vkj c ds Ekkuk Kkrk dhfTk, \

OkLRkqUk" B Ikz Uk

CkgfOkdYlkh,k Ikz Uk

- 1- ,kfn C RkFkk R ØEk'k% /kkfj Rkk Ok IkfRkjksk gks Rkk\$ RC dh fokek,ka gk\$kh –
 (a) $[M^0L^0T^2]$ (b) $[M^0L^0T]$ (c) $[M^0L^{-1}T^2]$ (d) buea l s dkkbz ugha
- 2- Xk\$Rk m"Ek d k fokeh,k Lkkk g\$–
 (a) $[M^0L^2T^{-2}]$ (b) $[MLT^{-2}]$ (c) $[M^0L^2T^{-2}]$ (d) $[M^0L^2T^{-1}]$
- 3- LVhQUk fuk,kRkkad σ dk Ekk«kd g\$–
 (a) okV eh^{&2} d\$You^{&1} (b) okV eh² d\$You^{&4}
 (c) okV eh^{&2} d\$You^{&4} (d) okV eh^{&2} d\$You^{&4}
- 4- IYkkad fuk,kRkkad (h) ds fYk, fokeh,k Lkkk g\$–
 (a) $[ML^{-2}T^{-3}]$ (b) $[M^0L^0T^{-2}]$ (c) $[ML^2T^{-1}]$ (d) $[ML^{-2}T^{-2}]$
- 5- r f«kT,kk , Oka l Yk\$kkbz dh , d Ukykh fTKLkds fLkjs lkj nkCkkURkj p gS Lks η ' ,kkURkk dk gOkk Ckg jgk g\$ RkCk IkfRk Lkkad .M CkgUks OkkYkh æOk ds vk,kRkUk v ds fYk, fokeh,k : lk ds vUkq lk Lk\$kd k g\$
 (a) $v = \frac{\pi pr^4}{8\eta l}$ (b) $v = \frac{\pi \eta l}{8pr^4}$ (c) $\frac{8p\eta l}{\pi r^4}$ (d) $v = \frac{\pi p\eta}{8lr^4}$
- 6- ,kfn C /kkfj Rkk ds Lk\$kkfj «k dh IYk\$ka ds CkhPk fOkHkokuRkj v gS RkCk CV^2 dh fokek,ks g\$
 (a) MLT Eka O,kDRk Ukg ha gk\$kh (b) $[MLT^{-2}]$
 (c) $[M^2LT^{-1}]$ (d) $[ML^{-2}T^{-2}]$
- 7- ,kfn L fdLkh lkj d dqMYkh dk lkj dRok gS , Oka bLkEka (i) /kkjk Ik\$kkfgRk gks jgh gks Rkks Li^2 dh fokek, a g\$–
 (a) $[ML^2T^{-2}]$ (b) MLT Eka O,kDRk Ukg ha gk\$kh (c) $[MLT^{-2}]$ (d) $[M^2L^2T^{-2}]$
- 8- TkYk Rkj \$kka dk Lk\$kj .k Ok\$ v mLkds Rkj \$kn\$,kz λ TkYk ?kURok ρ RkFkk Xk\$Rokh,k Rokj .k g lkj fUkHkj djRk gS Rkks fokeh,k fOkf/k }kj k mlk jkf'k,kka dk Lk\$kd k gk\$kh–
 (a) $v^2 \propto \lambda g^{-1} \rho^{-1}$ (b) $v^2 \propto g \lambda \rho$ (c) $v^2 \propto g \lambda$ (d) $v^2 \propto g^{-1} \lambda^{-3}$

9- Ikrkj kskdRkk dh fokek, ks M, L, T Eka RkFkk Q Eka gkxkh $\frac{1}{4}$ Tkgka Q vkok's k dh fokek gA $\frac{1}{2}$

- (a) $[ML^3T^{-1}Q^{-2}]$ (b) $[ML^3T^{-2}Q^{-1}]$ (c) $[ML^2T^{-1}Q^{-1}]$ (d) $[MLT^{-1}Q^{-1}]$

10- jfn C vksj L ØEk' k% /kxfj Rkk vksj lkj dRok dks lknf' kkk dj Rks gâ Rkks LC dh fokek gkxkh-

- (a) $[M^0L^0T^0]$ (b) $[M^0L^0T^2]$ (c) $[M^2L^0T^2]$ (d) $[MLT^2]$

11- Rkjxk Lkpkj .k Lkfn' k dk fokeh, k Lkuk gkxkk gS-

- (a) $[M^0L^{-1}T^0]$ (b) $[M^0LT^0]$ (c) $[M^0L^{-2}T^0]$ (d) $[M^0L^0T^0]$

12- jkf' k $x = \frac{\epsilon_0 LV}{t}$ Tkgka ϵ_0 EkPRk vkok's k dh fok | pkh, k 'khYkRkk L Ykâkkbz V fokHokkURkj vksj t LkEk, k gS Rkks X dh fokek, a LkEkkuk gS &

- (a) i frjksk ds (b) vko's k ds (c) okYVst ds (d) /kkjk ds

13- EkkfVZkuk Ik) frk Eka CkYk (F), Rokj .k (A) vksj T LkEk, k ds Ekvk HkkSRkd j kf' k, kka ds : Ik Eka mlk, kxk dj Rks gâ Ykâkkbz dh fokek, a EkkfVZkuk Ik) frk Eka gkxkk -

- (a) $[FT^2]$ (b) $[F^{-1}T^2]$ (c) $[F^{-1}A^2T^{-1}]$ (d) $[AT^2]$

14- $\frac{1}{\sqrt{\epsilon_0 \mu_0}}$ dh foek; s fuEu ea l sfdl ds cjkcj g&

- (a) Okxk dh fokek ds (b) LkEk, k dh fokek ds
(c) /kxfj Rkk ds fokek ds (d) njh dh fokek dA

15- LkEkdj .k $v = a \sin(\omega t + kx)$ Eka ω dh fokeh, k Lkuk gS-

- (a) $[M^0L^{-1}T^0]$ (b) $[ML^0T^0]$ (c) $[M^0LT^{-1}]$ (d) $[M^0L^0T^{-1}]$

16- jfn $x = \frac{a \sin \theta + b \cos \theta}{a + b}$ RkCk&

- (a) x o a dh fokek, LkEkkuk gS (b) a o b dh fokek, LkEkkuk Ukgha gS
(c) fokeghuk gS (d) bukEka Lks dkbz Ukgha gA

mRRkj EkkYkk- 1.(b) 2.(a) 3.(c) 4.(c) 5.(a) 6.(d) 7.(a) 8.(c) 9.(a) 10.(b)
11.(a) 12.(d) 13.(d) 14.(a) 15.(d) 16.(c)

fjDRk LFkkUkka dh IkfRkZ dhfTk, –

- 1- $v_k, kRkUk$ $IkR, kLfk$ dk f0keh, k _____gA
- 2- , d Xkan dh f«kT, k (5.2 ± 0.2) LksEk- gS Xkan ds $v_k, kRkUk$ Eka—IkfRk' kRk «kfV gA
- 3- dqMYkh ds LOkkj .k dk Xkqkkad dk Ekk«kd _____gA
- 4- , d Xkkykkbz Ekkikh ds Ekd, k IkSkkUks dks 720 HkkXkka Eka Ckka/k Xk, kk gS OkfUkZ, kj IkSkkUks Ikj 30 HkkXk gS Rkks, kak dh vYIkRkEkkad — gkXkh TkCkd OkfUkZ, kj ds 30 HkkXk Ekd, k IkSkkUks ds 29 HkkXkka ds LkakkRkh gA
- 5- , kn L—lkj dRok C—/kkfjRkk Ok R—IkfRkjksk gks Rkks RkCk C²LR dh f0kek, ka—gkXkh mRRkj EkkYkk— 1. [M¹L⁻¹T⁻²], 2. 11%, 3.gujh] 4. 1', 5. [M⁰L⁰T³A⁰]

, d 'kCn Eka mRRkj nhfTk, &

- 1- CkYk] ROkj .k] Lkakk RkFkk 'kfDRk Eka Lks fdLkd Ekk«kd U, kw/Uk Lkd. M gA
- 2- Ikdk' k Ok"Kz fdLk HkSkRkd jkf' k dk Ekk«kd gA
- 3- QEkZ fdLk dk Ekk«kd gA
- 4- LkjYk Ykkykd dh Ykakkbz 1% Ck<k nh TkRkh gS Rkks mLkd vkOkRkZkYk fDRkUk IkfRk' kRk Ck< TkkoXkka
- 5- Ckky'VEkSk fUk, kRkkad dk f0keh, k Lkuk CkRkKb, ks mRRkj EkkYkk— 1- Lkakk dk] 2- Ykakkb] 3- Ykakkb] 4- 0.5% 5- [ML²T⁻²θ⁻¹]

dkWkEk&A ea fn, ks Xk, ks HkSkRkd jkf' k dk dkWkEk—B Eka fn, ks Xk, ks f0keh, k Lkuk Lks fEYkkuk dhfTk, \

v	Ck
1- dks kh, k Okk	(a) [A ⁻² MLT ⁻²]
2- PkqCkd' khYkRkk	(b) [ML ² T ⁻² K ⁻¹ mole ⁻¹]
3- LkkoZ«kd Xk#ROkd"Kz k fUk, kRkkad	(c) [M ⁻¹ L ³ T ⁻²]
4- XkS, k fUk, kRkkad	(d) [ML ² T ⁻¹]
5- dks kh, k Lkakk	(e) [M ⁰ L ⁰ T ⁻¹]

mUkj EkkYkk 1. (e) 2. (a) 3. (c) 4. (b) 5. (d)

bdkbZ-2

, d f0keh, k XkFRk —

vFRk Yk?kqRRkj h, k Ikz Uk

Ikz LkEkRkYk Eka , d fCkanq p ds fLFkFRk fUknz kkacl $\frac{1}{2}$] $3\frac{1}{2}$ gS mLkds fLFkFRk Lkfn' k dks fyf[k, vkj mLkdh Ykakkbz CkRkkb, ks

Ikz- fdLkh {k.k t Ikj OkLRkq ds Okk dh fn'kk mLkds IkxkEKUk IkFk Lks dSks IkIRk gkRk gS

Ikz fdLkh OkLRkq dh fLFkFRk Lkfn'k $r(d) = 2t\hat{i} - 4t\hat{j}$ gS Rkks $t = 4$ Lkcl.M Ikj OkLRkq dk Okk KkRk dhfTk, \

Ikz , d Xkan {kFRkTk Lks θ dks k Ikj u Okk Lks Qadh TkRk gS mLkds IkFk dk LkEkhdj .k fyf[k, \

Ikz LkEkRkYk Eks , d LkEkKUK Okk Lks PkYUks OkkYkh OkLRkq dk IkxkEKUk IkFk dSkk gkRk gS

Ikz D, kk , kg LkEkOk gSfd fdLkh OkLRkq dk vkS.kRk Okk 'k, k gks Ikj Bkq vkS.kRk pkYk 'k, k Uk gkA

Ikz , kfn fdLkh fik.M dk fOkLFkkIKUk LkEk, k OkkZ ds vUkØEkKUKkRk gS Rkks fik.M , d LkEkKUK Okk Lks PkYk jgk gS, k , d LkEkKUK ROkj .k Lks

Ikz Okk—LkEk, k XkQ dk <kYk D, kk Ikdv djRk gS , kfn Okk fLFkj jgs Rkks ROkj .k 'k, k gkRk gS] Ikj Bkq, kfn PkYk fLFkj jgs Rkks vkOk' , kd Ukgahfd ROkj .k Hkh 'k, k gks D, kka

Ikz , d d.k dk t LkEk, k Ikj fOkLFkkIKUk gS $x = a_0 + a_1t + a_2t^2$ mLkh {k.k mLkdk ROkj .k KkRk dhfTk, \

Yk?kqRRkj h, k Ikz Uk —

Ikz vBkfj {k Eka fik.Mka ds f«f0keh, k XkFRk dks LkEkOkk, ka

Ikz , d LkEkKUK oRRk, k XkFRk Eka vkOkRkZkYk] vkOkfUk RkFk dks kh, k Okk dh Ikfj Hk"kk, a nhfTk, A dks kh, k Okk dh fn'kk Hk CkRkkb, ks

Ikz D, kk fdLkh OkLRkq dh ROkfjRk XkFRk Eka PkYk fLFkj gks LkdRk gS

Ikz IkM Ikj CkBs Ckanj Ikj , d f'kdkjh fuk'kkUk YkXkRk gS Ikj Rkq Ckanj mLkh LkEk, k fXkj IkMRk gS TkCk Xkks'kh NwRk gS D, kk Xkks'kh Ckanj dks YkXkRk\ , kfn Ckanj Uk fXkj's Rkks

D₃kk fQj Hkh Xkkz/kh YkXkzkh\

Ikz ,kfn , d oLrQ OkRRkh₃k EkkXkz Ikj LkEkkUk LkEk₃k Eka LkEkkUk njih Rk₃k dj Rkh gS Rkks OkLRkq dh PkkYk RkFkk OkzK dLks gkzks\

Ikz , d lkgMh ds f'k[kj Lks , d lKRFkj u OkzK Lks Aikj dh vksj RkFkk ntukjk mRkUks gh OkzK Lks UkhPks dh vksj Qadk TkkRkk gS lkgMh ds vk/kkj Ikj lkgMh Lks ntukka lKRFkj ka ds OkzKka Eka D₃kk vUkkkRk gkzks\

Ikz lKfj OkRkhz XkFRk D₃kk gS RkkR{kf.kd OkzK dks LkEÖkkb₃ks\

Ikz XkFRk ds LkEk₃k fuKj lKsK LkEkhdj.k dks fykf[k, , Oka fLk) dhfTk, \

Ikz PkYkh Xkbz njih ds fyk, XkFRk ds LkEkhdj.k dks fykf[k, , Oka fLk) dhfTk, \

Ikz , d fOkeh₃k XkFRk dj Rks gq d.k dk fOkLFkkIkuk x fUkEUkfykf[kRk Lkuk }kjk fn₃kk TkkRkk gS $t = \sqrt{x+5}$ t gka x EkhVj Eks RkFkk t Lkd.M Eka gS TkCk mLkdK OkzK 'k₃k gks TkkRkk gS Rkks fOkLFkkIkuk dh Xk.kukk dhfTk, \

nh?kznRRkj₃k Ikz Uk -

Ikz lKj fHkd OkzK u vksj fuK₃krk ROkj.k a Lks XkFRk dj Uks OkYkh OkLRkq }kjk n Oka Lksd.M Eka PkYkh Xkbz njih dk Lkuk KkRk dhfTk, \

Ikz fuK₃krk ROkj.k Lks XkFRk dj Rks fik.M }kjk tOk₃mOka RkFkk nOka Lksd.M Eka Rk₃k dh Xkbz njih kka ØEk'k% s₁, s₂ RkFkk s₃ gks Rkks n'k₃ks-

$$s_1(m - n) + s_2(n - l) + s_3(t - m) = 0$$

Ikz vkks{k d OkzK KkRk dhfTk, TkCkd XkFRk kka dh fn'kk, j LkEkkBkj Ok fOkIkj hRk gkz

Ikz fLk) dhfTk, fd OkLRkq dk RkkR{kf.kd ROkj.k LkEk₃k ds LkkkS k OkLRkq ds fLFkFRk ds fUknz kka ds f}Rkh₃k vOkdYkTk ds Ckj kCkj gkzks gS

Ikz fLk) dhfTk, fd fLFkFRk-LkEk₃k XkkQ ds fdLkh Hkh fCkmaq Ikj [khpkh Xkbz Lik'kz js[kk dk <kYk₃kk lKk.kRkk mLk {k.k Ikj OkLRkq ds RkkR{kf.kd OkzK dks fUk: fikRk dj Rkh gS

Ikz OkRRkh₃k XkFRk Eka dks kh₃k OkzK RkFkk js[kh₃k OkzK Eka LkzKk LFkkfIkRk dhfTk, A bukds Lkfn'k RkFkk vfn'k : Ik fykf[k, \

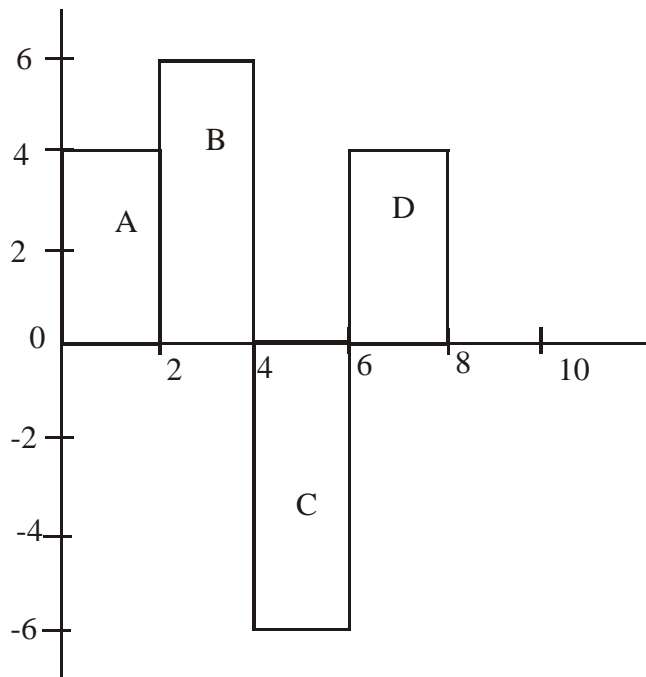
Ikz EkgRRkEk A₃kkbz vksj vf/kdRkEk {kSRkTk lKj kLk ds fyk, lKzKk dks k fdRkUk gkzks gS. KkRk dhfTk, \

Ikz fØdV dh , d Xkan 15 EkhVj Lksd .M dsØkØk Lks{kØRkTk Lks60 vák dk dks k ØUkkRkh gþZ Qadh TkkRkh gS KKRk dhfTk, –

- 1- Xkan dk mî ,kuk dkYk
- 2- Xkan }kjk IkzIRk vf/kdRREk ÅPkkbz
- 3- IkFØkh Ikj VdjkRks LkEk,k Xkan dk ØkØk Øk fn'kk

Ikz TkØk , d Øk,kqkkuk IkFØkh Lks 1960 EkhVj dh ÅPkkbz Ikj TkehuK LksfdLkh fØkanqP ds fYk, Bhd ÅIkj gS vksj {kØRkTk fn'kk Eka 100 EkhVj@Lksd .M ds ØkØk Lks mM jgk gS Rkks mLkLks , d ØkEk fxkj,kk TkkRkh gS P Lks mLk fØkanqdh njih KKRk dhfTk, Tkgka ØkEk TkehuK Ikj fxkjRkk gS

Ikz fPkØk Eka fdLkh ØkLRkq dk ØkØk LkEk,k XkØQ fn,kk Xk,kk gS ØkLRq dk 08 Lksd .M Eka fØkLFkkIKUK vksj ØkLRkq }kjk 08 Lksd .M Eka Rk,k dh Xkbz dYk njih KKRk dhfTk, \



ØkLRkqØk"B Ikz Uk

ØkgØkØk dYIkhh,k Ikz Uk –

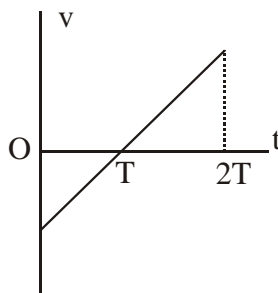
1- fdLkh d.k dh fdLkh {k.k t Ikj $x = v\{k$ ds vukfn'k fLFkfrk fUKEUK LkØkØk Lks nh TkkRkh gS- $x = 2 + t - 3t^2$, $t = 0$ Lks $t = 1$ Rkd ds LkEk,kØURkjYk Eka d.k }kjk Rk,k fd,kk Xk,kk fØkLFkkIKUK Øk njih gkØkh&

- (a) (2, 2) (b) (-2, 2.5) (c) (0, 2) (d) (-2, 2.16)

2- , d flk. M h $\frac{1}{2}$ ÅpkkbZ dh Ekhukkj Lks LOKRkækRkk IkæZd fXkj,kk TkRkk gS, kg flk. M IkFokh Rkd IkgPKUks Eka t Lkd. M dk LkEk, k YRkk gS $\frac{t}{2}$ Lkd. M ds Ik' PkkRk flk. M dh fLFkFRk dgka gkækh\

- (a) IkFokh Lks $\frac{1}{2}$ dh nijh Ikj
- (b) IkFokh Lks $\frac{1}{4}$ dh nijh Ikj
- (c) , kg flk. M ds æ0, kEkkuK Ok vk, kRkUk Ikj fukHkZ gkækk A
- (d) IkFokh Lks $\frac{3}{4}$ dh nijh Ikj

3- fn, kk Xk, kk fPkæk fdLkh d. k ds LkEk, k OkæK-XkæQ dks n' kRkk gS RkCk

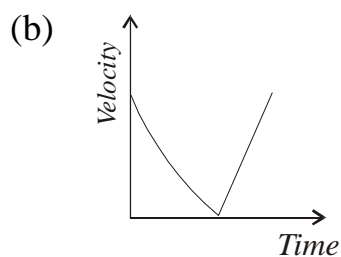
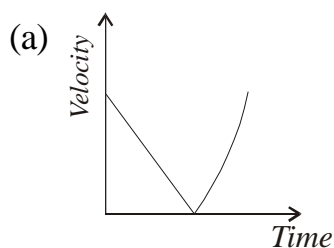


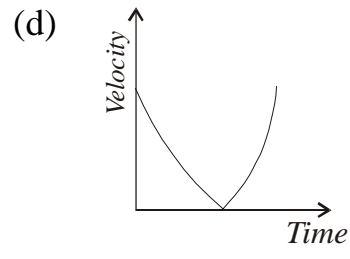
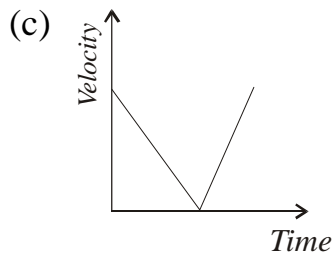
- (a) d. k dk fOkLFkkIkUk 'kæ, k gS
- (b) fdLkh fCkæq Ikj d. k vIkUkh XkFRk dh fn' kk CknYkRkh gS
- (c) d. k dh IkjæHkd Ok væRkEk PkkYk LkEkkuK gS
- (d) ÅIkj fn, ks Xk, ks LkHkh dFKUk LkR, k gS

4- fdLkh Ekhukkj dh Pkks/h Lks , d flk. M dks m/OkkZkj UkhPk ds vksj 10m/sec. ds OkæK Lks QæK TkRkk gSA bLkds }kj k RkhLkjs vksj nIkj's Lkd. M Eka Rk, k dh Xk, kh nIj, kka dk vUkækRk gkækk& (g = 10 m/sec²)

- (a) 5% (b) 7% (c) 3% (d) 6%

5- fdLkh Xkæ dks m/OkkZÅIkj dh vksj QæK TkRkk gSA Okk, kqk"æZ k dks Uæk, , k Uk EkkUk Tk, Rkks Xkæ dh XkFRk gækq Lkgh PkkYk&LkEk, k XkæQ gkækk





6- , d χ kk χ kk l Yk χ kkbz ds /kk χ ks Lks YkVdk g χ rk g χ m Lks fdRkukk U χ kkRkEk Ok χ kk Ik χ kkuk fd χ kk Tk χ , fd YkVduK fCk χ q dh χ kk χ bz Rkd Ik χ pk Tk χ k χ

- (a) gl (b) $2gl$ (c) \sqrt{gl} (d) $\sqrt{2gl}$

7- , d ?kMh Eka Lkd .M dh Lk χ z dh Yk χ kkbz 1 cm g χ A bLkdh Uk χ d ds Ok χ kk Eks Ik χ j OkRk χ kk 15 Lkd .M Eka gk χ kk A

- (a) χ kk χ (b) $\frac{\pi}{30\sqrt{2}}$ (c) $\frac{\pi}{30}$ Lk χ h@Lkd .M (d) $\frac{\pi}{30}\sqrt{2}$ Lk χ h@Lkd .M

8- m χ kk χ kkuk dh , d χ kan dks m/Ok χ zkkj Rk% χ kk χ dh vk χ Q χ dk Tk χ Rkk g χ 2m χ kk χ kkuk dh n χ kkjh χ kan dks χ kk χ zkkj Lks θ dks k Ik χ Q χ dk Tk χ Rkk g χ A n χ kkka χ kan Lk χ kkuk Lk χ kk ds fYk, Ok χ kk Eka jgRkh g χ A n χ kkka χ kan }kkj k Ik χ Rk χ kk χ kk χ d χ vk χ kk χ kk g χ

- (a) 1% (b) 2% (c) 1% (d) 1% $\cos\theta$

9- 100 kg. dh , d dkj 9 cm./sec. ds vf/kdRkEk Ok χ kk Lks 30 Ek χ . f χ kkT χ kk ds OkRRkkdkj Ek χ kkz Ik χ χ kkRkEk χ kkuk g χ LkMd , Ok χ dkj ds Ck χ Pk vf/kdRkEk ?"kkz k CkYk g χ -

- (a) 1000 U χ kk χ /Uk (b) 706 U χ kk χ /Uk (c) 270 U χ kk χ /Uk (d) 2000 U χ kk χ /Uk A

10- Tk χ kk , d Ik χ kk ds Ck χ kn fd χ ks Tk χ Rks g χ Rkks 36 PkDdj ka ds Ck χ kn bLkd χ dks kh χ kk Ok χ kk 50 Ik χ Rk' kRk dEk gks Tk χ Rkk g χ f χ kk χ kkOkLfk χ Eka vk χ ks Lks Ik χ Yks χ kg fdRkUks PkDdj vk χ Ik χ kkz dk χ kk\

- (a) 18 (a) 12 (a) 36 (a) 48

m χ kkj-1. (d) 2. (d) 3. (d) 4. (b) 5. (c) 6. (d) 7. (d) 8. (d) 9. (c) 10. (b)

fjDRk LFkkUkka dh Ik χ Rkz dhfTk, -

1- fdLkh Ek χ kkj Lks , d IkRf χ kk dks Ik χ kk fhkd Ok χ kk u Lks Ik χ kk χ kkRk fd χ kk Tk χ Rkk g χ IkF χ kk Rkd Ik χ pkUks Ik χ fTkLkd χ kk Ok χ kk 3u gks Tk χ Rkk g χ Ek χ kkj dh χ kk χ bz _____ g χ

- 2- , d f[kYkkMh R dh f«kT, kk ds OkRRkkdkj IkFk Eka , d lkwkz PkDdj 40 l d. M Eka YkXkkRkk gS 2 fEkUkV 20 Lkd. M Ik' PkRk bLkd fOkLFkkikuk —gkXkKA
 - 3- u OkXk Lks 0 dks k Ikj IkfkkRk dh Xk, kh OkLRkq dk {kSRkTk fOkLFkkikuk R gS LkEkKuk OkXk Ok LkEkKuk dks k ds fYk, PKUæEkk Ikj OkLRkq dh IkjLk — gkXkh A
 - 4- , d d. k 1 EkhVj dh f«kT, kk OkYks OkRRk dk , d PkDdj 10 Lkd. M Eka YkXkkRkk gS XkFRk ds nkj kUk vkS. kRk OkXk — gS
 - 5- , d d. k fUk, kRk PkkYk v Lks r f«kT, kk ds OkRRkkdkj EkkXkZ Ikj XkFRk djRkk gS, Oka , d PkDdj T LkEk, k Eka lkwkz djRkk gS d. k dk ROkj. k —gS
- mRRkj EkkYk - 1. $4u^2/g$ 2. $2R$ 3. $6R$ 4. 'kU; 5. $2\pi\theta/T$

bdkbz 03

OkYk , Oka XkFRk dk fUk, kEk

vfRk Yk?kqRRkj h, k Ikz Uk

- Ikz1— XkFRk ds nUkjs fUk, kEk dk dFkUk fYkf[k, A , kg OkYk ds Ckjs Eka D, kk CkRkYkkRkk gS
- Ikz2 fØ, kk vkSj IkFRkØ, kk OkYk CkjCkj Ok fOkIjhrk gkRks gS Rkks fQj Oks , d nUkjs dks fUkjLRk D, kka Ukgha dj nRks gS
- Ikz3- LkXkkEkh OkYkka ds LkRkYkUk dh 'kRkZ D, kk gS
- Ikz4— vLkdæh, k OkYk fdLks dgrks gS D, kk , kg IkFRkØ, kk OkYk gS
- Ikz5— EkkM Ikj fQLkYkUks Lks CkPkUs ds fYk, vf/kdRkEk OkXk fdRkUkk gkRkk Pkfg, \
- Ikz6— Ikj Ekk. kq Eka bYkDVRkUk dks Ukfhkd ds Pkjkka vkj OkRRkh, k EkkXkZ Ikj ?kUkUs ds fYk, vfHkdæh, k OkYk dgkj Lks IkRkRk gkRkk gS
- Ikz7 CkQZ Ikj PkYkUkk D, kka dFBUk gS
- Ikz8- vkOkXk dk SI Ekk«kd , Oka mLkd fOkh, k LkUk fYkf[k, \
- Ikz9- fLk) dhfTk, fd fdLkh OkLRkq Eka mRkUkUk ROkj. k mLkds æ0, kEkKuk ds 0, kRØEkkUkPkkRkh gkRkk gS
- Ikz 10 OkYk ds Ekk«kd U, kn/Uk dks IkfjHkkf"Rk dhfTk, vkSj mLkd fOkh, k LkUk fYkf[k, \

lkz11 D,kk dkj.k gS fd XkFRkd ?k"lz k dk Ekkuk LknSk LkhEkkURk ?k"k.kz ds Ekkuk Lks dEk gkRkk gS

lkz12 NnEk CkYk ds mnkgj.k nhfTk, \

lkz13 HkkjghUkRkk dh fLFkFRk fdLks dgrks gS

Yk?kqRRkj h,k lkz Uk -

lkz14 IkgkMka Ij ?kfkOknkj LkMd LkERkYk Uk gsdj Ckkgjh vj dN Ålkj mBh gkRkh gS D, kka

lkz15 IkkUkh Lks Hkj h CkYVh dks RkTkh Lks Å/OkkZlkj Rky Eka ?kfkRks gS Rks IkkUkh D, kka Ukgha fxjRkk gS

lkz16- fLk) djka fd vfHkdæh,k Rkj.k dh fn'kk OkRRk ds dæ dh RkjQ gkRkh gS

lkz17- gEk TEkhuk Ij dLks PkYk IkkRks gS

lkz18- CkYk ds SI Ik) FRk RkFkk CGS Ik) FRk ds Ekkekd dh IkfjHkk"kk fYk[kdj mLkEka Lkakk LFkfkRk dhfTk, \

lkz19- ,d OkRRk Ij XkFRk djRks d.k dk Okk 5 EkhVj Lkd.M RkFkk vfHkYk Rkj.k 10 EkhVj@Lkd.M² gS Rks OkRRk dh f«T,kk KkRk dhfTk, \

lkz20 5 fdXkk. æ0,kEkkuk ds ,d flk.M Ij 8 U,kw/Uk vj 6 U,kw/Uk ds nks YkOkRk~CkYk fØ,kk'khYk gS flk.M ds Rkj.k dk IkfjEkk.k Ok fn'kk KkRk dhfTk, \

lkz 21 fLk) dhfTk, fd fdLkh OkLRkq Ij YkXkUs OkkYks CkYk dk vOkk mLkds Lkakk Ikfj OkRkZk ds RkY,k gkRkk gS

lkz22 fLk) dhfTk, fd Ckka,k CkYk dh vUkqfLFkFRk Eka d.k dk js[kh,k Lkakk fuk,kRk jgRkk gS

lkz23 ,kfn dkbZ 0,kfDRk fYkV ds vñj RkSYkUs OkkYkh Ek'khuk Ij [kMk gSRkFkk fYkV Ok Rkj.k Lks Ålkj dh vj Tkk jgh gS Rks mLks dLk IkkRk gkakk] LIk"V dhfTk, \

lkz 24 ,kfn dkbZ 0,kfDRk fYkV ds vñj RkSYkUs OkkYkh Ek'khuk Ij [kMk gSRkFkk fYkV a Roj.k UkhPk dh vj Tkk jgh gS Rks mLks dLk IkkRk gkakk] LIk"V dhfTk, \

nh?kzRRkj h,k lkz Uk

lkz25 XkFRk ds nLkjs fuk,kEk Lks RkhLkjs fuk,kEk dks IkkRk dhfTk, fLk) djksfd nLkjk fuk,kEk

gh EkāKHKkRk fuk₃kEk gS

lkz26- lkfj QkRkhZ æ0₃kEkKkUk dk , d mngj .k nhfTk, A bLkds ROkj .k ds fYk, 0₃kākd lkkIRk dhfTk, \

lkz27- fLk) dhfTk, fd fdLkh fukdk₃k lkj Ckā₃k CkYk Uk YkXk jgk gkš Rkks mLk fukdk₃k dk Lkāk₃kZ jš[kh₃k Lkāk₃k fuk₃kRk jgRkk gS

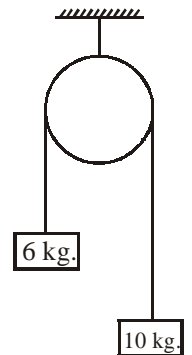
lkz28 fLk) dhfTk, fd ?k"lz k dks k vksj fOkjEk dks k LkEkKkUk gkBks gS

lkz 29 Ykks ds Xkks/ks dk æ0₃kEkKkUk 90 fdXkd. gS Xkks/ks dks 9-8 EkhVj dh ĀPkkbZ Lks jBk Eka fXkj₃kk TkRkk gSA fTkLkLks Okg jBk Eka 2 LkEkh. XkgjkbZ Rkd /kLk TkRkk gS jBk }kj k Xkks/ks lkj YkXk₃ks Xk₃ks lkrkj₃šk CkYk dh Xk. kUkk dhfTk, \

OkLRkqUk" B i' u

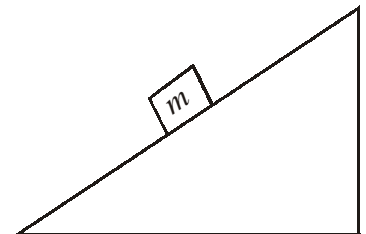
1- 6 fdXkd. RkFkk 10 fdXkd. ds nks æ0₃kEkKkUk fPk«kkUk₃kkj ?k"lz k jfgRk f?kjUkh Lks YkVdk, Xk, gS Mksjh Eka RkUkkOk gkškk –

- (a) 24-5 U₃kW/Uk (b) 2-45 U₃kW/Uk
- (c) 79 U₃kW/Uk (d) 73-5 U₃kW/Uk



2- m æ0₃kEkKkUk , d CYkkd] RkYk lkj UkhPksh dh vksj fQLkYk jgk gš {kšRkTk ?k"lz k Xkqkkæd μ_s Ok XkFRkTk ?k"lz k Xkqkkæd μ_k gS Rkks CYkkd lkj YkXkUks OkkYkk ?k"lz k CkYk gkškkA

- (a) μ_smgcosθ (b) (F+mg) sinθ
- (c) μ_k(F+mg) cosθ (d) (mg+F) tanθ



3- U₃kW/Uk Uks XkFRk ds fuk₃kEkka }kj k –

- (a) lkFEk fuk₃kEk Lks f}Rkh₃k fuk₃kEk vksj RkRkh₃k fuk₃kEk lkkIRk dj LkdRks gS
- (b) RkRkh₃k fuk₃kEk Lks lkFEk Ok f}Rkh₃k fuk₃kEk Lks lkkIRk dj LkdRks gS
- (c) f}Rkh₃k fuk₃kEk Lks lkFEk Ok RkRkh₃k fuk₃kEk lkkIRk dj LkdRks gS
- (d) XkFRk ds RkhUkka fuk₃kEk , d ntkjs lkj fukHkj dj Rks gS

4 Tkck dkBZ 0₃kfDRk Uknh Eka Rkš Rkk gS Rkck mLkdh vf/kdRkEk ĀTkZ [kPkZ gkBkh gS

- (a) lkgYkh 1/3 njjh Rkd (b) ntkjh 1/3 njjh Rkd
- (c) vkf[kjh 1/3 njjh rd (d) lkjh njjh Rkd LkEkKkUk ĀTkZ A

- 5- 6000 fdxkk. fyk¶V dksfdLkh dškyk }kjk ds 5m/sec.² ds Rkj .k Lks Ålkj dh vkj [khpkk TkkRkk gA ,fn $g = 10\text{m/sec.}^2$ gks Rkks dškyk Eka Rkukok gkxkk A
- (a) 6000N (b) 9000N (c) 60000N (d) 90000N
- 6- fdLkh fLlkxk ds , d fLkjslkj dkdZCkkkdj ntkjsfLkjsdks lkk«k ds vk/kkj Lks TkkMk Xk,kk gA lkk«k Eka lkkukh Hkjk g¶k gA bLk lkk«k dks , Lkh fyk¶V Eks j [kk Xk,kk gS Tkks fdLkh Rkj .k Lks UkhPk dh vkj vk jgh gA fLlkxk dh YkxkbZ –
- (a) Ck<xlh (b) ?kVxlh (c) vlfj OkfRkRk jgxlh (d) Tkkukdkjh vLk,kkZrk gA
- 7- LkhEkkurk ?k"lz.k fukHkj djRkk gS-
- (a) RkYk ds {k«kQYk (b) RkYk dh lkañfrk lkj
- (c) vfHkYk«k lfrkfo,kk lkj (d) RkYk dh lkañfrk Ok vfHkYk«k lfrkfo,kk lkj
- 8- fdLkh OkLRkq ds TkmRok ds dkj .k gS-
- (a) fLkQZ æ0,kEkkuk (b) fLkQZ Okxk
- (c) æ0,kEkkuk Ok Okxk nkslka (d) buEka Lks dkbZ Ugha A
- 9- jkdV/ mMkuk ds fLk) kRk gS-
- (a) ÅTkkZ Lkj {k.k (b) æ0,kEkkuk Lkj {k.k
- (c) js[kh,k Lk«kxk Lkj {k.k (d) dks kh,k Lk«kxk Lkj {k.k
- 10- U,kwUk ds Xkfrk dk lFkEK fuk,kEk 0,kDRk djRkk gS-
- (a) ÅTkkZ (b) dk,kZ (c) TkmRok (d) TkmRok vk?kwkZ
- mRrkjEkkYkk** 1. (d) 2. (c) 3. (c) 4. (b) 5. (d) 6. (b) 7. (d) 8. (a) 9. (c) 10. (c)

fjDRk LFkkUkka dh lfrkZ dhfTk, –

- 1- Xkfrk ds LkEkdj .k $v^2 = u^2 + \dots\dots\dots$ dks lkwkZ dhfTk, A
- 2- 50N dk CkYk 1kg. fdxkk æ0,kEkkuk lkj fo,kk djds ——— Rkj .k mRkUk dkjxkA
- 3- {kSRkTk Lks 30° dk dsk lkj dk,kjRk , d CkYk dk Å/OkkZkkj ?kVd 200N gS vkjkfRk CkYk dk Ekkuk——gkxkk A

- 4- nks LkEkkUK IkfjEkk.k dk CkYk ———dks k lkj dk₃kZ djUks lkj lkfj .kkEkh CkYk 'k₃k gkRkk gA
- 5- LOkRkakkRkkIk₃kZl fxkjRks gq fYk₃V Eks fLFkRk 100kg. d.k dk Hkkj ———gk₃kk A mRRkj EkkYkk -1. 2as 2. 50m/sec.² 3. 100N 4. 180° 5. 'k₃k

bdkbZ 04

dk₃kZ ÅTkkZ , Oka 'kfDRk

vfRk Yk?kqRRkj h₃k IkZ Uk

- lkz1 dk₃kZ gk₃ks ds fYk, nks vkOk' ₃kd CkRka D₃kk gA
- lkz2- dk₃kZ ds fYk, Ekk«kd SI RkFk CGS lk) fRk Eka CkRkkb₃ks
- lkz3- 1 TkYk fdRkUks vxkZ ds CkjCkj gkRkk gA
- lkz4- 'k₃k dk₃kZ fdUk—fdUk fLFkRk₃kka Eka gkRkk gA
- lkz5- vf/kdRkEk Ok U₃k₃RkEk dk₃kZ dCk gkRkk gA
- lkz6- fdLk OkLRkq ds dk₃kZ djUks dh {kEkk D₃kk dgYkkRkh gA
- lkz7- D₃kk dkj.k gS fd dk₃kZ Ok ÅTkkZ dk Ekk«kd , d gh gS v₃ Okg Ekk«kd D₃kk gA
- lkz8- ÅTkkZ ds fOkfHkUk : Ik fYkf[k, A
- lkz9- ₃k««kd ÅTkkZ ds lk₃kj fYkf[k, \
- lkz10 Ck«kka Eka , df«kRk TkYk fdLk lk₃kj ds ÅTkkZ dk mnkj .k gA
- lkz11 Lk«V ds fYk, dk₃k—dk₃k Lk Lk«k Lk₃f{kRk jgUk Tk: jh gA
- lkz12- Lk«V dk , d mnkj .k nhTk, fTkLkEka , d n₃kj ds Hk«Rk Lk«dZ Ugha gkRkk gA
- lkz13 lR₃kkLFk Lk«ê ds dk₃Z RkUk fOk' k«Rk, a fYkf[k, \
- lkz14- vIk₃kkLFk Lk«ê ds dk₃Z RkUk fOk' k«Rk, a fYkf[k, \
- lkz15- lR₃kkOkLFkUk Xkqkk«d fdLks dgRks gA
- lkz16- fLk«k fUk₃kRk«d dk Ekk«kd , Oka fOkh₃k Lk«k fYkf[k, \
- lkz17- vIk₃kkLFk Lk«ê Eka Lk«k ÅTkkZ dh gkFk gkRkh gA ÅTkkZ dh ₃kg gkFk fdLk : Ik

Eka IkzdV gkRkh gS

Ikz 18- , d gh LkjYk j[kk Eka XkFRk' khYk nks OkLRkq/ka ds Ek/,k Lk2kê gkSks ds fYk, vkOk' ,kd 'kRkz fYkf[k, \

Ikz 19- fn,ks Xk,ks LkEkhdj .k Lks fLlkZk fUk,kRkkaD K dk fOkeh,k Lkuk KkRk dhfTk, \

$$K = F/x$$

Yk?kqnÜkj h,k Ikz Uk

Ikz1 fdLkh vPkj CkYk }kj k fd,kk Xk,kk dk,kz ds fYk, Lkuk LFkkIKUkk dhfTk, \

Ikz2 /kukRkEd Ok __.kkREkd dk,kz ds RkhUk-RkhUk mnkgj.k nhfTk, \

Ikz3 , d CkYk 15 fdYkkkRkE æ0,kEkkUk dh OkLRkq dks 5 EkhVj@Lkd.M² ds ROkj .k Lks 2 EkhVj dh njih Rkd fOkLFkkfIKRk dj nBkk gS CkYk }kj k fd,ks Xk,ks dk,kz dh Xk.kUkk dhfTk, \

Ikz4- fdLkh flk.M Ikj fDRUkk CkYk YkXk,kk Tk,k fd Okg CkYk flk.M dks CkYk dh fn'kk Lks 60° dks k Ikj nks EkhVj fOkLFkkfIKRk dj nBkk gS ,fn CkYk }kj k fd,ks Xk,ks dk,kz 10 TkWk gkS

Ikz5- CkYk fOkLFkkIKUk OkØ dh Lkg,kRk Lks fdLkh Ikj hOkRkZ CkYk }kj k fd,kk Xk,kk dk,kz dh Xk.kUkk dks LkEkÖkkb,ks

Ikz6- , d d.k y-v{k ds vUkn'k $3y^2 + 4y$ U,kw/Uk dk CkYk dk,kj Rk gS Tkks d.k y = 4 Lks y = 5 EkhVj Rkd fOkLFkkfIKRk dj Rk gS CkYk }kj k fd,ks Xk,ks dk,kz dh Xk.kUkk dhfTk, \

Ikz7 XkFRk ds RkRkh,k LkEkhdj .k dh Lkg,kRk Lks XkFRkTk ÅTkz dk 0,kākd KkRk dhfTk, \

Ikz8- 8 fdXk. æ0,kEkkUk dh , d OkLRkq fOkjEkOkLFk Eka gS mLk Ikj 32 U,kw/Uk dk CkYk YkXk,kk TkRk gS 10 Lkd.M Ckn OkLRkq dh XkFRkTk ÅTkz fDRUkh gkS\

Ikz9- Xkq ROkh,k fLFkFRkTk ÅTkz dk 0,kākd KkRk dhfTk, \

Ikz10- fLk) dhfTk, - $K = p^2/2m$ Tkga LkdRkka dk vFkZ LkEKKU,k gS

Ikz11 ,fn fdLkh flk.M ds XkFRkTk ÅTkz Eka 21% dh Okf) dh Tk,ks Rkks mLkdh j[kh,k LkRk Eka fDRUkk Okf) gkS A

nh?kznÜkj h,k lkz Uk –

- lkz1 dk₃kz dh lkñfrk dks mnkgj .k LkfgRk LkEkÖkbb₃ks
- lkz2 ÅTkkz ds fofHkUuk : lk fyk[kdj₃ kkb«kd ÅTkkz dk Ok.kk dhfTk, \
- lkz3 fLlkzk dh fLFkFRkTk ÅTkkz dks CkYk fofLFkkUuk OkØ dh Lkgk₃kRkk Lks LkEkÖkbb₃ks
- lkz4- fLk) dhfTk, fd TkCk Hkkjh OkLRkq fLFkj gYdh OkLRkq Lks VdjkRkh gS Rkks Hkkjh OkLRkq mLkh Lk«k Lks PkYkRkh jgRkh gS fofRkq gYdh OkLRkq Hkkjh OkLRkq ds nYkqks Okk Lks PkYkUks YkXkRkh gS mnkgj .k nhfTk, \
- lkz5- fLk) dhfTk, fd vIkR₃kkLFk VDdj Eka LknSk ÅTkkz dh gkFuk gkRkh gS ÅTkkz gkFuk dk Lkwk LFkfkRk dhfTk, \
- lkz7- Xkq ROk ds v/khuk LokRk«kRkkk«k«d UkhPks fXkjRks gq fdLkh flk.M dh LkElkwkz ÅTkkz XkFRk ds IkR₃kd Pkj.k Eka fuk₃kRk gkRkh gS fLk) dhfTk, A
- lkz8- , d Yksgs dh Tk«khj ?k"lz k jfgRk EkT«k ds Ålkj bLk lk«kj j [kh gS fd mLk«k 1/6 HkXk EkT«k ds UkhPks YkVdk g\$₃ kfn Tk«khj dh Yk«k«bz / RkFkk æ0₃ kEkUk m gks Rkks Tk«khj ds YkVds gq HkXk dks Ålkj [khPkuks Eka fofRkUk dk₃kz djUk IkM«k \
- lkz9 UkhPks fn₃ks Xk₃ks fPk«k ds vUk«kkj , d ?k"lz k I₃kkYks Eka , d XkksYkh b/kj–m/kj Yk«d jgh gS I₃kkYks ds fUkEUKRkEk fCk«q Q Lks XkksYkh nkskka vkj fTuk fCk«q/ka Rkd TkkRkh gS mUkdh Q Lks Å/Okzhjh 0-2 EkhVj gS fCk«q Q lkj XkksYkh dh PkYk KkRk dhfTk, A $\frac{1}{g} = 9.8 \text{ EkhVj@Lkd} . M^{2\frac{1}{2}}$
- lkz 10 fdLkh ?k"lz k jfgRk EkT«k lkj 5 fEk-@Lkd.M dh PkYk Lks PkYk jgh g\$ 20 fofXk. dh , d OkLRkq , d vkn'kz fLlkzk Lks VdjkRkh gS₃ kfn OkLRkq fofkEkOkLFk Eka vk Tk₃ks Rkks fLlkzk Eka fofRkUk LkElkhUuk gk«k fn₃kk g«v gSfd fLlkzk dk CkYk fu₃kRk«d $2 \times 10^5 \text{ U₃kw/Uk@EkhVjA}$

CkgfOkdYlkh,k lkz Uk

- 1- PkCkh Hkj dh dEkUk Eka Lk«kfgRk jgRkh gS-
 - (a) kkb«kd XkFRkTk ÅTkkz (b) kkb«kd fLFkFRkTk ÅTkkz
 - (c) LFkSRkd ÅTkkz (d) dkbz Hkh ÅTkkz UghA
- 2- , d gYdh vk\$ Hkkjh OkLRkq dh XkFRkTk ÅTkkz , d LkEkUk gS RkCk Lk«k–
 - (a) Hkkjh OkLRkq dh vf/kd gk«kh (b) Hkkjh OkLRkq dh dEk gk«kh
 - (c) nkskka dh LkEkUk gk«kh (d) bukEka Lks dkbz Ugha A

- 3- , d OkLRkq ds æ0,kEkkuk vksj Okkk nkskks dks nqtkkk djUks lkj mLkdh XkFRkTk ÅTkkz gkxkh—
 (a) nqtkkk (b) Pkkj Xkqkk (c) vkB Xkqkk (d) Okgh jgXkk A
- 4- , d Xkan 5 EkhVj ÅPkkbz Lks fXkj dj 1-8 EkhVj ÅPkkbz Rkd mNYkRkh g\$ mNYkUks ds lk' PkkRk RkFkk lkKz Okkka dk vUkqkRk gkxkh—
 (a) 4/5 (b) 1/5 (c) 2/5 (d) 3/5
- 5- LkjYk jgkk Eks XkFRk djRks gq flk.M dk Lkakk 50% Ok<+TkkRk g\$ bLkdh XkFRkTk ÅTkkz Eka lFRk'krk of) gkxkh —
 (a) 75% (b) 100% (c) 125% (d) 150% A
- 7- , d dkj dks fOkj kEk Lks 10 m/sec. Rkd ROkfjRk djUks ds fYk, vkOk' ,kd ÅTkkz w g\$ dkj dks 10 m/s. Lks 20 m/s. Rkd ROkfjRk djUks ds fYk, vkOk' ,kd ÅTkkz —
 (a) W (b) 2W (c) 3W (d) 4W
- 7- OkUnpl dh , d Xkkykh , d Rk[Rks dks lkj djRks LkEk,k vUkks Okkk dk 1/20Okka Hkkk [kks nBkh g\$ mUk Rk[Rkka dh U,kkkRkEk Lkq ,kk D ,kk gkxkh Pkkfg, fTkUkLks Xkkykh lkwz : lk Lks fLFkj gks Tkk,ks \
- (a) 5 (b) 10 (c) 15 (d) 20
- 8- , d OkDLk dk\$ fuk ,krk {kEkRk lkknUk djUks OkkYkh Ek' khUk }kj LkjYk jgkk Eka PkYkk ,kk TkkRk g\$ OkLRkq }kjk — LkEk ,k Eka PkYkh Xkbz njh LkEkkUkqkRkh gkRkh g\$—
 (a) $\frac{1}{t^2}$ (b) $\frac{3}{t^4}$ (c) $\frac{3}{t^2}$ (d) t^2
- 9- ,kfn OkYk RkFkk Ykakkbz nkskka ds Ekk«kd Pkkj Xkqks dj fn ,ks Tkk ,ks Rkks ÅTkkz dk Ekk«kd gks Tkk ,kxkA
 (a) 16 Xkqkk (b) 8 Xkqkk (c) 2 Xkqkk (d) 4 xqk
- 10— fdLkh OkLRkq dk Lkakk p Ok XkFRkTk ÅTkkz E g\$,kfn bLkdk Lkakk 2p gks Tkk ,ks Rkks bLkdh XkFRkTk ÅTkkz gkxkh—
 (a) E/2 (b) 3E (c) 2E (d) 4E
- mRRkj EkYk**— 1- (b) 2- (a) 3- (c) 4- (c) 5- (c) 6- (c) 7- (b) 8- (c) 9- (a) 10- (d)

fjDRk LFkkUkka dh IkFRk dhFTk, -

- 1- , d fdYkkSkkV-?k.Vk _____ TkWk ds CkjKckj gkBlk gS
 - 2- TkUkjS/j _____ dks fOk | Bk ATkkz Eka Ikfj OkFRkBlk djRkh gS
 - 3- 10kg. dh OkLRkq 1 EkhVj dh APkkbz Lks fXkjUks Ikj mLkds XkFRkTk ATkkz Eka _____ (kf) gkBlk A
 - 4- , d v'Ok 'kFRk _____ OkkV ds CkjKckj gkBlk A
 - 5- fLlkZk fuk₃Rkkad dk Ekk«kd (m.k.s.) lk) FRk ea _____gkBlk gS
- mRRkj- 1. $3-6 \times 10^6$ TkWk 2. ₃kkf«kd ATkkz 3. 19-6 TkWk 4. 746 OkkV 5. N/m

bdkbZ -05

?kwkZk XkFRk , Oka TkMROk vk?kwkZ

vfRk Yk?kqUkj h₃k IkZ Uk

- Ikz1 LFkkUkka₃h₃k XkFRk fdLks dgRks gS
- Ikz2 ?kwkZk XkFRk Lks D₃kk vfHkIk₃k gS
- Ikz3 ?kwkZkXkFRk Eka ?kwkZk-v{k dgk; Lks XkqkjRkh gS
- Ikz4 OkUkh₃k XkFRk Eka ?kwkZk-v{k dgk; Lks XkqkjRkk gS
- Ikz5 CkYk vk?kwkZ dk EkkUk fdUk nks CkRkka Ikj fukHkj djRkk gS
- Ikz6 ₃kfn CkYk dks ?kwkZk-v{k ds fdLkh fCUng Ikj YkXk₃ks Rkks CkYk-vk?kwkZ dk EkkUk D₃kk gkBlk\
- Ikz8 CkYk-vk?kwkZ dk EkkUk vf/kdRke dCk gkBlk\
- Ikz9 fdLkh OkLRkq Ikj YkXkUks OkkYkk CkYk dk EkkUk 'k₃k gk\$ Rkks mLk OkLRkq Ikj CkYk vk?kwkZ dk EkkUk D₃kk gkBlk\
- Ikz10 TkYk IkEIk dk gRFkk YkEckk gkBlk g\$ D₃kka \
- Ikz11 vkVk IkhLkUks dh PkDdh Eka gRFkk Ikj f/k ds IkkLk YkXk₃kk TkRkk g\$ D₃kka \
- Ikz12 fdLkh d.k ds j₃kh₃k Lk«k dk fdLkh ?kwkZk v{k ds IkfjRk% vk?kwkZ D₃kk dgYkkRkk gS

- lkz13 CkQZ lkj LdšVšlk djRks LkEk, k Xkfrk /khEkh, kk RkšTk djUks Eka dkšK Lkk Lkj {k. k fuk, kEk—lkzkkkk gkškk gš
- lkz14 TkMROk vk?kwkZ I OkYks fik.M Eka TkMROk vk?kwkZ I dk VpMk vYXk gkšks lkj 'kšk TkMROk vk?kwkZ fdRkukk gkškk\
- lkz15 {kškh, k Okšk fdLks dgRks gš
- lkz16, kfn, d Vd vš, d dkj LkEkkuk PkkYk Lks Xkfrk' khYk gks Rkks Vd dks jkdUks ds fYk, dkj dh RkšKukk Eka vf/kd CkYk YkXkkukk lkMk gš D, kka
- lkz 17 YkšdRks gq Qš/CkYk Eka dkšK—dkšK Lkh ÅTkz fufgrk gkškh gš \
- lkz 18 Ldšj Lkk, kdYk vkfn ds lkfg, kka Eka vf/kd kš æ0, kEkkuk mLkds UšEk lkj fokrKjRk gkškk gš D, kka \

Yk?kqñÜkj h, k lkz Uk

- lkz1, d LkkbfdYk ds gšMYk dh YkEkkbz 40 Lkškh gš, kfn LkkbfdYk Lkškj bLkds lkR, kd fLkjs lkj 0-04 U, kw/Uk ds Ckj kCkj LkEkkURkj vš fOkIjhrk fn'kk Eka CkYk YkXkkRks gšks ?kškk, kš Rkks mLkds }kj k YkXkk, ks Xk, ks CkYk, kš ds vk?kwkZ dh Xk. kukk dhfTk, A
- lkz2 15 fdXkk æ0, kEkkuk, Oka 0-4 EkhVj O, kLk dk, d fjšk vIkukh T, kšfEkrkš, k v{k ds lkjRk 2200 PkDdj@fEkUV dh nj Lks ?kškk jgh gš mLkds
 1. TkMROk vk?kwkZ
 2. dks kh, k Okšk dh Xk. kukk dhfTk, A
- lkz3 15 fdXkk æ0, kEkkuk dk, d XkšYk 30° Ökškkok OkYks URRk LkEkrYk lkj YkšdRkk gš URRk LkEkrYk dh LkRk gš XkšYk ds CkšP ?k"lz k CkYk KkRk dhfTk, kš
- lkz4, kfn LkEkkuk æ0, kEkkuk Ok LkEkkuk f«kT, kk OkYk Bkš, k XkšYk vš Bkš, k CkšKuk fdLkh URRk LkEkrYk lkj, d LkkFk, d gh LFkkuk Lks Ykšdk, ks TkkUks lkj LkOkšfEk dkšK Lkk fik.M LkEkrYk ds fLkjs lkj lkšššš vš D, kka \
- lkz5 fLk) dhfTk, ks fd fdLkh fik.M dh ?kwkZ f«kT, kk fik.M ds fOkfhkš d. kka dh v{k Lks nfj, kka ds OkšZ ds Ek/, k ds OkškEYk ds Ckj kCkj gkškh gš
- lkz6 fLk) dhfTk, ks fd fdLkh fik.M dh ?kwkZ XkfrkTk ÅTkz $\frac{3}{4}$ $\frac{1}{2}$ TkMROk vk?kwkZ \times $\frac{1}{2}$ dks kh, k Okšk $\frac{1}{2}$ gkškh gš

CkgfOkdYlkh,k Ikz Uk

- 1- fdLkh OkLRkq dk æ0,kEkkUk dltæ—
- (a) LknSk T,kkFEkRkh,k dltæ lkj gkRkk gÅ
- (b) LknSk OkLRkq ds vñj fLFkRk gkRkk gS
- (c) LknSk OkLRkq Lks Ckkgj gkRkk gS
- (d) OkLRkq ds Ckkgj vFkOkk vñj gkRkk gÅ
- 2- , d 0,kfDRk , d ?kñkRks gg EkPk lkj vIkUkh nkUkka Ckkgjs dks QSYkk,ks [kMk gÅ vCk Okg , dk, d vIkUkh Ckkgka dks LkEks/ YkRkk gS Rkks mLkdK
- (a) dks kh,k Okk ?kV Tkk,kk (b) TkMROk vk?kwkz Ck< Tkk,kk
- (c) dks kh,k LkEkKk Ck< Tkk,kk (d) TkMROk vk?kwkz ?kV Tkk,kk A
- 3- M æ0,kEkkUk dk , d flk.M x-v{k ds LkEkkURkj fLFkj Okk Lks XkFRk dj jgk gS bLkdK dks kh,k LkEkKk –
- (a) flk,kRk gkRkk gS (b) 'kñ,k gS (c) Ck<Rkk gS (d) ?kVRkk gÅ
- 4- dkbz RkS kd Ålkj Lks lkkUkh Eka dñUks ds lkKz vIkUk 'kj hj fLkdK M YkRkk gS fTkLkLks fd –
- (a) TkMROk vk?kwkz C<+Tkk,ks (b) TkMROk vk?kwkz ?kV Tkk,ks
- (c) dks kh,k LkEkKk ?kV Tkk,ks (d) dks kh,k Okk ?kV Tkk,ks A
- 5- , d OkLRkq dh ?kwkz XkFRkTk ÅTkkz E RkFk vk?kwkz I gS OkLRkq dk dks kh,k LkEkKk gS
- (a) EI (b) $2\sqrt{EI}$ (c) $\sqrt{2EI}$ (d) E/I
- 6- , d Xkky'kh , d Xkñ/ds Lks vkdj VdjRkh gS vkSj mLkEka /kLk TkkRkh gÅ dksk Lkh jkf'k Lkj f{kRk gkKkh
- (a) LkEkKk (b) XkFRkTk ÅTkkz (c) LkEkKk Ok XkFRk't ÅTkkz (d) bukEka Lks dkbz Ugha
- 7- , d PkdRkh dk æ0,kEkkUk M Ok f«kT,kk r gS PkdRkh ds fdUkks dks Lik'kz djRkh gñZ vkSj mLkds RkYk Eka fLFkRk v{k ds LkkIkSk ,kk 0,kkLk ds LkEkkURkj mLkdK TkMROk vk?kwkz gS-
- (a) $\frac{5}{4}Mr^2$ (b) $\frac{Mr^2}{4}$ (c) $\frac{3}{2}Mr^2$ (d) $\frac{Mr^2}{2}$

8- m æðjkekkuk 0 r fækt₃kk dh , d fMLd dks $2r$ fækt₃kk ds Ökyk₃ Eka lkfj ÖkfrkRk fd₃kk TkRk gA Rkks ?kwkZk fækt₃kk Eka fdRkUkk lkfj ÖkRkZk gkZkk

- (a) $\sqrt{2}$ (b) 2 (c) $2\sqrt{2}$ (d) 4

9- w Hkkj dh , d NM dks nkkkka fLkj ka Lks nks 0 kfdRk {kRkTk fn'kk Eka j [ks gq gA w fkn , d 0 kfdRk vPkUkd NM dks NkM n $\frac{1}{2}$ Rkks nkkjk 0 kfdRk fdRkUkk Ökyk vUkkök djZkk\

- (a) w (b) $w/2$ (c) $\frac{3}{2}w$ (d) $w/4$

10- m æðjkekkuk dk , d Xkk $\frac{1}{2}$ kk θ dks k Ökyk vUkr Rkyk lkj fÖkUkk fQLkyk Ykædrkk g $\frac{1}{2}$ Xkk $\frac{1}{2}$ ks dk j $\frac{1}{2}$ kh₃ Rk $\frac{1}{2}$.k gkZkk—

- (a) $\frac{1}{7} g \sin\theta$ (b) $\frac{2}{7} g \sin\theta$ (c) $\frac{3}{7} g \sin\theta$ (d) $\frac{5}{7} g \sin\theta$

mÜkjEkkYk— 1-(d) 2-(d) 3-(a) 4-(b) 5-(c) 6-(a) 7-(a) 8-(c) 9-(d) 10-(d)

fjDRk LFkkUkka dh lÖRkZ dhfTk, —

1- 10 fdXkk. æðjkekkuk dk , d Ökyk 30° Ökptök Ökyk URk LkEkRkyk lkj Ykædrkk gA URk LkEkRkyk dh LkRk $\frac{1}{2}$ v $\frac{1}{2}$ Ökyk ds ÖkPk ?k"Zk Ökyk ——— gkZkh A

2- , d—, d fdXkk. æðjkekkuk ds nks d.k fdLkh v{k ds lkfj Rk%1 EkhVj v $\frac{1}{2}$ 2 EkhVj dh njh lkj lkfj HkEk.k dj jgs g $\frac{1}{2}$?kwkZk fækt₃kk ——— gkZkh

3- TkMRÖk v $\frac{1}{2}$ kwZ dh m.k.s. Ekkækd ——— gA

4- Bk $\frac{1}{2}$ Xkk $\frac{1}{2}$ kk dk 0 kLk v{k ds LkkIk $\frac{1}{2}$ TkMRÖk v $\frac{1}{2}$ kwZ ——— gkZkh gA

5- z Ykækkb $\frac{1}{2}$ b Pkk $\frac{1}{2}$ kbZ Ök M æðjkekkuk ds lkyk $\frac{1}{2}$ k $\frac{1}{2}$ krkkdkj $\frac{1}{2}$ ds Rkyk ds YkEckÖkRk v{k ds LkkIk $\frac{1}{2}$ TkMRÖk v $\frac{1}{2}$ kwZ ——— gkZkh gA

mRRkjEkkYk— 2. 16-3N 2. $\sqrt{\frac{5}{2}}$ Ekh. 3. kg. m 2 4. $\frac{2}{5} MR^2$ 5. $\frac{M(l^2 + b^2)}{12}$

fjDRk LFkkUkka dh lÖRkZ dhfTk, —

1- lFÖkh dk v $\frac{1}{2}$ krk ?kURÖk ——— gA

2- lFÖkh ds d $\frac{1}{2}$ æ lkj g dk Ekkuk ——— gA

- 3- PkUæEkk RkFkk IkFokh Ikj g ds Ekkukka dk vUkqkkRk _____ gA
- 4- G/g dh m.k.s. Ik) fRk Eka Ekk«kd _____ gA
- 5- [kks[kYks XkksYks ds vanj Xkq#ROkh,k {k«k dh RkhORkk _____ gkRkh gA
- mRRkj- 1. $5 \cdot 5 \times 10^3 \text{ kg./m}^3$ 2. 'kU,k 3. 1/6 4- m^2/kg 5. 'kU,k A

bdkbZ 6

Xkq#ROkkd"KZ k

Yk?kqRRkj h,k IkZ Uk -

- Ikz1 Xkq#ROkh,k ROkj .k dk Ekkuk OkLRkq ds æ0,kEkkuk Ikj fuHkZj Ukgha djRkkA
- Ikz2 IkFokh ds RkYk Ikj dgk; Ikj g dk Ekkuk vf/kdRkEk gkRkk gS g dk vf/kdRkEk Ekkuk S.I. Ik) fRk Eka fYkf[k, \
- Ikz3- OkLRkq dh IkFokh Lks Okg U,kkRkEk ÅPkkbZ KkRk dhfTk, Tkgk; Lks Okg IkFokh Ikj OkkIkLk Ukgha vk IkRkk A
- Ikz4- njLkRkkj ds fYk, fdLk Ik«kj dk mlkXkg mlk,kk«k fd,kk TkkRkk gS.
- Ikz5- Ñf«kEk mlkXkg Ikj OkBs vRkfj{k ,kk«kh HkkjghURkk dk vUkqkOk djRkk gS. D,kk«
- Ikz 6- Xkq#ROkh,k fOkHkOk dk Ekkuk Lkn«k __.kkREd gkRkk gS D,kk«
- Ikz7 D,kk dkj.k gSfd jk«k«/ dk b«kuk d{k dks vYkXk-vYkXk [k«/ Eka fOkHkDRk j [kk TkkRkk gS
- Ikz8- mlkXkg dh Ck«ku ÅTKZ D,kk gS.
- Ikz9 D,kk dkj.k gSfd /k«k« Ikj g dk Ekkuk vf/kdRkEk RkFkk fOk"kkRk-j«kk Ikj U,kkRkEk gkRkk gS.
- Ikz10 IkFokh ds RkYk Lks IkYkk,kuk Ok«k RkFkk PkUæEkk ds RkYk Lks IkYkk,kuk dk Ok«k dk Ekkuk fYkf[k,ks \
- Ikz11 nks flk.M m_1 vkj m_2 æ0,k Ekkuk ds , d-n«kjs Lks d njh Ikj fLFRk gSftuds chp yxus okyk cy F fuEu I « }kj k fn; k tkrk gA

$$F = G \frac{m_1 m_2}{d^2} \quad \text{rks } G \text{ dk foeh; } I \text{ « Kkr dhft, } A$$

- lkz12- PkUæEkk lkj Okk,kqkA/Yk Ukgha gS D; ka
- lkz13 mlkXkg dks bfPNRk ÅPkkbz lkj Yks Tkkdj 8 km.@l d.M ds Okk Lks {kSRkTk fn'kk Eka lkzksfRk fd,kk Tkkukk Pkkfg,] D,kka
- lkz14- dkbz Pkkj CkYka ds UkkEk fykf[k, vksj mUkEka dkbz , d UkkEk CkRkkb,ks fTklLeka doy vkd"lz.k dk Xkqk gBRkk gS
- lkz15- ,kfn fdLkh fok'kSk lkj fLFkfrk Eka lkFRkfØ,kk CkYk dk Ekkuk 'kD,k gks Tkk,ks Rkks O,kfDRk dks dS,kk lkRkRk gkRkk gS

Yk?kqnUkj,h,k lkz Uk -

- 1- fLk) dhfTk, fd lkFkh ds dææ lkj lkR,kd OkLRkq dk Hkkj 'kD,k gkRkk gS
- 2- fLk) dhfTk, fd lkYkk,kuk Okk Qæds Tkkuks OkkYks flk.M ds æo,kEkkuk RkFkk lkzksk.k dks lkj fukHkzj Ukgha djRkk A
- 3- fLk) dhfTk, fd m æo,kEkkuk ds flk.M dks lkFkh dh LkRkg Lks h ÅPkkbz Rkd Yks Tkkuks Lks mLkdh fLFkfrkTk ÅTkkz Eka mgh dh Okf) gks TkkRkh gS
- 4- fLk) dhfTk, fd Ñf«kEk mlkXkg dk lkjHkEk.k dYk mLkds æo,kEkkuk lkj fukHkzj Ukgha djRkk gS
- 5- fLk) djks fd lkYkk,kuk Okk PkkYk dk $\sqrt{2}$ Xkqkk gkRkk gS

nh?kznRRkj,h,k lkz Uk -

- lkz1 M æo,kEkkuk RkFkk R f«kT,kk dk , d BkLk XkksYk , d {kSRkTk LkEkRkYk lkj v PkkYk Lks fckuk fQLkYks Ykæd jgk gS ,kfn XkksYks dk æo,kEkkuk n«kqkk dj ns Rkks CkRkkb,ks mLkds PkkYk Eka fdRkukk lkj OkRkRk gkRkkA
- lkz2 Ckk,kukjh fukdk,k dks mnkgj .k LkfgRk LkEkÖkkb,ks
- lkz3- , d LkEkkuk lkRkYkh NM dh Ykækbz L RkFkk æo,kEkkuk M gS bLkd mLk v{k ds lkfjRk%TkMIRk vk?kwkz dk eku Kkr dhft, pafd bl ds , d fl js l s $\frac{L}{3}$ njh lkj fLFkRk fckUnq Lks gkdj YkæOkRk TkkRkh gS
- lkz4 fLk) dhfTk, fd fdLkh d.k dk dks kh,k Lkækk mLkds æo,kEkkuk vksj {kækh,k Okk ds XkqkukQYk ds nkækkks ds Ckj kckj gkRkk gS bLkds Lkg,kRkk Lks Xkzka ds XkFRk ds dSkYkj ds f}Rkh,k fuk,kEk dh Lfkkkuk dhfTk, \

Ikz5- , d n< flk. M Lks gkdj nks LkEkkRkj v{k Xkq'kj Rkh gS FTKLkEka Lks , d v{k dltæ Lks gkdj TKRkh gS , fkn flk. M dk LkElkwkz æ0, kEkkUK M RkFkk nkskka v{kka ds CkhPk dh njh R gks Rkks nkskjs Ek/ , k ds lkkfjRk% flk. M dk TkmROk vk?kwkz Kkrk dhfTk, \

Ikz6- , d Lkh/kh NM fTKLkdk æ0, kEkkUK m RkFkk YkEckkbZ x gks Rkks mLkdk tMROk vk?kwkz fUkEuk v{kka ds Lkkkksk Kkrk dhfTk, -

1. YkækkbZ ds YkækkRk RkFkk dltæ Lks Xkq'kj Uks OkYks v{k
2. YkækkbZ ds YkækkRk RkFkk , d flkjs Lks Xkq'kj Uks OkYks v{k ds lkkfjRk%

CkgfOkdYlkh, k Ikz Uk

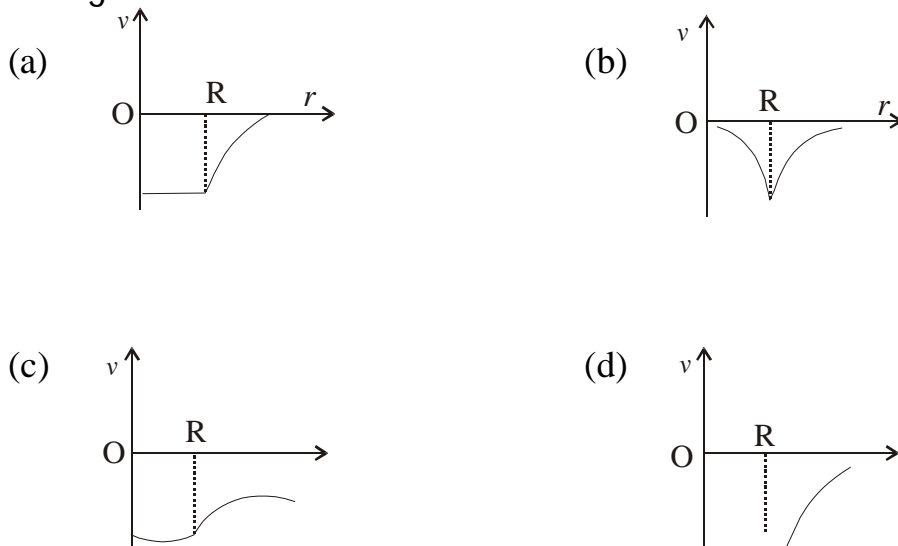
Ikz 1- Xkq'ROkh, k æ0, kEkkUK , Oka TkmROkh, k æ0, kEkkUK dk vUkqkRk gkRk gS-

- (a) 1% (b) 2% (c) 1% (d) 3%

Ikz 2- , fkn lFokh dh f&kT, kk 1 lkrk'krk dEk gks Tkk, ks YkfdUk mLkdk æ0, kEkkUK vlfjOkfRkZ jgs Rkks lFokh RkYk lkj Xkq'ROkh, k ROkj . k -

- (a) 2% Ck<Xkk (b) 2% ?kVXkk
 (c) 1% Ck<Xkk (d) 1% ?kVXkk

Ikz 3- lFokh ds dkj . k Xkq'ROkh, k fOkHOk dsEkkUK Eka mLkds dltæ Lks njh ds LkkFk [kh&kk Xk, kk OkØ gS-



Ikz 4- lFokh dh Lkrkg lkj Hk&kk/ , k js[kk Lks /k&kk lkj lkgp&ks lkj g dsEkkUK Eka fdRkUs lkrk'krk lkkfjOkfRkZk gkRk gS-

- (a) 4-5% (b) 0-65% (c) 0-05% (d) 0-43%

- Ikz 5- Lkylz ds vYkkOkk LkEhLFk Rkkjs Lks IkFOkh Ikj Ikzdk'k fdRkUks LkEk,k Eka Ikg@kRkk gS-
 (a) 4-2 Ok"KZ (b) 4-25 Lkd.M (c) 4-2 fnUk (d) 8 Lkd.M
- Ikz 6- nks mlkXkg A Ok B fdLkh Xkg P ds Pkkjka vki ØEk'k%4R Ok R f«kT,kk dh OkRRkh,k d{kkvka Eka Xkfrk djRks gS ,fn mlkXkg A dh PkkYk 3v gS Rkks B dh PkkYk gkXkh
 (a) 12v (b) 6v (c) 4/3v (d) 3/2v
- Ikz 7- ,fn IkFOkh dh LkRkg Ikj Xk@ROkh,k fokHkok v gS Rkks IkFOkh ds d{æe Ikj Xk@ROkh,k fokHkok gkXkh –
 (a) 2V (b) 3V (c) 3/2V (d) 2/3V
- Ikz 8- , d æo,kEkkuK M nks HkkXkka m RkFkk M – m Eka Vw TkkRkk gS fTKUgafQj fdLkh njih Ikj j [k fn,kk TkkRkk gS buKds Ek/,k vf/kdRkEk Xk@ROkh,k OkYk gkXks ds fYk, m/M dk vUkkkRk gkXkh –
 (a) 1/3 (b) 1/2 (c) 1/4 (d) 1/5
- Ikz 9- Lkylz ds Pkkjka vki vIKUs-vIKUs d{kdka Eka ?k@kRks gq Xkgka dh PkkYk Eka Ikfj OkRkZk fdLkds Lkj {k.k ds vk/kkj Ikj LkEÖkk,kk Tkk LkdRkk gS-
 (a) j_s[kh,k Lk@kXk (a) dks kh,k Lk@kXk (a) dYk ÅTkz (a) dks kh,k XkfrkTk ÅTkz A
- Ikz 10- IkFOkh RkFkk PkUæEkk ds d{æaka ds CkhPk dh njih 384000 fdEkh. gS ,fn IkFOkh dk æo,kEkkuK 6×10^{24} kg RkFkk $G = 6.66 \times 10^{-11} \text{Nm}^2/\text{kg}^2$ gkS Rkks PkUæEkk dh d{kh,k PkkYk gkXkh YkXkHkXk-
 (a) 1 km/s (b) 4 km/s (c) 8 km/s (d) 11.2 km/s
- mUkj –1- (a) 2. (c) 3. (c) 4- (b) 5- (a) 6- (b) 7. (c) 8- (b) 9- (b) 10. (a)

bdkbZ 7

Bkk ds Xqk /kEkZ

vfrk Yk?k@RRkj h,k Ikz Uk –

- Ikz 1 OkYk , Oka IkfrkOkYk Eka Ekq,k vRkj dhfTk, , Oka nkkbka ds fokh,k Lk@k fYkf[k, \
- Ikz 2 fLl@k RkkÇks dh CkTkk,k YkkgS dh CkUk,kh TkkRkh gS D,kk@

- lkz 3 D₃kk gk₃kkk ,fn Rkkj dh Yk₃kkbz dks [kh₃pkdj n₃pkqkh dj nh Tkk₃k\
- lkz 4 nkCkEkk1kh Eka lkkjs ds LFkkUK lkj TkYk dk mlk₃kk₃kk djUks lkj D₃kk lkkkkok lkm₃kk \
- lkz 5 XkEKZ Lkkk LOkkfn"V gk₃kk g₃ D₃kk₃
- lkz 6 Å₃pkkbz Lks fdLkh æOk dh Ckm dks fXkjkuks lkj fLkd₃kd/dj Xk₃kyk gks TkkRkh g₃ D₃kk₃
- lkz 7 D₃kk gk₃kkk ,fn Lk₃k₃k₃kd CkYk dk Ekkuk vLk₃k₃kd CkYk Lks vf/kd g₃kk
- lkz 8 Ok"kkz __Rkq Eka [k₃kkka dh Tk₃pkkbz Ugha gk₃kk Lks D₃kk lkkkkok lkm₃kk \
- lkz 9 Xk₃kyk₃kh₃k Ik"B lkj nkCk dk Ekkuk vf/kd D₃kk₃ gk₃kk g₃
- lkz 10 dhYk Uk₃phYkk Ugha gk₃kk lkj nhOkj lkj Xk₃km₃uks ea dfBukbz gk₃rh g₃ D₃kk₃
- lkz 11 vfOkjRkRkk dk fLk) k₃kk Lkk/kkj .k æOk ds fYk, Yk₃Xkw Ugha gk₃kk D₃kk₃
- lkz 12 , LksXk₃kk₃kh₃k fukdk₃k fTKLkdh LOkRk₃kkRkk dh dksV 5 gk₃kk g₃ bLkEka fdLk-fdLk lkd₃kj dh Xk₃fRk lkk₃kh TkkRkh g₃
- lkz 13 =k₃s/Uk fCk₃mq fdLks dgRks g₃
- lkz 14 Lkj {kk Xk₃qkd fdLks dgRks g₃
- lkz 15 lR₃kkLFk Jk₃rk Lks v₃tk D₃kk LkEkÖkRks g₃kk
- lkz 16 ' ,kkuk CkYk dk Ekkuk fdLk-fdLk dkjdka lkj fuk₃kk₃ djRkk g₃
- lkz 17 UkhPks fn₃ks Xk₃ks LkEkhdj .k $Y = \frac{FL}{Al}$ Eka Y dk fOk₃eh₃k Lkwk KkRk dhfTk, A
- lkz 18 dIk₃Ms lkj Ekk₃kk jXk₃muks Lks D₃kk lkkkkok lkm₃kk A
- lkz 19 lka₃kk PkYkkuks lkj gEka B₃h gOk₃ka D₃kk₃ lkk₃rk gk₃kk g₃
- lkz 20 fdLk RkkIk lkj fdLkh Xk₃kk dk v₃kk₃kkuk 'k₃kk gks TkkRkk g₃ LkEkÖkk₃kk
- lkz 21 , d O₃kfDRk 2000 EkhVj dh Å₃pkkbz Lks d₃nrks LkEk₃k l₃kk' k₃q/ dk mlk₃kk₃kk D₃kk₃ djRkk g₃
- lkz 22 lR₃kkLFkRkk Eka LkkE₃k n₃jh Lks D₃kk LkEkÖkRks g₃
- lkz 23 Xk₃mvj I v₃dkj ds Ckuk, TkkRks g₃ D₃kk₃
- lkz 24 d₃kkka Eka YkVdk₃ks Tkkuks OkkYks Ld₃wk Ck₃kk dh l₃k₃kk₃ Pkk₃h D₃kk₃ Ckuk₃kh TkkRkh g₃

- Ikz 25 CkjkEkhVj Eka Ikkjs ds LFkkUk Ikj IkkUkh dk mlk₃kkkUk Uggha djRk\$ D₃kkā
- Ikz 26 Ikkjk dkkkk Ikj Uggha fPkIkdrkk D₃kkā
- Ikz 27 EkYkk₃Ek CkkYkka Lks CkUks Ckq k dks IkkUkh Eka MqkkRks gSRkks mLkds CkkYk vYkXk—vYkXk jgRks gS fdRkq fUkdYkUks Ikj CkkYk vkIkLk Eka fPkIkdr TkkRks gS D₃kkā \
- Ikz 28 Ik"B RkUkkOk dk SI Ekk«kd , Oka fOkeh₃k Lkwwk fykf[k, \
- Ikz 29 LkhLks ds XkksYk Njā CkUkkUks ds fyk, LkhLks dks fik?kYkkdj ÅPkkbz Lks Qggkj ds : Ik Eka IkkUkh Eka fXkjRks gS D₃kkā
- Ikz 30 ?kkOk /kkkks ds fyk, M\$kkkk fEYks IkkUkh dk mlk₃kkkUk djRks gS D₃kkā
- Ikz 31 Ekk\$h ds kUkYkh dh RkYkUkk Eka IkrYkh ds kUkYkh Eka æOk vf/kd ÅPkkbz Rkd Pk< TkkRkk gS D₃kkā
- Ikz 32 ₃kfn fdLkh Ńf«kEk mlkXkq Eka ds kUkYkh dks æOk Eka Mqkk₃kk Tkk₃ks Rkks ds kUkYkh Eks Pk< s æOk ds Hkkj Eka D₃kk IkkkkOk IkM\$kk \

Yk?kqRRkj h₃k Ikz Uk —

Ikz 1 Okk₃kq dh vIk\$kk Tkyk Eka PkYkUks Ikj gEka dfBUkkbz gkRkh gS D₃kkā A

Ikz 2 UkhPks fn₃ks Xk₃ks LkEkhdj .k Lks η dk foeh₃k Lkwwk KkRk dhfTk,

$$F = \eta \cdot A \frac{dv}{dx} \text{ Tkgkj Lkdrkka ds LkkEkkU₃k vFkZ gS A}$$

Ikz 3 fn₃ks Xk₃ks LkEkhdj .k Eka k dk foeh₃k Lkwwk KkRk dhfTk, $v_c = k \frac{\eta}{\zeta d}$ Tkgkj Lkdrkka ds LkkEkkU₃k vFkZ gS

Yk?kqRRkj h₃k Ikz Uk —

Ikz 1 fdLkh LkRkæRkk Ikkzd fXkj jgsfik.M ds LkhEkkRk O\$kk ds fyk, O₃kākd KkRk dhfTk, \

Ikz 2 æOk dh Ckm ds vñj nkCk dk EkkUk vf/kd gkRkk g\$ vFkOkk dEkj Xkf.kRkh₃k Xk.kUkk }kj k LkEÖkkb₃ks

Ikz 3 fdLkh vk₃kRkkdkj ÝEk dks LkkCkqk ds ?kksYk Eka Mqkkdj Ckkgj fUkdYk TkkRkk gS Rkks mLk Ikj CkUks fQYEK dks fLkdq/Uks Lks jkdUks Eka fd, Xk, dk₃kZ ds fyk, O₃kākd LFkkfkkRk dhfTk, \

Ikz-4 Yksgs dh LkpbZ IkkUkh Eka Mðk TkkRkh gS YkfdUk mLkh Yksgs Lks CkUkk TkgtTk IkkUkh Eka Rkgrk gS A D, kka

Ikz-5 CkfgL«kkOk Okk dh Xk.kUkk dhfTk, RkFkk CkRkbb, ks dh ,kg fdLk fLk) kRk Ikj dk, kz djRkh gS

Ikz-6 XkLk ds v.kq XkFRk fLk) kRk ds vk/kkj Ikj vkn'kz XkLk ds nkCk ds fyk, O, kãkd KkRk dhfTk, \

Ikz-7 ,kfn fdLkh XkLk dk IkjEk RkkIk Pkkj Xkqkk dj fn, kk Tkk, ks Rkks mLkdh

1. XkFRkTk ÅTkkz
2. OkXkZ Ekk, kEkYk PkkYk
3. nkCk Ikj D, kk IkHkkOk IkMkKk \

nh?kzRRkj h, k Ikz Uk

Ikz-1 TkCk dkbZ vkn'kz æOk fdLkh UYkh Eka /kkjk j s[kh, k Ikðkg Eka CkgRkk gS Rkks bLkds EkkXkZ ds IRR, ksd fCkanqIkj bLkds, dkad vk, kRkUk ,kk , dkad æO, kEkkUk dh dyk ÅTkkz fUk, kRk jgRkh gS

Ikz-2 OkSPkj hEkVj fdLks dgRks gâ OkSPkj hEkVj Eka nks LFkkUkka Ikj UYkh ds IkfjPNn {ksekQYk a₁ Ok a₂ gSRkFkk OkgkanCk Eka vRkj æOk dh ÅPkkbZ h ds CkjKckj gS UYkh Eka Lks IkFRk Lkcd. M CkgUks OkkYks æOk ds vk, kRkUk dk Lkæk LFkfkFRk dhfTk, \

CkgfOkdYIk h, k Ikz Uk

1- IkkUkh ds Hkjs fXkYkkLk Eka CkOZ dk VpMk RkS jgk gS TkCk Lkækwkz CkOZ fik?kYk Tkk, ks Rkks æOk dk RkYk –

- | | |
|-----------------------|---|
| (a) ÅPkk gks Tkk, kkk | (b) UkhPks fXkj Tkk, kkk |
| (c) Okgh jgk | (d) CkOZ vks IkkUkh dh Ekk«kk Ikj fUkHkj djkk A |

2- fdLkh RkjYk dk fdLkh RkYk Ikj Ikz knn gkRkk gS-

- (a) CkYk×{ksekQYk (a) nkCk×{ksekQYk (a) CkYk×{ksekQYk (a) nkCk×{ksekQYk A

3- fdLkh æOk ds fyk, TkjhUk dk fUk, kEk gS-

- (a) rh = fu; rkd (a) r²h = fu; rkd (a) r/h = fu; rkd (a) r³h = fu; rkd

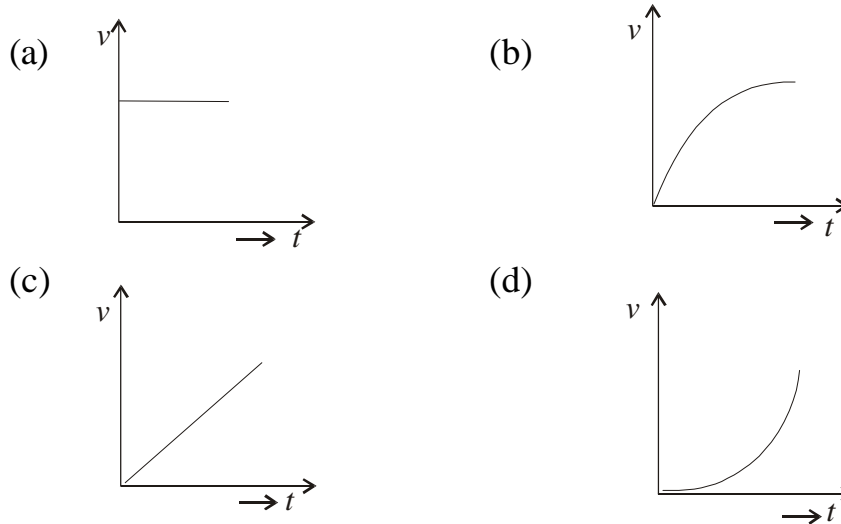
4- fdLkh Ck'kukkdKj LkRkg ds fYk, nkCkURkj gkRkk gS-

(a) $2T/r$ (b) T/r (c) $2T\left(\frac{1}{r_1} - \frac{1}{r_2}\right)$ (d) $4T\left(\frac{1}{r_1} - \frac{1}{r_2}\right)$

5- , d IkkbTk Eka IkkLdYk Lksd.M gkRks gS-

(a) 0-001 (b) 0-0001 (c) 0-001 (d) 0-1

6- , d Xkm RkjdKsYk Eka fXkjkbZ TkRkH gS mLkdK Okk LkEk, k OkØ gkRkk-



7- Ck'UkksYkh IkEkSk Bhd Lks YkkXkm gkRkk gS-

- (a) vkn' kZ RkRk ds /kjkjs[kh, k Ikkg ds fYk,
- (b) vkn' kZ æOk ds fOk{kq/k Ikkg ds fYk,
- (c) OkLRkFkd æOk ds /kjk js[kh, k Ikkg ds fYk,
- (d) fdLkh Hkh æOk ds fdLkh Hkh Ikkg ds fYk, A

8- fUkEuk Eka Lks ØkRkd Okk dk Lkgh Lkwk gS-

(a) $v_c = \frac{k\eta d}{r}$ (b) $v_c = \frac{k\eta}{dr}$ (c) $v_c = \frac{dr}{k\eta}$ (d) $v_c = \frac{r\eta}{dk}$

9- Ok'kZ dh Ckm dk Okk, q Eka LkEkRk Okk v gS Ckm dh f<kT, k r RkFk Okk, q dh ' , kUkRkk Xkqkkad η Ij fUkEuk IkzKj fUkHj dJk gS-

(a) $v \propto r\eta$ (b) $v \propto r^2\eta$ (c) $v \propto r\eta^2$ (d) $v^2 \propto r^2/\eta$

bdkbZ 8

Å"EkK , Oka Å"EkKXkFRkdH

vfRk Yk?kqRRkj h,k Ikz Uk –

- Ikz1 fdLkh Å"EkKXkFRkd fukdk,k dk dkkk Lkk Xkqk Å"EkK,k LkRkYkUK dh vOkLFkk dks fuk,kfækRk djRks g\$
- Ikz2 RkkIk EkkIKUks fMXkh LkSYLk,kLk vk\$ QkjBkgkbV ds Ek/,k LkRkZk n'kkb,k\$
- Ikz3 IksMqKEK ,kk LkRkYkRk Ikfg,kk OkkYkh ?kfm,kka Eka fEkJ/kkRkq dk mlk,kk\$ D,kka fd,kk TkRkRk g\$
- Ikz4- fdLk RkkIk Ikj Ikkukh dk ?kukRok vf/kdRkEk gkRkRk g\$
- Ikz5 fdLkh OkLRkq ds vOkLFkk IkfjOkRkZk ds fYk, vkOk' ,kd Å"EkK dks D,kk dgRks g\$
- Ikz6- jk\$Xk,kka dh fLkRkZk ds fYk, XkEKZ Ikkukh ds CkRkYkka dk mi ; k\$ D,kka fd,kk TkRkRk g\$
- Ikz7- Xk\$K RkkIkEkkIk Eka mPPk RkkIk Ok fukEUK RkkIk ds EkkIKUK Eka dkk—dkk Lks Xk\$K Ikz,kRk djRks g\$ vIKUks mRRkj dk dkj .k nhfTk, \
- Ikz8- Å"EkK,k IkFRkj k\$K dk fOkh,k Lkwk fYkf[k, \
- Ikz9- CkQhYks Iknd'k Eka jgUks OkkYks TkUKTkFRk Bm Lks CkPKUks ds fYk, vIKUk ?kj fdLk Ikdkj CkUkRks g\$
- Ikz10- LkwkZ ds LkRkg dk RkkIkEkkUK 6000K g\$TkCkd OkhUK ds Lkwk ds vUkq,kkj LkwkZ ds LkRkg dk RkkIk 6050K gkRkRk g\$ bLkd dkj .k CkRkbb,k\$
- Ikz 11- LkwkZ ,kk Rkkjka ds RkkIk dh Xk.kUk ds fYk, Ikz,kRk fuk,kEk fYkf[k, \
- Ikz12- nks LkEkkUK vk,kRkUK YkfdUK Xk\$Yk dkj , Oka vk,kRkdkj Ikækka Eka Ikjk Hkj k g\$,fn bUga XkEKZ TkYk Eka Mqk,kk Tk,k\$ks Rks fdLk vkdkj ds Ikæk dk RkkIk 'kh?kRk Lks Ck<Xkka
- Ikz13- LkwkZ Eka Uk,ks RkRkka dh [kk\$'k fdLk Ikdkj dh TkRkRk g\$
- Ikz 14- U,kvUk ds 'khRkYkUK fuk,kEk Eka OkLRkq vk\$ mLLds IkfjOk\$'k ds Ek/,k RkkIkURkj vf/kd Ukgha gk\$kh Pkfg,] dkj .k CkRkbb,k\$
- Ikz15- Ikkukh dks Å"EkK nBks jgUks Ikj mLkd RkkIkEkkUK DOKfUkka d Rkd Ck<Rk g\$ YkfdUK mLkds Ckkn Å"EkK nBks Ikj RkkIkEkkUK Ukgha Ck<Rk] CkRkbb,k\$ Ckkn Eka nh XkbZ Å"EkK dk

D₃kk gkrkk gS.

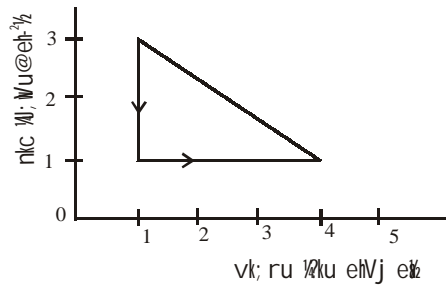
Ikz 16- CkEgk.M Eks Ñf".kdk dh lkgPkkuk fdLk lkdj dh TkkRkh gS.

Ikz 17- Okk.Mj OkkVvk vOkLFkk LkEkhdj.k ds nkCk Lk kskuk Eka nkCk vkf/kD₃k vj₃ XkS.k ds ?kukRok Eka Lk kdk n' kkb₃ks.

Ikz 18- fdLkh :) k'se OkØ ds fyk, Rkkik vj₃ vk₃kRkuk Eka Lk kdk n' kkb₃ks.

Ikz 19- :) k'se LkEikhMuk dh vOkLFkk Eka fukdk₃k dk RkkikEkkuk ?kVRkk gS D₃kk.

Ikz 20- fukEukkfdRk P-V vkj₃ k Eka dk₃kz dh Xk.kukk dhFTk, \



Ikz 21- vFRk' khrfYkr Okk"lk D₃kk gS.

Yk?kqRRkj h₃k Ikz Uk -

- 1- vkn'kz XkS.k vOkLFkk LkEkhdj.k Eka Lk kskuk dh vkOk' kdrkk D₃kk gPZ.
- 2- fdrkukh ÅPkkbz Lks CkQZ dk VpMk IkFokh l₃j fXkjsfd Okg lkwkRk%fik?kYk Tkk₃ Tkcfd CkQZ dh XkRk Å"Ekk 80 dYkjh XkEk gS.
- 3- jfn 'kqd Okk₃k ds nkCk dks Ck<kdj vk₃kRkuk l₃j fHkd vk₃kRkuk dk 1/9 dj na Rkks mLkd nkCk fdrkuk gkRk Tkcfd fokf'k"V Å"Ekk dk Ekkuk 1-5 gS.
- 4- D₃kk fdLkh dkukkz bākuk dh n{krkk 100 lFRk'krk gskLdrkh gS vIkksmRRkj ds l{k Eka lEkk.k nhFTk, \
- 5- dkukkz bākuk Eka TkCk fklVuk , OkafLkYks Mj dks fLkd ds Ålkj j [kdj nkCk Ck<kRks gq LkEikhMuk fd₃kk TkkRk gS Rkks fd₃ks Xk₃ks dk₃kz dh Xk.kukk dhFTk, \
- 6- :) k'se l₃j OkRkOk Eka XkS.k CkkYkYk ds fuk₃kek dk lkkYkuk Ugha djRkh gS D₃kk.
- 7- Ñf".kdk ds fokfdj.k 'OkRk gkRks gS dFkuk dh fokkRkuk dhFTk, \
- 8- vf/kdrkEk fokfdj.k ÅTkz ds LkRk PkUæEkk ds fokdj.k dk RkjXkns₃kz 14 EkkØkuk gS PkUæEkk dk Rkkik Kkrk dhFTk, Tkcfd $b = 2884 \times 10^{-6}$ ehVj@dFYOkuk gS.

- 9- ,fn fdLkh OkLRkq dks 100°C Lks 60°C Rkd Bm/k gkbls Eka 180 Lkd .M YkXkRkk gS bLkh OkLRkq dks 60°C Lks 20°C Rkd Bm/k gkbls Eka fdRkUk LkEk ,k YkXkRkk TkCkd Ikfj Oks k dk Rkkik 10°C gA
- 10- fdj PkksQ ds fuk ,kek dh Ikq"V fdLk ?kVUk Lks dh Tkk LkdRkh gS
- 11- Å"EkkXkFRkdh ds IkFEk fuk ,kek fyk [kdj DOKFUK IkØEk Eka vkrkfj d ÅTkkz Eka Ikfj OkRkØk dk O ,kãkd IkIRk dhfTk, \
- 12- CkhuK dk fOkLFkkikuk fuk ,kek D ,kk gS bLk fuk ,kek dk fok'Yksk .k dhfTk ,ks
- 13- Rkkik dh LFkk ,kh vOkLFkk Eka Pkkykd ds , d QYkd Lks ntlj s QYkd dh vkg IkØkfgRk Å"Ekk dh Ekk«kk fdUk dkj dka Lks IkØkffOkRk gkRkh gA buK RkF ,kka dh Lkgk ,kRkk Lks Å"Ekk dh PkkykdRkk Xkqkkad dh Ikfj Hkk"kk fykf [k ,ks

nh?kZnRRkj h ,k Ikz Uk

- Ikz1 Bk ,k ds vk ,kRkUk IkLkkj Xkqkkad mLkds j s [kh ,k IkLkkj Xkqkkad dk RkhuK XkØk gkRkk gS bLk dFkUk dh Xkf .kRkh ,k O ,kk [,kk dhfTk, \
- Ikz2- Ekskj LkEkhdj .k fykf [kdj fLk) dhfTk, \
- Ikz3- Xk ,kka dh fokf'k"V Å"Ekk nks Ikdkj dh D ,kka gkRkh gS dkj .k CkRkkb ,ks Cp dk EkkUk Cv Lks CkMk gkRkk gS
- Ikz4- LVhQUk ds fuk ,kek dh O ,kk [,kk dhfTk, RkFkk bLkdh Lkgk ,kRkk Lks U ,kVUk ds 'khrkYkUk fuk ,kek dks fUkXkFEkRk dfj ,ks \
- Ikz5 Okk .Mj OkkV Uks Xk ,k ds vOkLFkk LkEkhdj .k Lks D ,kk Lkã kkskUk fd ,kk bLkds vk/kkj Ikj Okk .Mj OkkV vOkLFkk LkEkhdj .k dk fUkXkEUK dhfTk, \
- Ikz6- dkUkkz bãkUk dk fLk) kRk D ,kk gS mLkdh n{kkRk dk O ,kãkd IkIRk dhfTk, \
- Ikz7- TkYk ds fokfHkUk Rkkikka Ikj LkEkRkkikh OkØ [kRkdkj O ,kk [,kk dhfTk, \
- Ikz8- LkYkz mlkdj .k }kjk /kRkq dh NM dh Å"Ekk PkkykdRkk Xkqkkad KkRk djUks dh fokf/k dk Ok .kØk fUkEUK 'kh"kdka ds vk/kkj Ikj dhfTk, –
- 1- mlkdj .k dk UkkEkkãdRk fPk«k
- 2- Ikq ,k .k
- 3- Xk .kUk A

Ikz9- gkbMRSJKUK Xk&k RkkIkEkkIk dh Lkj PKUKJ fLk) kRk , Oka dk,kz Ikz kkYkh dk O,kk[,kk dhfTk, \

Ikz10- LkEkkUK Yk&kbZ RkFkk LkEkkUK vUKkLkFk dkV dh RkhUK NMs Js khØEk Eka Tk&Mh XkbZ gS fTKLkdh Å"EkK PkkYkdRkk, a1%2% gS ,fn IkfEk RkFkk v&RkEk NM ds [kYks fLkj ka ds RkkIk ØEk' k% 200°C RkFkk 18°C gS Rkks nks&ka Lk&/k, kka ds RkkIk Kkrk dhfTk, \

Ckg&OkdYIk, k Ikz Uk

1- Ikkukh dk Øk&Rkd RkkIk gS

- (a) 37-1°C (b) 0°C (c) 100°C (d) 374-1°C

2- , d Xk&k ds , d Ekkyk dks Ø Å"EkK nh Tk&Rkh gS fTKLkLks w dk,kz gk&kk gS A Xk&k ds RkkIk Eka Okf) gk&kh-

- (a) Q / C_v (b) $\frac{Q - w}{C_v}$ (c) $\frac{Q - w}{C_p}$ (d) $C_v(Q - w)$

3- nks fukdk,k RkkIk, k LkE, k&OkLkFkk Eka gS bukds fyk, LkEkkUK jkf' k gS-

- (a) Å"EkK (b) fokf' k"V Å"EkK (c) RkkIk (d) Lk&kk

4- dkUkk& b&fUK dh n{kRkk dk Lk&k gS-

- (a) $\eta = 1 - \frac{Q_1}{Q_2}$ (b) $\eta = 1 - \frac{Q_2}{Q_1}$ (c) $\eta = 1 - \frac{T_1}{T_2}$ (d) $\eta = \frac{T_1}{T_2} - 1$

5- fLk&d dk RkkIk dEk djUks Ikj dkUkk& b&fUK dh n{kRkk -

- (a) IkgYks Ck<Rkh gS fQj ?kVRkh gS (b) Ck<Rkh gS
(c) ?kVRkh gS (d) vIkfjofRk& jgRkh gS

6- -10°C ds 1 Xk&Ek CkQZ dks 100°C Okk"Ik Eka IkfjOkfRk& fd,kk Xk,kk Rkks dk,kz gk&kh-

- (a) 3045 Tk&Yk (b) 6056 Tk&Yk (c) 721 Tk&Yk (d) 616 Tk&Yk

7- IkØEk $Pv^{1/2}$ fuk, kRkk&d ds vURk&Rk fdLk, d IkjEk. k&d vkn' kZ Xk&k dh Ekkykj m"EkK /kkfjRkk gk&kh-

- (a) 15/2 R (b) 28/2 R (c) 7/2 R (d) 'k&Yk

8- fdLk Xk&k dh fukf' PkRk Ek&kk dk nkCk P Ok RkkIk T gS Xk&k dk LkE&RkkIk, k

v_k kRkUk IkR₃ kLFkk Xkq kkađ gS

- (a) 2/3 P (b) P (c) 3/2 P (d) 2P

9- $V = K \left(\frac{P}{T}\right)^{0.33}$ Tkgka K fuk₃ kRkkađ gS₃ kg gS

- (a) LkEkRkkikh IkØEk (b) #nkSEk IkØEk
(c) LkEkv_k kRkUkhd IkØEk (d) LkEknkCkh₃ k IkØEk

10- , d vkn'kz XkS₃ k Lks Hkj k g₃vk CkYkUkkdkj Ikk«k fukOkkRk Eka fLFkRk gS A₃ kfn Ikk«k vPkkUkd QV Tkk₃ ks Rkks XkS₃ k dk RkkIk –

- (a) fuk₃ kRk gkXkk (b) 'k₃ k gks Tkk₃ kXkk (c) Ck< Tkk₃ kXkk (d) ?kV Tkk₃ kXkk A

mRRkjEkYkk– 1. (d) 2-(b) 3-(c) 4-(b) 5-(b) 6-(a) 7-(c) 8. (b) 9-(c) 10.(a)

fjDRk LfkkUk dh IkRkZ dhfTk, –

Ikz 1- #) kSEk IkLkkj Eka RkkIk dks T Lks T₁ Rkd IkfjOkfRkRk djUks Ikj LkEIKUk dk₃ kz — gkRkk gS

Ikz 2- CO dh nks fokf'k"V Å"Ekvka Cp/Cv dk vUkqkRk — gS

Ikz 3- , d gh lknkFkz ds CkUks nks XkksYkka ds O₃ kLk 1% gS Rkks mUkdh Å"Ek /k₃fj Rkkvka dk vUkqkRk — gS

Ikz 4- TkCk , d vkn'kz XkS₃ k $\frac{1}{\gamma} = 5/3\frac{1}{2}$ dks fLFkj nkCk Ikj XkEkz fd₃ k TkkRkk gS Rkks bLkdks nh Xkbz Å"Ek₃ k ÅTkkz dk — IkfRk' kRk Ckâ₃ k dk₃ kz djUks Eka Ikz k₃ Rk gkXkkA

Ikz 5- 0°C RkFkk 27°C RkkIkka ds CkhpK dk₃ kz dj jgs vkn'kz Ikz kRkd dk dk₃ kz Xkq kkađ — gkXkkA

mRRkjEkYkk 1. $\frac{R}{\gamma-1}(T-T_1)$ 2. 1-40 3. 1% 4. 40% 5. 273@27° A

bdkbZ-09

nkš/kuk

vfRk Yk?kqRRkj h, k Ikz Uk –

- Ikz 1- nkš/kuk XkFRk Eks b.kkE, k fLFkFRk Eka XkFRkTk ÅTkkz dk Ekkuk fdrkukk gkBkk gS
- Ikz 2- dYkk vksj dYkkBkj dh vOk/kkj .kk dks Llk"V dhfTk, \
- Ikz 3- LkjYk vkORkZ XkFRk djRks gq d.k dh ÅTkkz fdLk : Ik Eka gkBkh gS
- Ikz 4- LkjYk vkORkZ XkFRk djRks gq d.k dh LkElkwiz ÅTkkz vkORFRk Ikj fdLk Ikzdkj fukHkj djRkh gS
- Ikz 5- vBkfj {k Eka ORRkh, k d{k Eka PkDdj YkXkRks gq Nf«kEk mIkXkg Eka LkjYk Ykš/kd ds nkš/kuk dkYk Ikj D, kk IkHkkOk IkMškk \
- Ikz 6- vUtkknh nkš/kuk fdLk vOkLFkk Eka IkIRk gkBkh gS
- Ikz 7- ,kfn fdLkh YkHkh IkYk Ikj IkšYk LkšUkdka dk CkVkfYk, kuk dnEk fEKYkddj PkYks Rkks IkYk Ikj D, kk IkHkkOk IkMškk\
- Ikz 8- Ikz kksnRk nkš/kuk , Oka EkPRk nkš/kuk Lks LkHk/RRk , d–, d mnkgj .k nhfTk, \
- Ikz 9- jšM, kks Lks/ Eka IkLkkj .k dæ Lks IkLkkfj Rk /Okfuk dks Lkdkukk fdLk Ikzdkj ds nkš/kuk dk mnkgj .k gS

Yk?kqRRkj h, k Ikz Uk –

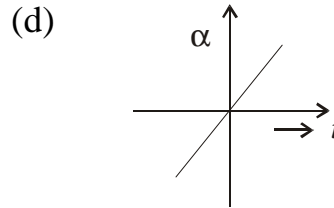
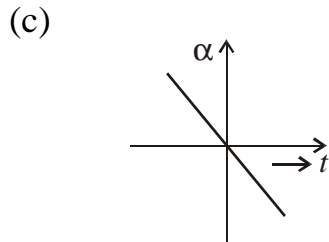
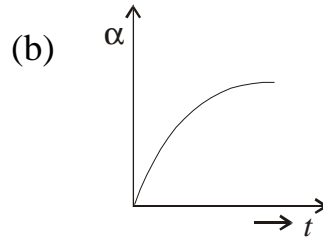
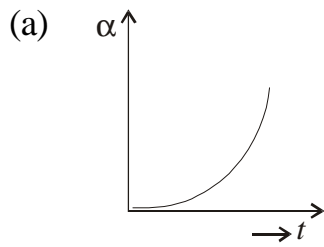
- Ikz 1- Lkd .Mh Ykš/kd ds vkORkZdkYk dks $2\sqrt{2}$ dj nbks Ikj mLkdh YkHkbZ Ikj D, kk IkHkkOk IkMškk \
- Ikz 2- fYk¶V ds vnj , d Ykš/kd LkjYk vkORkZ XkFRk dj jgh gSA ,kfn fYk¶V Xkš/Rok ds v/khuk LORkHkRkk IkHkd fXkjUks YkXks Rkks Ykš/kd ds nkš/kuk dkYk Ikj D, kk IkHkkOk IkMškk\
- Ikz 3- , d Ykš/kd fTkLkdh YkHkbZ z gS bLks fOk"kkRk jškk Lks IkFOkh dh /kqk dh vksj Yks Tkkuks Ikj mLkdh vkORkZdkYk fdLk Ikzdkj Ikfj OkFRkRk gkškk\
- Ikz 4- LkjYk vkORkZ XkFRk dj jgs d.k dk vk, kEk 10LksEk. RkFkk bLkdh vkORFR 50 gvZTk gS Rkks mLk d.k dh vf/kdRkEk Okk fdrkukk gkškk \

- Ikz 5- μ fn LKEKKUK YKECKkbZ ds nks YkksYkd fTKLkd μ_0 KEKKUK m_1 RkFkk m_2 gS] Rkks fdI dk vkorZky vf/kd gksk tcfD $g = 9.8 \text{ eh@l s}^2$ gS
- ikz 6 I jY vkorZxfr dj jgs d.k ds foLFkki u dk I ehdj.k $y = 0.20 \sin(220t + 0.30)$ gS Tkgk; y EkhVj Eks RkFkk t LkdM Eka gS Rkks bLk LkEhdj.k }kj k nksYkuk vkokfUk vj vkokrkZdkYk Kkrk dhfTk, \
- ikz 7- LkjYk YkksYkd ds fukYkKkuk Rkkj dks XkekZ djUks ds Ik' Pkkrk nksYkuk djUks Ikj vkokrkZdkYk Ikj D₃kk IkHkkok IkMxkk\
- ikz 8- fdLkh fLIkZk dk CKYk fuk₃krkkd 100 U₃kw/uk@EkhVj gS μ fn fLIkZ dh YkKkbZ ea 0-1 EkhVj dk IkfjOkRkZk fd₃kk Tkk₃ks Rkks mLkds fLFkrkTk \hat{A} Tkkz Eka D₃kk IkfjOkRkZk gkxkk\
- ikz 9- mLk YkksYkd dk vkokrkZ dkYk Kkrk dhfTk, fTKLkdh YkKkbZ $\frac{39.2}{\pi^2}$ EkhVj gS
- ikz 10- fLk) dhfTk, fd LkjYk vkokrkZ Xkfrk djRks gq d.k dh \hat{A} Tkkz IkjOkYk₃ ds LkEhdj.k }kj k lknf' kRk djRks gS
- ikz 11- LkjYk vkokrkZ Xkfrk djRks gq d.k ds foLFkkikuk dk LkEhdj.k Ikkrk dhfTk, \
- ikz 12- LkjYk vkokrkZ xfr djRks gq d.k dk Rokj.k mLkds foLFkkikuk ds foIkfjRk fn'kk Eka gkxkk gS dFkuk dh foKokpKuk dhfTk, \
- 13- LkjYk YkksYkd ds vkokrkZdkYk mLkds μ_0 KEKKUK YkKkbZ vj Xk~~#~~Rokh₃ Rokj.k }kj k fdLk IkZkj IkHkkfokRk gkxkk gS

CKgfoKdYIk₃ k Ikz Uk

- 1- LkjYk vkokrkZkfrk Eka fLFkj jgRkk gS-
 (a) IkR₃kkuk; Uk CKYk (b) XkfrkTk \hat{A} Tkkz (c) fLFkrkTk \hat{A} Tkkz (d) vkokrkZdkYk
- 2- LkjYk vkokrkZ Xkfrk djRks fdLkh d.k dh LkElkwZ \hat{A} Tkkz LkEkkuk~~kk~~RkH gkxkk gS-
 (a) vk₃kkEk (b) $\frac{1}{2}$ vk₃kkEk^{1/2} (c) $\sqrt{vk₃kkEk}$ (d) $1@vk₃kkEk$
- 3- , d Xkg dk μ_0 KEKKUK RkFkk 0₃kkLk IkfoKk Lks n~~kk~~ks gS bLk Xkg Ikj mLk YkksYkd dk vkokrkZdkYk fTKLkd IkfoKk Ikj vkokrkZdkYk 1 LkdM gS gkxkk-
 (a) $\frac{1}{\sqrt{2}}$ LkdM (b) $\sqrt{2}$ LkdM (c) 2 LkdM (d) $\frac{1}{2}$ LkdM

4- LkjYk vkORkZ XkFRk djRks d.k dk ROkj.k fOKLFkkIKUk OKØ gkRkk gS-



5- LkDl YkYkd dh PkUæEkk Eka IkHkkOkh YkækbZ gkRkk gS-

(a) 16.5 cm. $\frac{1}{4}y \times Hk \times \frac{1}{2}$

(b) 50 LkEk. $\frac{1}{4}y \times Hk \times \frac{1}{2}$

(c) 100 LkEk $\frac{1}{4}y \times Hk \times \frac{1}{2}$

(d) 116.5 LkEk $\frac{1}{4}y \times Hk \times \frac{1}{2}$

6- fdLkh fUkd,k ds LkjYk vkORkZ XkFRk djUks ds fYk, mLkEka Xkqk gkSkh PkKfg, -

(a) dSkYk IkR,kkLFkk dk

(b) dSkYk TkMROK dk

(c) IkR,kkLFkk , Oka TkMROK dk

(d) fdLkh Hkh Xkqk dk gkSkh vkOk'kd Ugha

7- LkjYk vkORkZ XkFRk Eka vk,kkEk-

(a) LkEk,k ds LkkFk Ck<Rkk gS

(b) LkEk,k ds LkkFk ?kVRkk gS

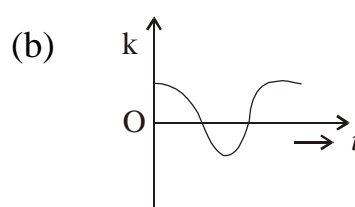
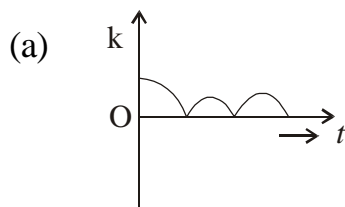
(c) dHkh Ck<Rkk gS dHkh ?kVRkk gS

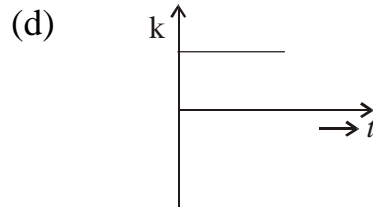
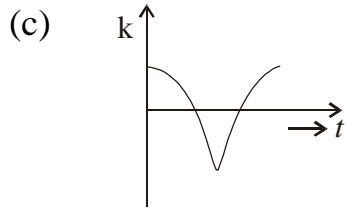
(d) fUk,kRk jgRkk gS

8- , d d.k f vkOkfUk Lks LkjYk vkORkZ XkFRk djRkk gS bLkdh XkFRk fTkLk vkOkfRRk Lks nkSkUk djRkh gS Okg gS-

(a) $f/2$ (b) f (c) $2f$ (d) 'kU,k A

9- LkjYk vkORkZ XkFRk djRks d.k dh XkFRkTk ÅTkZ-LkEk,k OKØ gkRkk gS-





- 10- , d Ykkýkd ?kMh lkrk fnuk 1 fEKUV lkhNs gks TkkRkh gS Rkks Ykkýkd gS-
 (a) vf/kd Hkkjh (b) vf/kd gYdh (c) vf/kd Ekksh (d) vf/kd Ykák
 mRRkj- 1. (d) 2. (b) 3. (b) 4- (c) 5- (a) 6- (c) 7- (d) 8- (c) 9-(a) 10-(d)

fjDRk LFkkUk dh lkrkZ dhfTk,ks-

- 1- LkjYk vkORkZ Xkfrk — HkkSRkd jkf'k ds Lkj {k.k lKj vk/kkfjRk gS
 2- vURk YkákZ ds LkjYk Ykkýkd dk vkORkZkYk — gkRk gS
 3- LkjYk vkORkZ Xkfrk djRks d.k dh dYk ÁTkZ — }kj k 0,kDRk djRks gS
 4- LkjYk Ykkýkd dk ?kM,kka Eka mlk,kk — fuk,kEk lKj vk/kkfjRk gS
 11- fdLkh Ykkýkd dk vf/kdRkEek vkORkZkYk — fEKUV dk gkRk gS

- mÜkEkkYk — 1. mTkZ Lkj {k.k 2. vURk 3. $\frac{1}{2}mw^2a^2$ 5 4. LkEdkYKYk 5. 84-6

bdkbZ 10

Rkj ák

vfRk Yk?kqRRkj,h,k lk' Uk -

- lkz 1 Ckan vXXkZk lkbik dh RkqkUkk Eka [kq'ks vXXkZk lkbik Lks mRlUUK Lokj Ek/kj gkRks gS D,kkà
 lkz2 fOKLlkanUk fdLks dgRks gS
 lkz3 ,klf«kd Rkj ákka }kj ÁTkZ dk LkRkj .k Ekk,kEk ds fdLk Xkqk ds dkj .k LkRkfjRk gkRkh gS
 lkz4 Xkgjs [kkUkka Eka TkghYks XkS,kka dk fdLk fof/k }kj lRkk YkXk,kk TkkRkk gS
 lkz5- fdLkh jYkXkMh ds LkhVh dh vkORkTk Lkqkdj vllk dS,ks LkqkFÜPRk dj áks fd Okg lklk Lks vk jgh gS ,kk nij Tkk jgh gS

- Ikz6- , d vlxkzk Ikkbk EkaEkvk LOkjd dh vOkfRRk n gS] Tkkj LksQmDUksIkj 5n dk IkFEkK vf/kLokjd fukdYkRkk gS\ ,kg CRkkb,ks fd Okg Ikkbk Ckan gS,kk [kYkk\
- Ikz7- D,kk fukOkkRk ,kk vLkhFEkRk Ekk/,kEk Eka vIkxkkEkH RkjZk LkPkfjRk gks LkdRkh gS dkj .k CRkkvks
- Ikz8- TkCk RkjZk dk IkjkOkRkZk fdLkh n~ LkhEkk Lks vkj EkPRk LkhEkk Lks gkRkk gS Rkks vkkfRrRk RkjZk vkj IkjkOkfRkRk RkjZk ds dYkkRkj Eka D,kk IkfjOkRkZk gkRkk gS
- Ikz9- O,kk [,kkuk HkOkukka dh Lkhf<,kkj vLkEkuk Pkk&/kcz dh Cukkk, kh TkkRkh gS RkFkk mUga dkYkhuk Lks <dk TkkRkk gS D, kka -
- Ikz 10- IkxkkEkH RkjZkks Eka , d RkjZknS, kz fdLks dgRks gS
- Ikz 11 fOkLi nks dks LIk"V Lkhkks ds fyk, nks /Okfuk ds vOkfUk, kka Eka fdRkuk vkj gkRkk Pkkfg, ks
- Ikz 12 fukEukfykf [kRk Eka Lks fdLk Ekk/,kEk Eka /Okfuk dh PkkYk vf/kdRkEk gkRkh&
1- BkLk 2- æOk 3- XkLk A
- Ikz13 gOkk Eka vknRkk Ck<Uks Lks Okk, q ds PkkYk Eka D,kk IkHkkOk IkVRkk gS
- Ikz14- vUkqkn CkDLk fdLks dgRks gS
- Ikz15 RkjZkka ds v/,kkjks k dk fLk) kRk D,kk gS

Yk?kqUkj h, k-

- Ikz 1 fdLk Rkkk Ikj Okk, q Eka /Okfuk dh PkkYk IkjZkhd PkkYk dh nkkqkjh gkRkh TkCkd Ikj fhkd rki 27°C gS
- Ikz 2 vkDLkHkuk RkFkk UkkbVRkZkuk ds?kukRk dk vUkqkRk 16%4 gSRkks mLkEka /Okfuk ds Okkka dk vUkqkRk KkRk dhfTk, \
- Ikz 3 LkEkæ RkV Lks Vdj kUs OkkYkh LkEkæh RkjZkks YkOkRk gkRkh gS bLk dFkuk dk Ok. kRk dhfTk, A
- Ikz 4 , d PkEkxknM Okk, q Eks 200 fdYkkgVZk dh IkjJO, k /Okfuk mRkUuk djRkk gS ,kg /Okfuk TkYk dh LkRkg Ikj vkkfRrRk gkRkh gS ,kfn Okk, q Eka /Okfuk dk Okk 320 EkhVj@Lk dM gSRkFkk TkYk Eka 1600 EkhVj@Lk dM gks Rkks fukEukfykf [kRk dh Xk. kUkk dhfTk, A

- 1- ijkofr̄ /ofu dk rjæ n̄; l
- 2- ikjxfer /ofu dk rjæ n̄; l
- Ikz 5 fdLkh Rkkjs Lks vkUkSkkYkk Ikzdk'k dk Rkjækn̄, k̄z 7000A° gS TkCkfd OkkLRkfoKd Rkjækn̄, k̄z 6050A° gS Uk{kææ dk IkfoKh ds Lkkkksk Okk fdrkUkk gkækk A
- Ikz 6 O,kfRkdj.k dh ?kvUkk D,kk gS vkok' ,kd 'krkkæ dk mYYks[k dhfTk, \
- Ikz 7 vUkj .kuk fdLks dgrks gS O,kk [,kkuk HkOkuk bLks fdLk Ikzdkj dEk fd ,kk Tkk LkdRkk gS
- Ikz 8 gCCKYk ds dFKUkkUkkkjj OkEgk.M YXkkRkkj QSkRkk Tkk jgk gS bLk dFKUk dk Ikz,kksXkd vk/kkj D,kk gS

nh?kz mRRkj,h,k Ikz Uk-

- Ikz 1 MkIYkj IkækkOk D,kk gS TkCk fLFkj LækkBk dh vsj Jkækk XkfrkEkkuK gks Rkks /Okfuk dh vkokfRRk fdLk Ikzdkj IkjOkfRkæ gkækh gS Xkf.kRkh,k O,kækd IkLRæk dhfTk, \
- Ikz 2 fokLlkan fdLks dgrks gS fokLlkan dh Xkf.kRkh,k O,kk [,kk dhfTk, RkFkk vf/kdRkEk vk ,kkEk ds fyk, vkokfUk Ikj IkækkOk dk Ok.kæk dhfTk, A
- Ikz 3 n'kkæ,ks fd [kys vkæækk Ikækk Eka LkEk vsj fok"Ek Lkæknh mRlUkk gæks gS
- Ikz 4 fdLkh Rkjækn̄ ds fokLFkkUk dk LkEkhdj .k $y = 4 \sin 16\pi \left(t - \frac{x}{20} \right)$ gS Tkgl; y Lkækh. Eka O,kDRk fd ,kk Xk ,kk gS fUkEkkædRk dh Xk.kukk dhfTk, -
 1. vk ,kkEk 2. Rkjækn̄, k̄z 3. EkækfCknq Ikj IkjæHkd dYkk 4. Okæk 5. vkokfRRk
- Ikz 5 , d Lokfjææ dh vkokfRRk 521 Hz gS TkCk vU ,k Lokfjææ dks bLkds LkkFk vUkkkn dh fLFfRk Eka YkkRks gS Rkks 9 fokLlkan Lkækkbz nækk gS ,fn nUkjs Lokfjææ ds Hkækkvka dk jækEkYk Lks jXkM fn ,kk Tkk ,ks Rkks nksækka Lokfjææ ds vUkkkn dh fLFfRk Eka 12 fokLi an Lkækkbz nækk gS nUkjs Lokfjææ dh vkokfRRk KkRk dhfTk, \

nh?kz mRRkj,h,k Ikz Uk -

- Ikz 1 m/OkkZkj RkYk Eka L Ykækkbz dh , d fLlæk ds , d fLkjs dks n< vk/kkj Lks dLkdj mLkds nUkjs fLkjs Eka m æO,kEkkuK dk , d fik.M YkVdk fn ,kk TkkRkk gS fLlæk Lks YkVds fik.M dk nkykUkdYk dk O,kækd KkRk dhfTk, \
- Ikz 2 fLk) dhfTk, fd LkjYk vkokRkz Xkfrk ds nkskuk d.k dh LkElkwkz ÅTkkz fuk ,kk gkækh gS

Ikz 3 fLk) dhfTk, fd {kSRkTk RkYk Eka fLlkLk Lks Ckalks flk. M dk nksYkuk $T = 2\pi\sqrt{\frac{m}{k}}$ gkRkk
gS Tkgka Ikz kDRk Lk dRkka ds LkEkku, k vFkz gA

Ikz 4 LkjYk vkORkZ XkFRk djRks gq LkjYk Ykkykd dk nksYkuk dkYk lkkIRk djRks gq n'kkb, ks
fd nksYkuk dkYk Ykkykd ds æ0, kEkkuK Ikj fukHkZ UkgHa djRkk gS

CkgfOkdYlkh, k Ikz Uk

1- fUKEu Eka Lks dksk-Lkh LkEkhdj. k IkxkkEkH RkjZk dh UkgHa gA

(a) $y = A \sin w\left(t - \frac{x}{v}\right)$ (b) $y = A \sin 2\pi\left(\frac{t}{T} - \frac{x}{\lambda}\right)$

(c) $y = A \sin \frac{2\pi}{\lambda}(vt - x)$ (d) $y = A \sin 2\pi\left(\frac{t}{T} - \frac{x}{v}\right)$

2- , d IkxkkEkH RkjZk , d vOkYkksdUk ds fCkng Lks Xkq'kj Rkh gS bLk fCkng Ikj ØFEkd RkjZk
JZk ds CkHPk dk LkEk, k vURkjkY 0-2 gS Rkks

(a) RkjZk nS, kZ 5 Ekh. (b) vkOfUk 5 gVTk

(c) XkEkUk CkXk 5 m/s. (d) RkjZknS, kZ 0-2m gA

3- $y_1 = a \sin(wt - kx)$ rFkk $y_2 = a \cos(wt - kx)$ nks RkjZk dh nh XkbZ gA nkskka
RkjZkka ds CkHPk dYkkURkj gS-

(a) $\pi/4$ (b) π (c) $\pi/8$ (d) $\pi/2$

4- LkEkkuK vkOfUk RkFkk I_0 RkFkk $9I_0$ RkhORkk OkYkh nks /Okfuk RkjZks 0, kFRkdj. k mRlUUK
djRkh gS, kfn , d LFkkUk Ikj Ikfj. kEkH RkhORkk $7I_0$ gks Rkks mUk RkjZkka ds Ek, k
U, kkkRkEk dYkkRkj gkXkk

(a) 90° (b) 100° (c) 120° (d) 110°

5- vIkxkkEkH RkjZk Eka fUkLlkan , Lks fCkUnq gkRks gS Tkgka gkRkk gA

(a) vf/kdRkEk fOkLFkkIkUk , Oka vf/kdRkEk Ikfj OkRkZk

(b) vf/kdRkEk fOkLFkkIkUk , Oka U, kkkRkEk nkCk Ikfj OkRkZk

(c) U, kkkRkEk fOkLFkkIkUk , Oka vf/kdRkEk nkCk Ikfj OkRkZk

(d) U, kkkRkEk fOkLFkkIkUk , Oka U, kkkRkEk nkCkA

6- , d Ekuk₃k 2 fdEkh. njih lkj LkhVh dh /Okfuk Lktkdj vIkukh ?kMh fEKYkkRkk gS A mLkdh ?kMh Eka fdRkUkk nkSk jgXkk ¼Okfuk dk OkXk – 330 m/s.)

- (a) 3 LksdM RkTk (b) 3 LksdM LktRk (c) 6 LksdM RkTk (d) 6 LksdM LktRk A

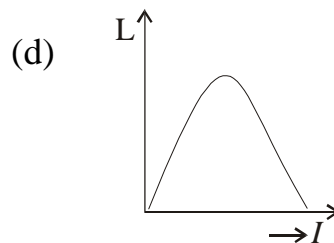
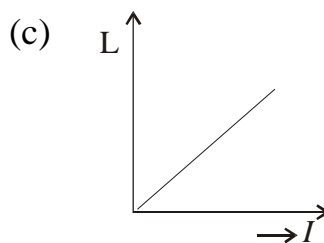
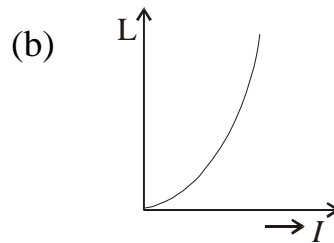
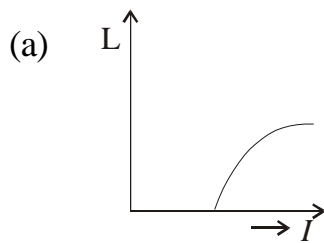
7- vIkXkkEkh RkjXk Eka fTtLkdh RkjXk n₃k₂ λ gS fUKLlkan vKj LkEkhlk ds lklkan ds CkhpK dh njih gkRkh gA

- (a) λ (b) λ/2 (c) λ/4 (d) 2λ

8- nkSkka fLkjkA lkj dLkh l YkakkbZ dh RkUkh gpZ Mkj h Eka mRlKUk vIkXkkEkh RkjXk dh RkjXk n₃k₂ λ gS RkCk

- (a) $\lambda = \frac{n^2}{2l}$ (b) $\lambda = \frac{l^2}{2n}$ (c) $\lambda = \frac{2l}{n}$ (d) $\lambda = \frac{2}{n}$

9- fUkEUk Eka Lks dksk /Okfuk dh lKkYkRkk Ok RkhOkRkk ds Ek/ k Lkgh XkkQ gS-



10- ,kfn fdLkh [khpKh gpZ Mkj h dh YkakkbZ 40% dEk dj nh Tkk₃ks Rkks RKUkkOk 44% Ck<k nh Tkk₃ks Rkks vArkEk RkFkk lkj ahkd EkWk vKOkfUk₃kka dk vUkqkRk gS-

- (a) 2% (b) 3% (c) 3% (d) 1%

mRRkj – 1. (d) 2- (b) 3. (d) 4. (c) 5. (c) 6- (d) 7. (c) 8. (c) 9-(a) 10. (a)

fj DRk LFkkUkka dh lkRkZ dhfTk, –

1- /Okfuk L<kkRk RkFkk JkRkk ds Ek/ k YkXkUs OkYks fUk₃kEk — dgYkkRkk gS-

- 2- 3 vksj 5 vksj Eka dh nks /okfuk Rkj xkka dh Lkgk,krkk Lks fokLlkn mRIKUUK fd,ks TkkRks gA fokLlknka Eka vf/kdRkEk vksj U,klkRkEk RkhokRkkvka dk vUkqkRk — gkxkk A
- 3- — rki ij /ofu dk ox 0°C ij /ofu ds ox dk nqçqk gkskA
- 4- , d RkUkh gpZ Mkjh ds RkRkh, k Lkklkn dh vkokfuk 400Hz] 100Hz RkFkk 402Hz gA lkrk LksdM mRIKUUK fokLlknks dh Lkç, kk — gkxkA
- mRRkj EkkYkk**— 1. Mkyj dk fuk, kEk 2. 16% 3. 819°C 4. 98 gVTk 5. 1