



bdkbz pkj

i kni dk; bh; ('kjhj fØ; kRedrk)

vè; k; 11
iK/læ ea ifjogu

vè; k; 12
[k'ut iKsk.k

vè; k; 13
mPp i kni læ ea izdk' k&l åysk.k

vè; k; 14
i kni ea 'ol u

vè; k; 15
i kni of} , oa ifjo/Zu

, d le; oð i'plr tð l jþuk dk o.ku , oa thfor tðodkæ dh fofHURk (fooj.k)
dk vr nlsvyx : i eagyk tks tho fokku eaLi"V : i l s i j L i j f o j k / h i f j i ç ; oð
Fk ; g nls ifjiç ; 'lq vkrh nls ij thou Lo: i , oa ifrHkl oð l æBu oð nls Lrjæ
ij vkræjr Fkæ bl ea , d dks tð Lo: i l æBu oð Lrj ij of. k' fd; k x; k tçd
nls js dks l æBu oð dks' kdh; , oa v. lq Lrj ea of. k' fd; k x; kæ ifj. kelo: i igyk
ifjLFkr&fokku rFk bl l sl æð/r fokku oð varx' Fk tçd nls jk 'kjhj fokku , oa
tð&jl k; u 'kæ-k oð : i eaLFkrir gæ/kæ i qih i kni læ ea 'kjhj oKkfud i Øelædk o.ku
, d mnkj.k oð nls ij g\$ ftl s bl [kæ oð vè; k; læ eafn; k x; k gæ i kni læ ea [k'ut
iKsk.k] izdk' k&l åysk.k] ifjogu] 'ol u rFk i kni of} , oa ifjo/Zu dks varr% vkf.od
Hk'k ea gh dks' kdh; dk; fof/ vls ; gk rd fd tðod Lrj oðs l mfHkr fd; k x; k
gæ tçk Hh vls pR; i w'z ik; k x; k g\$ ogk ij i; k'j.k oð l mH'z ea 'kjhj oKkfud i Øe
oð l æ/læ dh Hh pptz dh xbz gæ



eyfou oðyfou
(1911 &)

eyfou oðyfou dk tle við 1911 eafeul k/k (; w, l -, -) eaqvk Fk vlg
vki usfeul k/k fo' ofo | ky; l s j l k; u 'kl-k ea ih-, p-Mh- dh mikf/ iklr
dhA vki uscdÿs dh oðyhi Oðuz; k ; whofl ÷h oð j l k; u 'kl-k oð i ki o l j oð
in ij l ok, a inku dhA

f}rh; fo'o ; q; oð Bhd cln] tc i j k fo'o fgjk' kek&ulxkl kd dh
foLi Oð/d ?Kvuk l s j s M; k/fezk oð nði Hko dks n[kd j nð[k l s Lrc/ Fk]
rc eyfou vlg muoð l gdehÿ us j s M; k/fezk oð ykHnk; d mi; loka dks
izV fd; k vkiusts, - ck' ke oð l f k feydj C₁₄ oð l k k dkcZUMkvbvM l k b M
oð ycyifo/ } j k d Pph l kexh t s dkcZUMkvbvM l k b M ty , oa [kfutk
t s srRola l s r f k 'koj k j p u k l s x h u l y k / t (gfjr i k n i k) ea i f r f Ø; k d k
vè; ; u fd; k FkA eyfou us izrkfor fd; k fd i k s' i z k' k Å t k d k
j k l k; f u d Å t k ea cny n r s g ð f t l oð fy, , d o. k d v. k y / k oð l æ f B r
, j s (l e g) r f k v l ; r R o l a ea , d b y d v M d k l F k u l a f j r d j r s g ð
i z k' k & l á y s k . k ea d k c z oð l o l a k h d j . k oð i k f k o s oð i f r f p - k . k d j u s i j
vki d k s 1961 ea u k c y i j l d k j i k l r g e y / k A

eyfou oð } j k l F k i r f d , x , i z k' k & l á y s k . k oð f l } h a r] v k t H h]
Å t k , o a i n k f k s oð fy, i q % L F k i u ; k ; l á k / u l a oð v è ; ; u r f k l s g & Å t k
v u d a' l u ea v k / k j H a r v è ; ; u l a oð fy, H h m i ; l s x f d ; k t k r k g ð

vè; k; 11

i kŷka ea i fjogu

11-1 ifjogu oð elè; e

11-2 ini&ty l eʔ

11-3 yeh njih rd ty
dk ifjogu

11-4 ok'ik&l tū

11-5 [kfut i kŷkda dk
mngx.k , oa
ifjogu

11-6 Ýyŷ e ifjogu%
mnxe l s>ŷ rd
idlg

D; k vki dksdHkh vk'p; Zughagv'k gSfd o{kka dh l cl s'Àph f'k[kj rd i kuh oðl s
igprk gŷ ; k fi Qj bl ckr oð fy, fd inkFKZ , d dks'kdk l s nŷ jh dks'kdk dh
vŷŷ oðl s c<+tkrs gā vŷŷ ; sinkFKZ l eku izdkj l s, d fn'kk ea pyrs gā D; k bu
rRoka dks vkxs c<us oð fy, miki p; h Åtkz dh vko'; drk gkrh gŷ i M&i kŷka dks
tāq/ka dh viŷkk dgha vf/d njih rd v.kv/ka dks ys tkus dh vko'; drk gkrh gŷ
tcfđ mueafđ l h izdkj dk ifjogu rak ugha gkrka tMka }kjk xg.k fd; k x; k i kuh
i kŷka oð l Hkh Hkkxkard igprk gŷ tksc<rs gq rus oð vxz Hkkx rd tkrk gā i fŷk; ka
}kjk l ā lu izdk'k&l āyŷk.k oð ifj.kkelo: i mRi lu mRi kn Hkh i kŷka oð l Hkh vacka
rd igprs gā vŷŷ enk dh xgjkz ea var%LFkkfir tMka oð 'kh'kz rd tkrs gā ; g
xfr'khyrk y?kq njih rd] dks'kdk oð vmj ; k f>fYydk oð vkj&ikj vŷŷ Ård oð
varxŷ , d dks'kdk l s nŷ jh dks'kdk rd kuh jgrh gā i M&i kŷka ea gksus okyh bl
ifjogu fof/ dks l e>us oð fy,] gea l cl s igys dks'kdk dh vk/kjHkr cukov
rFkk i kŷs dh 'kjh&jpuk foKku oð ckjseaeny tkudkjh dks i q% Lej.k djuk gksk
vŷŷ bl oð l kFk gh l kFk gea fol j.k] foHko , oa vk; u oð ckjsea tkudkjh Hkh i ktr
djuh gksxhA

tc ge inkFKkã oð ifjogu dh ckr djrs gārks l cl s igys gea ; g i kfjHkkf"kr
djuk vko' ; d gkrk gSfd ge fdl izdkj dh xfr vŷŷ fdu inkFKkã dh ppkz dj
jgs gā i qih; i kŷka ea ftu inkFKkã dk ifjogu gkrk gŷ muea ty] [kfut i kŷkd]
dkcŷud i kŷkd , oa i kŷka oð of¼ fu; ked eŷ ; gā de njih rd inkFKkã dh xfr]
i l j.k , oa l kbVksyktfed /kjk l fØ; ifjogu dh enn l sgks l drk gā yeh njih
oð fy, ifjogu] l oguh; rak (tkbye rFkk Ýyk, e) }kjk l ā lu gkrk gŷ vŷŷ bl s
LFkkurj.k dgk tkrk gā

, d egúoiwZigywftl ij è;ku nsis dh vko'; drk gS og ifjogu dh fn'kk gð enyh; ikni ka ea tkbye ifjogu (ikuh vks [kfutka dk) vko'; d : i l s, d fn'kkRed vFkkz~eny lsrusrd gkrk gð dkcud vks [kfut ikSkdka dk ifjogu cgrfn'kkRed gkrk gð izk'k&l áys"kd i fúk; ka }kjk l áys"kr dkcud ; kSxdka dks i kS'soð l Hkh vakaftuea HhMkj vax Hkh l fEefyr gð rd igppk; k tkrk gð ckn ea Hkð/kj vaka l sblga i q% ifjogfur fd; k tkrk gð tMka }kjk [kfut ikSkd rRoka dks tMka }kjk xg.k djoð ml sruš i fúk; ka , oaof¼ {kSkard Hkst k tkrk gð tc fdl h i kS'sdk dkbZ Hkx tjol Fkk dks i tkr djrk gS rks ml s {kSk oð i kSkdka dksoki l yd j of¼ d jusokys {kSkka dh vkj Hkst fn; k tkrk gð gkeku ; k ikni of¼ fu; ked rFkk vU; j l k; u&mlkst d Hkh ifjogfur fd, tkrsgð ; |fi budh ek-kk cgr de gkrh gð dbz ckj ; s, d /ph; ; k , d fn'kk; h gkrsgð vks l áys"kr LFkku l s nu js Hkxka rd ifjogfur gkrsgð vr% , d i qih; i kS'sea; kSxdka dk vkokexu dki th tFVy (ySdu l hkor% cgr Øekud kj) vks fofHkku fn'kkvka ea gkrk gð i R; d vax oðN inkFkka dks xg.k djrk gS rFkk oðN nu jka dks nrk gð

11-1 ifjogu oð ekè; e

11-1-1 fol j. k

fol j. k }kjk xfr fuf"Ø; gkrh gS rFkk ; g dks'kdk oð , d Hkx l s nu js Hkx rd ; k dks'kdk l s vU; dks'kdk rd de njih rd ; k , d k dg l drs gð fd i fúk; ka oð v r j dks'kdh; LFkku l scká i ; kbj.k rd oðN Hkh gk l drh gð bl ea Åt kZ dk 0; ; ugha gkrka fol j. k ea v.kq vfu; fer : i l s xfr djrs gð ifj. kkeLo: i inkFkz mPp l kmrk l s fuEu l kmrk okys {kSk ea tkrsgð fol j. k , d /heh i fØ; k gS rFkk og thfor rak ij fuHkj ugha djrh fol j. k xS no ea Li"V ifjyf{kr gkrh gS tcf d Bkd ea Bkd dk fol j. k oðN vák rd gh l hko gð i kS'ka oð fy, fol j. k vR; r gh egúoiwZ gS D; kkd ikni 'kjhj ea xS h; xfr dk ; g vošyk ekè; e gð

fol j. k dh nj l kmrk dh ið.krk] mlga vyx d jusokyh f>Yyh dh i k j xE; rkj rki rFkk nkc l s i Hkfor gkrh gð

11-1-2 l q kè; fol j. k

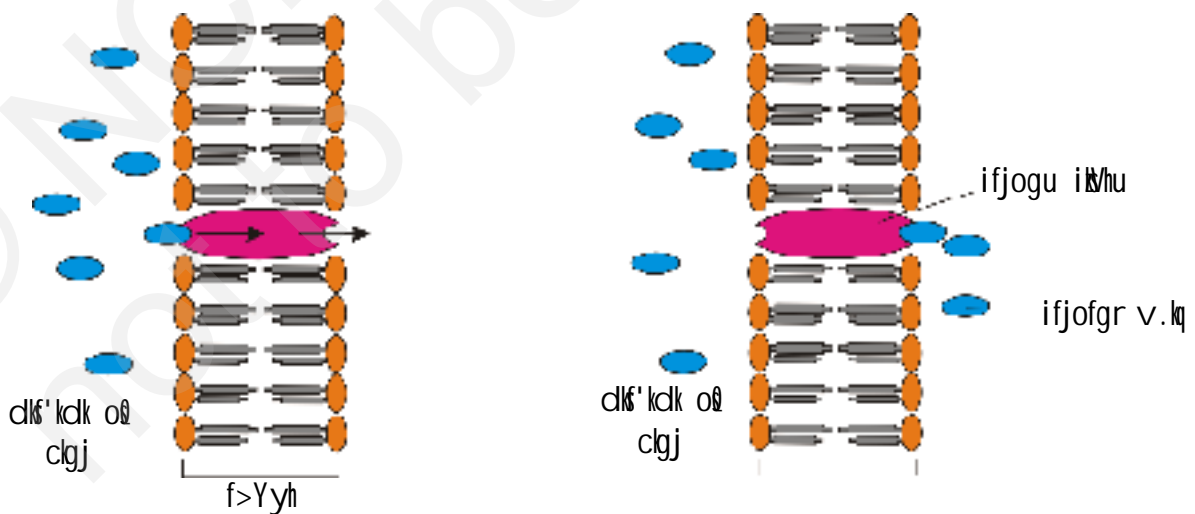
tS k igys crk; k x; k gS fd fol j. k mRi l u d jus oð fy, ið.krk dk igys l s mi l Fkr jguk vR; r vko'; d gð fol j. k dh nj inkFkka oð vkdkj ij fuHkj djrh gð ; g rks igys l s gh Li"V gS fd y?kq inkFkz rst xfr l s fol j. k djrs gð fdl h Hkh inkFkz dk fol j. k f>Yyh oð i e [k l ghkxh fyfi M (Lipid) ea ?kyu'khyr ij fuHkj djrk gð fyfi M ea ?kyu'khy inkFkz f>fYydk oð ekè; e l s rst h l s fol fjr gkrsgð ftl inkFkz dk vák ; k ekbVh (Moiety) tyjxh gkrk gð og f>fYydk oð vkj&i kj dfBukbZ l s xqjrk gð vr% mudh xfr dks l qe cukus dh vko'; drk gkrh

gð , d s v . k q d k s v k j & i k j d j u s oð f y , f > f y y d k i k s / h u l f k k u m i y c / d j k r h g ð o s l k m r k i o . k r k l f k k i r u g h a d j i k r s t c f d v . k q / k a oð f o l j . k oð f y , l k m r k i o . k r k f u f ' p r r k s i j i g y s l s g h m i f l f k r g k s u h p k f g ,] H k y s g h m l g a i k s / h u l s e n n f e y j g h g ð a ; g i f oð ; k g h l q k è ; f o l j . k d g y k r h g ð

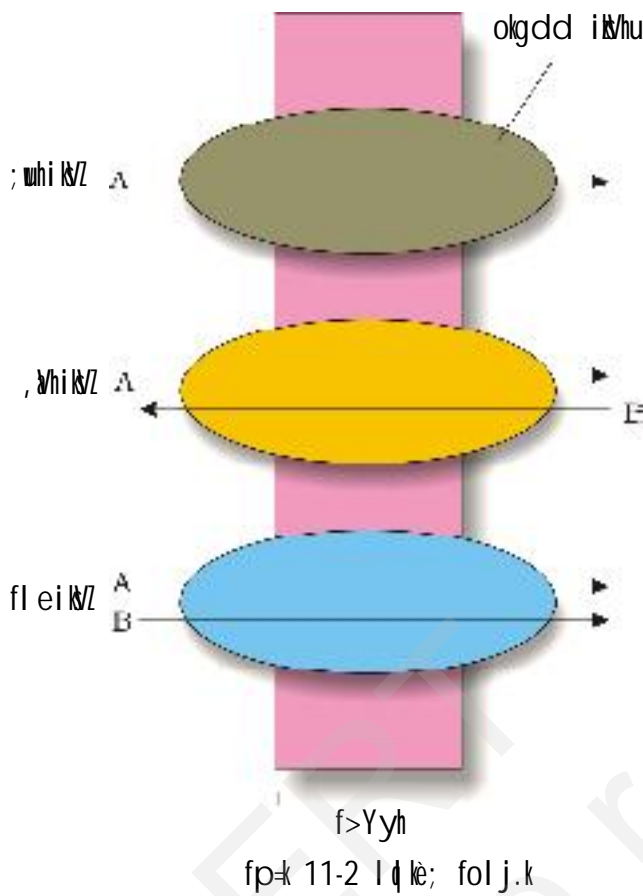
l q k è ; f o l j . k e a i n k f k k a d k s f > y y h oð v k j & i k j d j u s e a f o f ' k ' v i k s / h u e n n d j r h g s v k s b l e a , v h i h å t k z d k h k h o ; ; u g h a g k r k a l q k è ; f o l j . k f u e u l s m p p l k m r k e a i w k z i f j o g u u g h a d j l d r k g s v r % b l d k j . k å t k z f u o s k d h v k o ' ; d r k g k s h g ð i f j o g u d h x f r n j r c v f / d r e g k s h g s t c i k s / h u oð l h k h l o k g d k a d k i z k s i w k z i l s g k a l q k è ; f o l j . k v f r f o f ' k ' v g k s k g ð ; g d k s ' k d k v k a d k s i n k f k k a oð m n x g . k oð f y , p ; u d j u s d h n w i n k u d j r k g ð ; g f u j k s / d k a oð i f r l o s n u ' k h y g k s k g s t k s i k s / h u d h i k ' o z k k y k l s i f r f oð ; k d j r h g ð

v . k q / k a d k s v k j & i k j t k u s oð f y , f > f y y d k e a e k s t m i k s / h u j k l r k c u k r h g ð oð n j k l r s g e s k k [k y s g k s r s g a r f k k oð n f u ; å k r g k s l d r s g ð oð n c m s g k s r s g s t k s f o f h k l u i z d k j oð v . k q / k a d k s i k j t k u s d h n w n r s g ð i k s j u , d i z d k j d h i k s / h u g s t k s l y k f l v m e k b v k s d k a m s k r f k k c d v h f j ; k d h c k á f > y y h e a c m s v k d k j oð f i n n k a d k f u e k z k d j r h g s r k f d f > y y h e a l s g k d j i k s / h u oð n k s / l k b t oð v . k q h k h m l e a l s x t j l oð a

f p = k 11-1 i n f ' k z d j r k g s f d c k á d k s ' k d h ; v . k q i f j o g u i k s / h u i j c a / r j g r s g ð v k s ; g h i f j o g u i k s / h u c k n e a ? k w k z g k s d j d k s ' k d k oð h k h r j v . k q d k s eð r d j n r s h g ð m n k g j . k oð r k s i j t y e k x z & t k s v k b r j g oð f o f h k l u , d o k i k s j u l s c u k g k s k g ð



f p = k 11-1 l q k è ; f o l j . k



11-1-2-1 fuf"Ø; fl ei ks/Z rFkk , whi ks/Z

oqN okgd ;k ifjogu iks/hu fol j.k dh vuøfr rHkh nrsrgð tc nksrjg oð v.kq, d l kFk pyrs gð fl ei ks/Z eð nksuka v.kq, d gh fn'kk ea f>fYydk dks ikj djrs gð tcfð , whi ks/Z ea osmyVh fn'kk ea pyrs gð (fp=k 11-2)A tc , d v.kq nñ js v.kq l s Lorak gk d j f>fYydk dks ikj djrk gð rc bl fof/ dks ; fui ks/Z dgrs gð

11-1-3 l fØ; ifjogu

l fØ; ifjogu l kmrk ið .krk oð fo#¼ v.kq/ka dks iä djus ea ÅtkZ dk mi ;ksx djrk gð l fØ; ifjogu f>fYydk iks/hu }kjk iwZ fd ;k tkrk gð vr% f>fYydk oð fofHkku iks/hu l fØ; rFkk fuf"Ø; nksuka ifjogu ea eq; Hkñedk fuHkkrS gð iä , d rjg dk iks/hu gS tks inkFkka dks f>fYydk oð ikj djkus ea ÅtkZ dk iz ;ksx djrh gð ; siä iks/hu inkFkka dk de l kmrk lsvf/d l kmrk rd ifjogu dj k l drsgð ifjogu dh xfr vf/dre rc gksh gStc ifjogu djusokys l Hkh iks/hu dk iz ;ksx gks jgk gks ;k og l arlr gh D ;ka u gkð , at kbeka dh Hkñer okgd iks/hu f>fYydk oð ikj djusokys inkFkka oð ifr cgr vf/d fof'k"V gksh gð ; siä iks/hu fujks/d oð ifr Hkh l ðnu'khy gksh gS tks ik'oz kkyk l s ifr fØ; k djrs gð

11-1-4 fofHkku i fjogu fof/ ; ka dh rgyuk

rkfydk 11-1 ea fHkku & fHkku ifjogu rak dh rgyuk dh xbZ gð tS k fd Li"V gks pðk gS fd f>fYydk dh iks/hu l q kè; fol j.k , oa l fØ; ifjogu oð fy,

rkfydk 11-1 fofHkku i fjogu rakka dh rgyuk

xqk	l k/kj. k fol j. k	l q kè; ifjogu	l fØ; ifjogu
fof'k"V f>fYydk iks/hu dh vlo' ; drk	ugha	gk	gk
mPp o. Hkñed	ugha	gk	gk
ifjogu l arlr	ugha	gk	gk
f'k[kjki fj (vifgy) ifjogu	ugha	ugha	gk
, Vhih ÅtkZ dh vlo' ; drk	ugha	ugha	gk

mUkjnk; h gkrh gS rFkk bl idkj ; g mPp o.kkRed gksus oL lkekU; y{k.k tS sl arl
 gksuk] fujks/dka oLl ifr vuqØ; k rFkk gkekZuh; fu; ak.k inf'kZ djrsga yfdu folj.k
 pkgs l q kè; gks ; k ugha id.krk oLl vuq kj gkrk gS rFkk ÅtkZ dk mi ; kx ugha djrkA

11-2 ikni&ty lca'

i kS/ka oLl 'kkjhfd fØ; kdyki oLl fy, ty vfuok; ZgsvkS ; g l Hkh thfor i kf.k; ka oLl
 fy, , d vr; r egUoiwZ HkRedk fuHkkrk gA ; g og ekè; e mi yC/ djkrk gS ftlea
 l Hkh inkFkZ ?kay u'khy gkrsgA tho nØ; eagtkjarjg oLl v.kq ikuh ea ?kaysgkrsgA vks
 fuyfcr jgrsgA , d rjct oLl varxZ 92 ifr'kr lsvf/d Hkx ikuh dk gkrk gS rFkk
 T; knkrj 'kkdh; i kS/ka ea 'kqd inkFkZ oLl boy 10 l s 15 ifr'kr gkrk gS ckdh ty gkrk
 gA gkykfd ; g dkr fcYoty l p gSfd , d i kS's ea ty dk forj.k fHkUu&fHkUu gkrk
 gS dk"B okys Hkx ea Fkkk/le de gkrk gS rFkk uje Hkx ea cgr T; knkA , d cht l v[kk
 l k fn[k l drk gS i jarq fi Qj Hkh ml ea ikuh dh oqN ek=kk gkrh gS vU; Fkk og thfor
 ugha jgsk vks 'olu Hkh ugha djskA

LFkyh; i kS's ifrfnu Hkjh ek=kk ea ikuh xg.k djrsga yfdu ifUk; ka l s
 budk vf/d rj Hkx ok'i kBl tZ }jkj gok ea mM+ tkrk gA eDoLl dk , d ifjiDo
 i kS/k , d fnu ea yxHkx rhu yhVj ikuh vo'kks"kr djrk gS tcd l j l ka dk
 i kS/k yxHkx i kp ?kay sea viusotu oLl cjkj ikuh vo'kks"kr dj yrk gA ikuh dh bl
 mPp ek=kk dh ek oLl dkj.k] ; g vk'p; Z ugha gksuk pkfg, fd Nf"k , oa i kNfrd
 i ; kbj.k ea i kS's dh of¼ , oamRi kndrk dks l hfer djus okyk l hekdkjh dkjd ik; %
 ty gh gkrk gA

11-2-1 ty foHko ; k ty vr% kfDr

ikni&ty lca' dh 0; k[; k djus oLl fy, oqN fo'kks ekud 'kCnka dh l e> vè; ; u
 dks vkl ku cuk nrh gA ty foHko ty dh xfr ; k ifjogu dks l e>us oLl fy,
 vk/kjHkr /kj.kk gA foys foHko ; k foys vr% kfDr rFkk nkc foHko ; k nkc
 vr% kfDr ty foHko dks l fuf'pr djus okys nks e[; dkjd gA

ty oLl v.kq/ka ea xfrt ÅtkZ i kbZ tkrh gA nØ rFkk xS dh voLFkk ea os vfu; fer
 xfr djrsgg ik, tkrsgA ; g xfr rhoz rFkk fLFkj nksuka rjg dh gks l drh gA fd l h
 rak ea ; fn vf/d ek=kk ea ty gsrks ml ea vf/d xfrt ÅtkZ rFkk ty foHko gkskA
 vr% ; g l fuf'pr gSfd 'kq4 ty ea l cl s T; knk ty foHko gkskA ; fn dkbZ nks
 vrfoZV ty rak l a oLl ea gkars ikuh oLl v.kq oLl vfu; fer xfr oLl dkj.k ty oLl
 okLrfod xfr dh Rofjr xfr T; knk ÅtkZ okys Hkx l s de ÅtkZ okys Hkx eagkschA vr%
 ikuh mPp ty foHko okys vrfoZV ty oLl rak l s de ty foHko okys rak dh vks
 tk, xA inkFkZ dh xfr dh ; g i fØ; k ÅtkZ dh id.krk oLl vuq kj gkrh gS vks folj.k
 dgykrh gA ty foHko dks xhd fpUg Psi ; k ψ l s fpeR fd; k x; k gS vks bl s
 i kl dYl tS h nkc bdkbZ ea 0; Dr fd; k x; k gA i j j k oLl vuq kj 'kq4 ty oLl ty

foHko dks ,d ekud rki ij tks fdl h nkc ea ugha g\$ ij 'kbi; ekuk x;k g\$
 ;fn oqN foys 'kq4 ty ea ?kksys tkrsg\$ rks ?kksy ea epr ikuh de gks tkrk
 g\$ ty dh lknrk ?kV tkrh g\$vk\$ ty foHko Hkh de gks tkrk g\$ bl hfy, l Hkh
 foys uka ea 'kq4 ty dh vi\$kk ty foHko fuEu gkrk g\$ bl fuEurk dk ifjek.k
 , d foys o\$ nhdj.k o\$ dkj.k g\$ftl s foys foHko dgk tkrk g\$ (;k Ψ_s)A
 Ψ_s l n\$ udkjkrEd gkrk g\$ tc foys o\$ v.kq vf/d gkrs g\$ rks Ψ_s vf/d
 udkjkrEd gkrk g\$ ok; eMyh; ncko ij foys ;k ?kksy dk ty foHko $\Psi_s =$ foys
 foHko Ψ_s gkrk g\$

;fn ?kksy ;k 'kq4 ty ij ok; eMyh; ncko l s vf/d ncko yxk;k tk, rks
 ml dk ty foHko c<+tkrk g\$;g , d txg l snljh txg ikuh ia djuso\$ cjkj
 gkrk g\$ D;k vki l kp l drsg\$fd gekjs 'kjhj o\$ fdl rak eankc fufe\$ gkrk g\$
 tc folj.k o\$ dkj.k i k\$sdh dks'kdk eaty i\$sk djrk g\$vk\$ og dks'kdk fHk\$
 dh vkj c<k nrk g\$vk\$ dks'kdk dksLi chr cuk (i qyk) nrk g\$ (fp=k 11-2)A ;g
 nkc foHko dks c<k nrk g\$ nkc foHko T;knkrj l dkjkrEd gkrk g\$ gkykf d
 i k\$ka ea udkjkrEd foHko ;k tkbye o\$ ty [kM ea ruko , d rus ea ty o\$
 ifjogu eaeglo i wkZ Hkfedk fuHkrk g\$ nkc foHko dks Ψ_p l s fpfEr fd;k x;k g\$
 dks'kdk dk ty foHko] foys , oankc foHko nksuka gh l s i Hkfor gkrk g\$ bu nksuka
 o\$ chp l ea/ fuEu izdkj l s gkrk g\$

$$\Psi_s = \Psi_s + \Psi_p$$

11-2 ijkl j.k

i k\$'s dh dks'kdk] dks'kdk f>Yyh ;k , d dks'kdk fHk\$ l s f?kjh gkrh g\$;g
 dks'kdk fHk\$ ty , oafoy;u ea inkFkk o\$ fy, epr : i l s i kxE; gkrh g\$ vr%
 ;g ifjogu ;k xfr o\$ fy, ck/d ughagkrh g\$, d i k\$'s dh dks'kdkvka ea i k;%
 , d o\$nh; jl /kuh gkrh g\$ ftl dk jl /kuh; pr jl dks'kdk o\$ foys foHko ea
 Hkxhnhkj dh djrk g\$ ikni dks'kdk ea dks'kdk f>Yyh rFkk jl /kuh dh f>Yyh]
 Vksk\$y[kLV] nksuka , d l kFk dks'kdk o\$ Hkhrj , oackgj v.kq/kadh xfr fu/kjzr djus
 o\$ fy, egRo i wkZ gkrs g\$

ijkl j.k fo'k\$: i l s , d foHknd v/Z ;k i kxE; f>fYyd o\$ vkj&ikj
 ty o\$ folj.k o\$ fy, l mfHkZ fd;k tkrk g\$ ijkl j.k Lor% gh ifjr cy dh
 vuf\$;k l s i\$ik gkrk g\$ ijkl j.k dh fn'kk , oa xfr nkc i \$.krk , oa l knrk
 i \$.krk ij fuHk\$ djrh g\$ ty viusmPp jkl k;fud foHko (;k l knrk) l s fuEu
 jkl k;fud foHko ea rc rd l p\$kr gkrk g\$ tc rd fd l kE;rk ij u igp tk, A
 l kE;rk ij nks d {kka dk ty foHko , d l eku gksk p\$fg, A

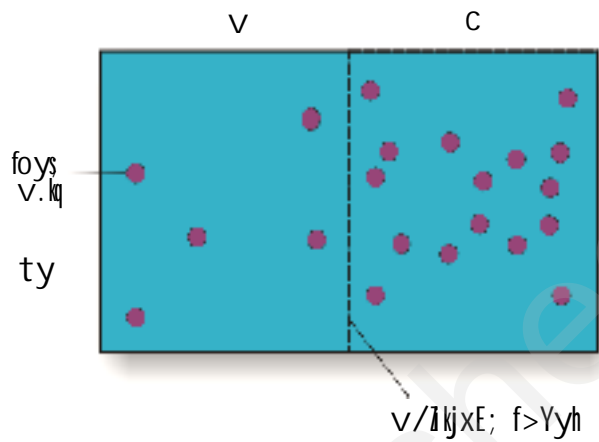
vki usfo |ky; ea igys o\$ pj.kka ea , d vkywdk ijkl j.kekih (vklke\$hvj)
 cuk;k gkskA ;fn dm dks ikuh ea j[kk tkrk g\$ rks vkywo\$ dm dh xqk ea j[kk
 'ko\$jk dk l knz ?kksy ijkl j.k o\$ }kjk ikuh dks , d=k dj yrk g\$

fp= 11-3 dk vè; ; u dj] ft l eanks d{kkav , oa c ea j [ks x; s foy; uka dks Hkj dj v/ l k j x E; f > Yyh }kjk v y x & v y x f d ; k x ; k g ß

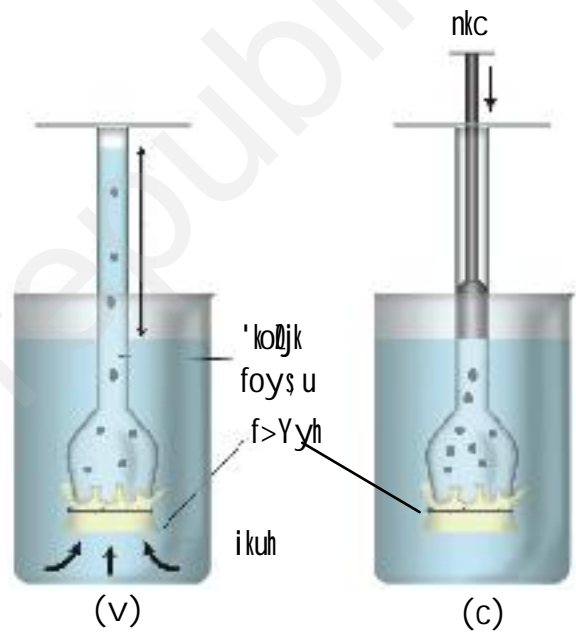
- (v) fdl d{k oß ?kky ea , d fuEurj ty foHko gß
- (c) fdl d{k oß ?kky ea fuEurj foys foHko gß
- (l) i j l j . k fdl fn'kk ea l a lu gkxk\
- (n) fdl foy; u dk mPp foys foHko mPprj gkxk\
- (;) l k E ; r k oß l e ; fdl d{k ea ty foHko fuEurj gkxk\
- (j) ; fn , d d{k ea ψ dk eku & 2000 kPa gS v k j n l j s ea & 1000 kPa gS r k s fdl d{k ea mPprj ψ gkxk\

vk b ,] , d n l j s i z k x dh p p k z d j] t g h ' k o d j k oß foys u d k s , d d h i e a f y ; k x ; k g ß t k s , d c h d j e a j [k s x , i k u h l s v / l i k j x E ; f > Y y h } k j k v y x g ß (fp= 11-4) A (vki bl idkj dh f > f Y y d k , d v M s l s i k l r d j l d r s g ß v k i v M s oß , d f l j s i j N k s / k l k N n d j oß l k j k i h y k , o a ' o r i n k F k z (; k y d , o a , Y c f i e u) f u d k y y a v k j f i o j v M s oß d o p d k s o f N ? k a / k a oß f y , r u q u e d oß v E y (H c l) e a N k M + n A v M s d k d o p ? k y t k , x k v k j m l d h f > Y y h l k o r i k l r g k s t k , x h) A i k u h d h i d h v k j x f r d j s k v k j d h i e a ? k k y d k l r j c < + t k , x k A ; g i f Ø ; k r c r d t k j h j g s c h t c r d f d l k E ; r k d h f l F k f r u g h a v k t k r h A ; f n f d l h d k j . k o ' k j ' k o d j k f > Y y h oß e k è ; e l s c k g j f u d y v k , a r c D ; k d H k h l k E ; r k d h f l F k f r v k , x h \

d h i oß Å i j h H k k x i j c k g j h n k M k y k t k l d r k g S r k f d f > f Y y d k oß e k è ; e l s d h i e a i k u h f o l f j r u g k ß ; g n k i k u h d k s f o l f j r g k s s l s j k c d r k g ß f o y s l k m r k v f / d g k s i j i k u h d k s f o l f j r g k s s l s j k c d u s oß f y , v f / d n c o d h H k h v k o ' ; d r k g k x h A l ð ; k R e d v k / k j i j i j l j . k n k i j l j . k f o H k o oß c j k c j g k r k g S y s d u b l d k l o ß r f o i j h r g k r k g ß i j l j . k n c o e a i z ð r n k l d k j k R e d g k r k g S t c f d i j l j . k f o H k o u d k j k R e d g k r k g ß



fp= 11-3



fp= 11-4 i j l j . k d k , d i n z l k A , d d h i e a ' k o d j k f o y ; u H k j d j i k u h l s H k j s c h d j e a m Y V k j [k k x ; k g ß f t l d k e d k v / l i k j x E ; f > Y y h l s c m g ß (v) ty f > Y y h d k s i j d j r s g q f o l j . k l s d h i oß ? k y d j l r j c < k , x k (t s k d h r h j oß f u ' k u f n [k j g s g ß) (c) d h i e a t y oß c g l o d k s j k c d u s oß f y , n k d k b l n e k y f d ; k t k l d r k g S t s k f d f p = k e a f n [k ; k x ; k g ß

11-2-3 thonð; oþpu

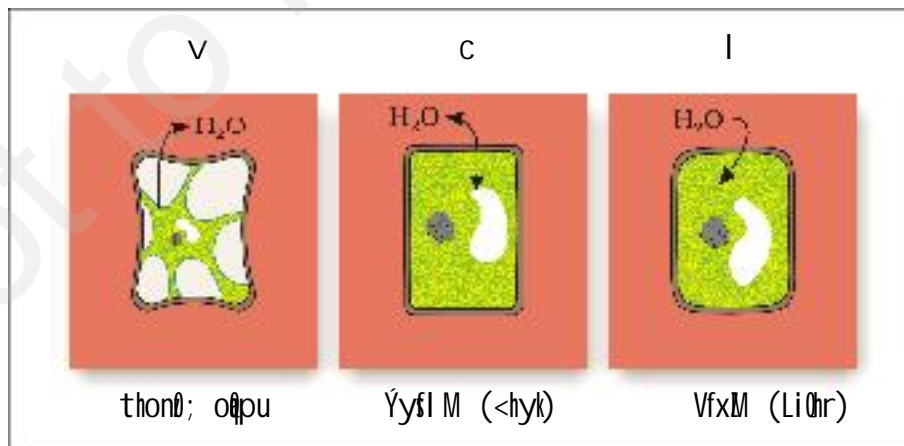
ikni dks'kdkvka (;k Årdkð) ea ty dh xfr oð ifr 0; ogkj djuk ml oð vkl & ikl oð ?kksy ij fuHkj djrk gð ;fn ckgjh ?kksy dks'kdk nð; oð ijkl.j.k nkc dks l arfyr djrk gS rks ml s ge l ei jkl kjh dgrs gð ;fn ckgjh foys u dks'kdk nð; l svf/d ruñr gS rks ml s vYi ijkl jh dgrs gð vks ;fn ckgjh foys u cgr vf/d l knrk; þr gkrk gS rks bl s vfri jkl kjh dgrs gð dks'kdk, avYi ijkl kjh ?kksy ea i þyrh gð vks vfri jkl kjh ea fl oðMfrh gð

thonð; oþpu rc gkrk gS tc dks'kdk l s ikuh ckgj xfr dj tk, rFkk ikni dks'kdk dh dks'kdk f>Yyh fl oðMedj dks'kdk fhkfulk l svyx gks tkrh gð ; g rc gkrk gS tc , d dks'kdk (;k Ård) dks vfri jkl kjh ?kksy ea Mkyk tkrk gð l cl s igys thonð; l s ikuh ckgj vkrk gS fi Oj j l /kuh l a tc dks'kdk l s fol j.k }kjk ikuh fudy dj cká dks'kdk nð; ea tkrk gS rc thonð; dks'kdk fhkfulk l svyx gks tkrh gS vks bl s dks'kdk dk thonð; oþpu dgk tkrk gð ty dk ifjogu f>Yyh oð vkl&ikj mPprj ty foHko {ksk (vFkkz~dks'kdk) fuEurj ty foHko {ksk ea dks'kdk oð ckgj (fp=k 11-5) tkrk gð

thonð; oþpr dks'kdk ea dks'kdk fhkfulk , oal oþpr thonð; oð chp dh txg dks dks Hkjrk gS

tc dks'kdk (;k Årdkð) dks l ei jkl kjh ?kksy ea j[kk tkrk gS rks ty dk oþy i Hkko vñj ;k ckgj dh vks ughagkrk gð ;fn cká ?kksy thonð; oð ijkl kjh nkc dks l arfyr j[krk gS rks bl s l ei jkl kjh dgrs gð dks'kdkvka ea tc ty vñj vks ckgj l eku : i l s iðkfr gkrk gS rks dks'kdk, a l kE; koLFkk ea dgh tkrh gð rc dks'kdk dks <hyk (Ýyksi M) dgk tkrk gð

thonð; l oþpu dh ifð; k ik; %i frorh gkrh gð tc dks'kdkvka dks vYi jkl kjh ?kksy (mPp ty foHko ;k thonð; dh rnyuk ea ruñr) foys u ea j[kk tkrk gS rks dks'kdk ea ty fol fjr gkrk gS vks thonð; dks fhkfulk oð fo#¼ ncko cukus dk dkj.k curk gS ft l s Li ðfr nkc dgk tkrk gð ikuh ?kd usoð dkj.k tho nð; }kjk



thonð; oþpu Ýyksi M (<hyk) VfxM (Liðhr)

fp=k 11-5 ikni dks'kdk dk thonð; oþpu

i dV fd, x, d Bkj fHkʰk oʰ fo i jhr nkc dks nkc foHko ; k ʰp dgrs gʰ dks' kdk
 fHkʰk dh n<ʰk oʰ dkj.k dks' kdk ugha i Ovrh gʰ ; g Li Ofr nkc vr% dks' kdkvka
 oʰ foLrkj , oa i Oʰko oʰ fy, mʰkjk; h gksk gʰ
 , d <hyh dks' kdk dk ʰp D; k gksk\
 i kʰs oʰ vykok fdI tho ea dks' kdk fHkʰk gksk gʰ

11-2-4 vr% kʰk.k

vr% kʰk.k , d fo' kʰk i d kj dk fo l j.k gʰ tc Bkd , oa dksykbMI }kjk i kuh dks
 vo' kʰk'kr fd; k tkrk gS rks bl oʰ dkj.k ml oʰ vk; ru ea fo' kky : i l so f¼ gksk
 gʰ vr% kʰk.k oʰ ifr' Br mnkj. kka ea chtka vks l vkh ydfM+ka }kjk ty dk
 vo' kʰk.k gʰ i oʰy gʰz ydMh ; k dk" B oʰ }kjk i ņk fd, x, nkc dk iz kx vkfn
 ekuo }kjk dMh pVvka , oa i RFjka dksrkMh oʰ fy, fd; k tkrk FkA ; fn vr% kʰk.k
 oʰ }kjk nkc ughagksk rks uoksfHkn [kʰy tehu ij mHkj dj ughavk i krʰ os l bkor%
 ckj vkdj LFkfir ughagks i krʰ

vr% kʰk.k Hkh , d i d kj dk fo l j.k gʰ D; k ad ty dh xfr l kmz k i d. krk oʰ
 vuq kj gʰ cht ; k vll; , d h gh l kexz ka ea i kuh yxHkx ugha oʰ cjkj gʰ vr%
 ; svkl kuh l sty dk vo' kʰk.k dj yss gʰ vo' kʰk'kr rFk vr% kʰk'kr gksokys nʰ
 oʰ chp ty foHko i d. krk vko' ; d gʰ bl oʰ vrfjDr] dkbz Hkh inkFkz tksfdI h
 Hkh nʰ dks vr% kʰk'kr djrk gʰ vo' kʰk'kr vks nʰ oʰ chp ca'rk gksk igy
 'krz gʰ

11-3 ych njih rd ty dk ifjogu

i kʰHkd voLFk eavki us, d iz kx fd; k gkskA bl iz kx oʰ nʰku vki usjachu i kuh
 ea l i ņ i oʰy l fgr Vguh dks Mkyk gksk rFk ml oʰ ja oʰ ifjorʰ dks Hkh nʰkk
 gkskA Vguh oʰ dVs Nkj dks oʰN ?kʰ/srd ?kʰy ea jgus oʰ ckn vki usfuf' pr gh
 ml {kx dks è; ku l snʰkk gksk ft l ea l s jachu i kuh dk ifjogu gksk gʰ ; g iz kx
 vki kuh l sn' kʰz k gSfd i kuh oʰ ifjogu dk jkLrk l oʰguh cMʰy ed; r% tkbye gʰ
 vc ge ykʰka dks vks vks <uk gʰ i kʰka ea i kuh rFk vll; inkFkʰ oʰ ifjogu dh
 i fʰ; k dks l e>uk gʰ

y ch njih rd inkFkʰ dk ifjogu oʰy fo l j.k }kjk ughagks l drk gʰ fo l j.k
 , d /heh i fʰ; k gʰ ; g Nks/h njih rd v. kq/ka dks i gʰpkuse adkjxj gʰ mnkj. k oʰ
 fy, % , d ik: fid ikni dks' kdk (yxHkx 50µm) oʰ vkj&ikj v. kq dks xfr djus
 oʰ fy, yxHkx 2-5s l e; yxrk gʰ bl nj ij vki D; k x. kuk dj l drs gʰ fd
 i kʰka oʰ vʰj 1m dh njih r; djus ea v. kq/ka dks fo l j.k oʰ }kjk fdruk l e;
 yxsk\
 cMʰ, oa tVʰy thoka ea cʰg'k inkFkʰ dk ifjogu ych njih rd gksk gʰ
 dHkh&dHkh mRi knu ; k vo' kʰk.k , oa l xz. k oʰ LFkku , d nu js l s dki ņ njih gksk gʰ
 vr% fo l j.k , oa l fʰ; ifjogu dki ņ ugha gʰ bl fy, fo' k'V 0; ki d njih dk

ifjogu rak vko'; d gkstrk gSrkfd vko'; d inkFKZ fuf'pr : i lsrhoz xfr l s
 igp l oA ty] [kfut rFkk Hkkstu lkefigd izkkyh }kjk ifjogu djrsgA lkefigd
 ; k Fkksd i okg ea inkFKkAdk , d LFkku l smt js LFkku rd ifjogu] nks fcmy/ka o chp
 nkc dh fHkkuurk o ifj.kkeLo: i gkrk gA lkefigd i okg dh ; g fof'k'Vrk gSfd
 inkFKZ pkgS ?kksy gks ; k fuyau unh o i okg dh rjg gh cgrk gA ; g folj.k l s
 fHkku gkrk gS tgk ij fofHkku inkFKZ viuh l kmrk i o.krk o vud kj Lorak : i l s
 ifjogfur fd, tkrsgA Fkksd i okg dks rks ?kukRed tyh; nkc i o.krk ; k ½.kkRed
 tyh; nkc i o.krk (tS % i pky o }kjk pWk.k) o }kjk i ktr fd; k tk l drk gA
 inkFKkAdh i knika o l oguh Ardka o }kjk Fkksd ; k lkefigd xfr dks LFkkukarj.k
 dgrsgA D; k vki dks; kn gSfd tc vki us Aps i knika dh tMla ruka rFkk i fUk; ka o
 vud LFk dkV (Økl l o'ku) dks n[kk Fkk vkSj ml dh l oguh izkkyh dk ve; ; u
 fd; k Fkka mPp i knika ea cgr gh mPp fo'kshNir l oguh Ard & tkbye vkSj
 Ýyks e gkrsgA tkbye e[; : i l sty] [kfut yo.kk oN dkcud ukbVktu rFkk
 gkekA dks tM+l sok; oh; Hkkx rd LFkkukarfjr djrk gA Ýyks e e[; : i l s fofHkku
 izkj o dkcud , oavdkcud foys uka dks i fUk; ka l s i knika o fofHkku Hkkxka ea
 LFkkukarfjr djrk gA

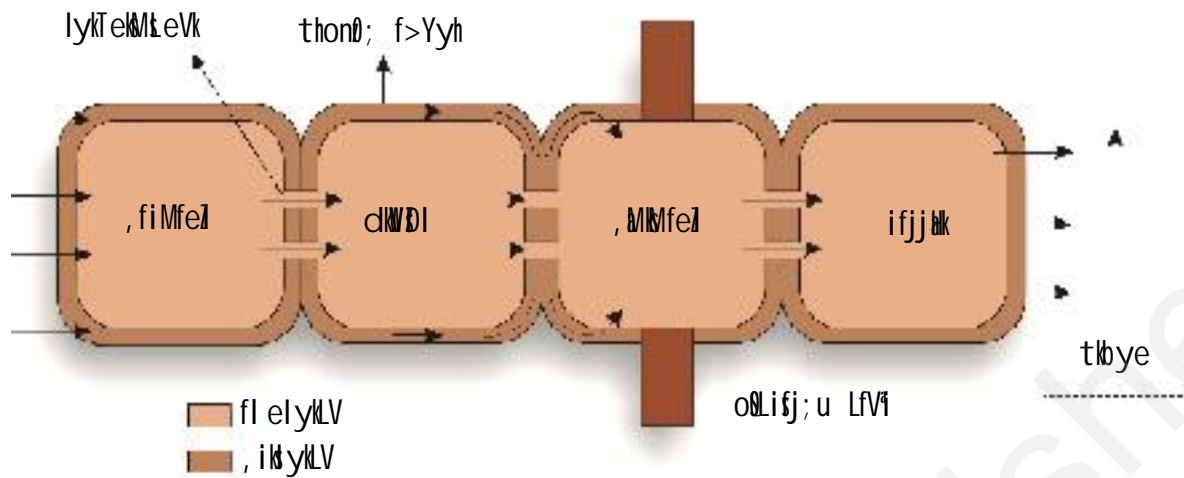
11-3-1 i kS's ty dks o l svo'kks'kr djrsgA

ge l Hkh tkurs gSfd tMla i Mla o fy, T; knkrj ty dks svo'kks'kr djrh gA bl hfy,
 ge ty dks enk ea MkyrsgA u fd i fUk; ka i jA ty vkSj [kfut rRoka o vo'kks'k.k
 dh ftEenkjh fo'kks : i l sey jkeka dh gkrh gS tksfd tMla o vxz 'kh'kz Hkkx ij
 yk [kka dh l e; k ea ik, tkrsgA ey jke iryh fHkFk okys gkrsgA tks svo'kks'k.k o
 fy, 0; ki d : i l s {kks ink u djrsgA ty] [kfut & foys o l kFk ey jke l s gkclj
 'kq : i l s folj.k i fØ; k o }kjk vo'kks'kr fd; k tkrk gA , d dkj tc ey jke
 }kjk ty vo'kks'kr dj fy; k tkrk gS rc og tMla dh xgjh irka eanks fHkku i Fkka
 l s xfr djrk gA nks fHkku i Fk fuEu g%

- , i ktykLV i Fk
- fl elykLV i Fk

, i ktykLV fudVorhZ dks'kdk fHkFk dk rak gA tMla o varLropk ea ekSt m
 o l i jh i VVh dks NkMl j i js i kS's ea i oSyk jgrk gS (fp=k 11-6)A ty dk
 , i ktykLV d ifjogu o boy varjdks'kdh; txgka vkSj dks'kdk vkadh fHkFk ea mRi lu
 gkrk gA , i ktykLV o ek; e l s gksisokyk ifjogu dks'kdk f>Yyh dks i j ugha djrk
 gA ; g xfr i o.krk ij fuHk djrh gA , i ktykLV ty o ifjogu ea dkbZ Hkh ck/
 k ugha Mkyrk gS vkSj ty ifjogu lkefigd i okg o ek; e l s gkrk jgrk gA tS
 gh ty varjdks'kdh xgk ; k okroj.k eaok'ir gkrk gS rks, i ktykLV o l rr ty
 i okg ea ruko mRi lu gks tkrk gA vr% vki ad , oal akfDr 'khyrk o dkj.k ty
 dk lkefigd i okg gkrk gA

fl elykLV d rak var% l ad/r tho nD; dk rak gA i Ml h dks'kdk, a dks'kdk
 yMh l s tMh gkrh gA tks fd tho nD; rrr rd foLrr : i l s i oSyk jgrh gA



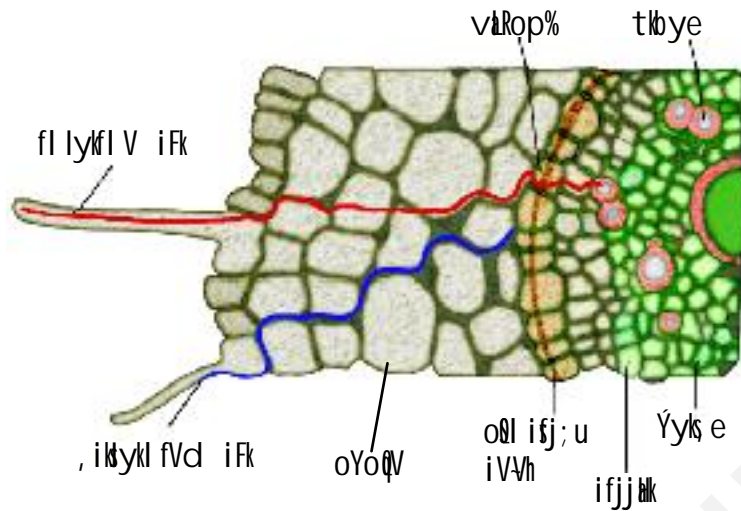
fp=k 11-6 tM+ea ty oð xfr dk iFk

fl elyKLVd ifjogu ea ty dks'kdkvka oð tho nD; oð ekè; e lsrFk vrj dks'kdh ifjogu ea; g tho nD; rraqoð ekè; e lsvkxsc<fk gð ty dks'kdkvka oð vñj dks'kdk f>Yyh oð ekè; e lsiðsk djrk gð vr%bl izdkj dk ifjogu vi{kkÑr /hek gkrk gð fl elyKLVd dks ifjogu ea dks'kdk nD; h iðkgu l gk; rk djrk gð vki dks'kdk nD; h iðkgu dks gkbFM'yk dh iÙkh oð dks'kdk ea n[kk gksk] DykjkyKLV dk ifjogu iðkg oð dkj.k vkl kuh l s fn [kkbz iM+l drk gð

tMka ea vf/drj ty iðkg , ikyKLV oð ekè; e lsrMri l u gkrk gð pñd oYoQV&dks'kdk, j <hyh xfr gkrh gð vr% ty dh xfr eafdl h izdkj dk ifrjks/ mri l u ugh gkrkA gkykfd oYoQV dh vkrfjd l hek] l hek vr%ropk] i kuh oð fy, viðs; gkrh gð , d k l pñjue; eSVDI oð dkj.k gkrk gð sft l s oLi gh i VVh dgk tkrk gð i kuh dk v.kq irZ dks Hknu s oð vl eFkz gkrk gð vr% blga vl pñjue; dks'kdk fHkFk {sk dh vkj i q% f>Yydk oð ekè; e l s dks'kdk oð vñj Hkstk tkrk gð bl oð dñ ty fl elyKLV oð }kj xfr'khy gkrk gð vks i q% f>Yyh dks i kj djrk gSrkfd tkbye dks'kdkvka rd igp l oð ty dh xfr enyijr l s vr% dks'kdk rd fl elyKLVd gkrh gð ; gh , d jklrk gð sft l s i kuh rFkk vl; foys oð oYj fl fyMj ea iðsk djrs gð

, d dkj tkbye ekè; e oð Hkhrj igpusij ty i q% dks'kdkvka oð chp rFkk ml oð vkj&ikj tkus oð fy, Lorak gks tkrk gð ubZ tMka ea ty l h/s tkbye okfgdkvka; k&vks okfgudkvka ea iðsk djrk gð ; s thou jfgr ukfy; k; gð vks , d izdkj l s, ikyKLV dk fg l k Hkh gð eny l oguh rak ea ty rFkk [kfut vk; uka dk ekxZ fuEu fp=k ea l {k hÑr fd; k x; k gð (fp=k 11-7)A

oQn i kS'ka ea vfrfjDr l jpuK, a tMka gkrh gð tks mlga ty (, oa [kfutk] oð vo'kksk.k eaenn djrh gð ekbdkj kbt k tM+oð l kFk i Oi ðnh (dod) dk l gthoh l xBu gð i Oi ðnh ; k dod rraqubZ tMka oð vkl & ikl uS'ood (cukrs) gð; k osemy dks'kdk ea iðsk dj trsgð dod rraqdk , d cMk 0; ki d ry {sk gkrk gð tks Hkne l s [kfut vk; u , oa ty dks eny l s vf/d ek=kk ea vo'kks"kr dj yrk gð



fp-k 11-7 ty , oa vk; u dk fl lykflVd , oa , i kyklfVd iFk rFk tMla ea i dk g

;sdod tM+dksty ,oa [kfut mi yC/ djkrsgá vks cnysea tMaHkh ekbdkjkbth dks 'kodbj rFkk ulbVktu lekgr ; ksd indku djrs gá oqN i kS/kadk ekbdkjkbtk oØ l kFk dk vfodYih l a/ gkrsgá mnkgj.k oØ fy, ekbdkjkbtk dh mi fLFkr oØ fcuk phM+dk cht u rks vøfjr gk l drk gS vks u gh LFkkfir gk l drk gá

11-3-2 i kS/kaeaty dk Áij dh vkj xeu

geus vHkh ns[kk fd i kS's enk l s ty dk oØl s vo'kkS.k.k djrs gá vks l oguh Árdka eabl soØl sigpkrsgá vc ge ; g tkuuso le>usdk iz kl djksfd ty i kS'soØ fofHkuu Hkkxkaard oØl sigprk gá ; g ty dk pyu fØ; k'khy gS; k vHkh Hkh fuf"Ø; gS pfid ty iM+oØ ruseax#Rokd" k z k oØ fo#¼ xfr djrk gSrksbl oØ fy, Átkz dks nrk gS

11-3-2-1 ewy nkc

tS sfd enk oØ fofHkuu vk; u l fØ; rk oØ l kFk tMla oØ l oguh Árdkaea ifjogfur gkrsgá r ksty Hkh bl h i fØ; k dk vuq j .k (viuh foHko ið.krk l) djrk gS rFkk tkbye oØ vñj nkc c<rk gá ; g ?kukRed nkc gh ewy nkc dgykrk gS vks rus eaade ÁpkbZrd ty dks Áij HkstusoØ fy, mlkjnk; h gkrk gá ge oØl ns[k l drs gáfd ewy nkc fo|eku gá bl oØ fy, ,d NkV k l k uje rusokyk i kS'k p qavks ft l fnu okrkoj.k i ; klr vknZk i w k z g k s ml fnu i k r % d k y oØ l e; rus oØl uhps {k s r t fn'kk eaml srh [k s C y M l s d k V n á v k i t Y n gh ns[k s f d ml d V s g q rus i j n o dh o q N e k - k k Á i j dh v k j m B v k r h g á ; g n o l d k j k R e d ewy nkc oØ d k j . k v k r k g á ; f n v k i m l r u s e a , d j c j dh i r y h u y h p < k n a r k s v k i o k l r o e a l k o dh n j e k i l d r s g á v k s l k f o r n o oØ d k j d k a dh l j p u k t k u l d r s g á ewy nkc dk i H k k o j k r r F k k l q g oØ l e; H k h n s [k k t k l d r k g s t c o k " i h d j . k dh

ifʰ; k de gkrh gʰ vʰj vfrfʰDr i kuh ?kkl oʰ frudka dh ukd ij fo'kʰk fNnka l s
l for ty cmka oʰ : i ea yVdus yxrk gʰ bl izdkj no oʰ : i ea i kuh dk {k;
fcmʰ ko (xVʰku) dgykrk gʰ

ty ifjogu dh oʰy fʰ; k ea eʰy nkc oʰoy , d l k/kj.k nkc gh inku dj
i krk gʰ ; g mPp oʰkka ea ty oʰ pyu ea bl dh dkbz cMh Hkfedk ugha gkrh gʰ
eʰy nkc dk 0; ki d ; ksnku tkbye ea i kuh oʰ v.kʰka dks fujarj dMh oʰ : i ea
LFkʰfir j [kusea gks l drh gʰ tksfd vDl j ok"i kʰl tʰu oʰ }kjk i bʰk fd, x, oʰg-
rukoka oʰ dkj.k VWrh jgrh gʰ vf/dkʰk ty dks ifjogu djusea eʰy nkc dk dkbz
vFkʰz ugha gʰ vf/drj i kʰka dh vko' ; drk ok"i kʰl tʰur f[kpko l s i jh gks tkrh
gʰ

11-3-2-2 ok"i kʰl tʰu f[kpko

i kʰ.k; ka dh Hkʰfr i kʰka ea i fʰj l p.j.k rak ugha gkrk bl oʰ d kotm tkbye oʰ eke; e
l sty dk Åijh cgko i ; kʰr mPp nj l } yxHx 15 ehVj ifr ?kʰs rd gks l drk
gʰ ; g xfr oʰl sgkrh gʰ ; g , d i pʰnk l oky vkt rd l oky gh cuk gʰk gʰ
i kʰs oʰ }kjk i kuh Åij dh vʰj ^/oʰyk* tkrk gʰ ; k fi 0j Åij l s [kʰpʰk tkrk gʰ
vf/drj 'kʰs/drʰz l ger gʰ fd i kʰka }kjk i kuh eʰ; r% [kʰpʰk tkrk gʰ vʰj bl dh
l pkyu 'kʰDr i fʰk; ka ea ok"i kʰl tʰu dh ifʰ; k dk ifj.kke gʰ bl sty ifjogu dk
l a atu&ruko ok"i kʰl tʰu f[kpko ekʰy oʰ : i ea i l rʰ fd; k tkrk gʰ i jarqbl
ok"i kʰl tʰu f[kpko dks dks tʰur dj jgk gʰ

i kʰka ea ty vLFk; h gʰ izdk'k&l a yʰk.k , oa of ¼ oʰ fy, i fʰk; ka ea i gʰp us okys
i kuh dk , d ifr'kr l s Hkʰ de iz kʰ fd; k tkrk gʰ i kuh dh vf/drj ek=k i fʰk; ka
l s ja/z }kjk mʰk nh tkrh gʰ ty dh ; gh {kʰr ok"i kʰl tʰu dgykrh gʰ

vki usfi Nyh d {kʰvka ea ok"i kʰl tʰu dk vè; ; u , d LoLFk i kni dks i kʰy h fʰku
oʰ vʰj j [kdj vʰj ml oʰ vʰj dh l rg ij ty dh l vʰe cmka dk voyksdu
djoʰ fd; k gʰskʰ vki i l kh l s i kuh dh bl deh dh ifʰ; k dks dks kʰy vDy kʰbM
i s j }kjk dj l drs gʰ ft l dk ja i kuh vo'kʰs"kr djus ij cny tkrk gʰ

11-4 ok"i kʰl tʰu (Vʰl fi jʰku)

ok"i kʰl tʰu] i kʰka }kjk ty dk ok"i oʰ : i ea i fʰj orʰ rFk bl l s mʰi l u {kʰr gʰ
eʰ; r% ; g i fʰk; ka ea i k, tkus okys ja'ka l sgkrk gʰ ok"i kʰl tʰu ea i kuh dk ok"i
cudj mʰus oʰ vykok vʰl i htu , oa d kʰz mʰk vʰl i kʰbM dk vknku& inku Hkʰ
i fʰk; ka ea Nkʰs fNnka ft l ga ja/z dgrs gʰ oʰ }kjk gkrk gʰ l keku; r% ; s ja/z fnu ea [kʰy
jgrs gʰ vʰj jkr ea cm gʰstkrsgʰ ja/z dk cm gʰsuk vʰj [kʰyuk j {kd dks'kdkvka oʰ
Li Qʰr (Vjxj) ea cnyko l s gkrk gʰ i R; d j {kd dks'kdk dh vʰkʰfjd fHkʰk
ja'fNnz dh rji 0 dki Qʰ eksʰ , oarʰ; rki wʰz gkrh gʰ ja/z dks ?kʰs nks j {kd dks'kdkvka
ea tc Li Qʰr nkc c<fʰk gʰ rks i ryh ckgj h fHkʰk; k; ckgj dh vʰj mʰk jr h gʰ vʰj
vʰ: uh fHkʰk dks vʰ/pʰmʰdkj fLFkʰr ea vkus dks et cʰj djrh gʰ ja'z fNnz oʰ [kʰyus

l cfl Mjh
dlk' kdk

j {kd} kj
dlk' kdk



fp=k 11-8 j {kd} kdk ja'z oel l kfk

ea j {kd} kdk dh fhkfuK; ka ea mi fLFkr l w(e l wkkHk (ekbØksi Ocfjy) Hkh l gk; rk djrk gß l syvyst l w(e l wkkHk dk vfHkfoll; kl vjh; Øe l s gkrk gSu fd vupß; l Øe l } tks ja'fNnz dks vkl kuh l s [kksyrk gß i kuh dh deh gksus ij tc j {kd} kdk dh Li Øfr l ekr gkrh gß (; k ty ruko [kRe gkrk gß] rks ru; vkrfjd fhkfuK; k; i q% viuh eny fLFkr ea tkrh gß rc j {kd} kdk; ; <hyh i M+ tkrh gß vksj ja'z fNnz cm gks tkrß gß l keku; rkj ij , d i "B/kjh (ik; %f} chti=h) i Ükh oel fupyh vksj vf/d l ð; k ea ja'z gkrß gß tcf d , d

fj i k'ohz (ik; % , d chti=h) i Ükh ea ja'ka dh l ð; k nksakarji Q yxHkx cjkj gkrh gß

ok" i k&l tzu dbzckgjh dkjdka tS sfd rki] idk'k] vknzk , oaok; qdh xfr l s i Hkkfor gkrk gß ok" i k&l tzu dks i Hkkfor djus okys vl; ikni dkjd tS sfd ja'ka dh l ð; k , oaforj.k] [kys ja'ka dk ifr'kr] i kS'ka ea i kuh dh mi fLFkr rFkk forku jpuk vkfn gß

tkbye jl dk ok" i k&l ftz : i l s Åij p<uk eð; : i l s i kuh oel fuEu Hkk&rd xqkka ij fuHkj djrk g%

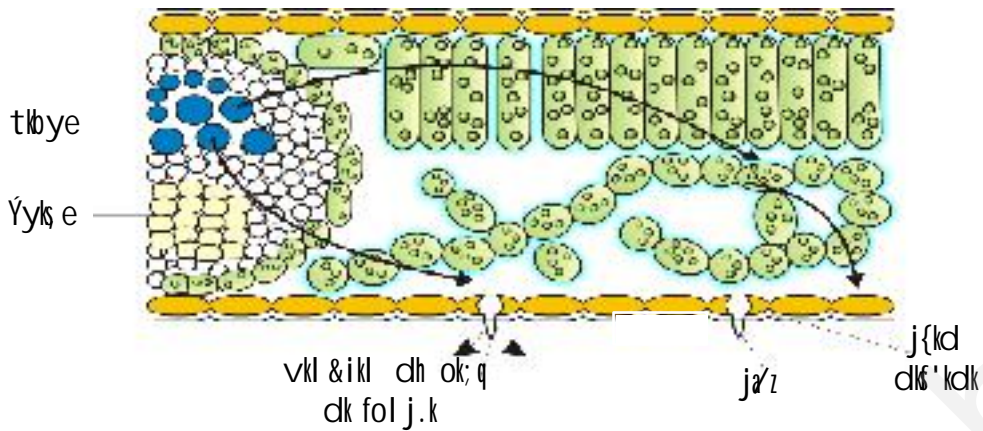
l kl atu & ty oel v.kq/ka oel chp vkil h vkd" kzk

vk l atu & ty v.kq/ka dk /ph; l rg dh vksj vkd" kzk (tS sfd okfgdh; rRoka dh l rg)

i "B ruko & i kuh oel v.kqdk nØ voLFkk eaxS h; voLFkk dh vi s k , d nu js l svf/d vkdf" kz gksika

i kuh dh ; s fof'k" Vrk; j mls mPp ru; l keF; l inku djrh gß tS s , d oel' kdkRo f[kpko 'kfr l s ifrjks' dh {kerk rFkk mPp oel' kdkRo vFkkz~fd l h iryh ufydk ea p<us dh {kerk i kS'ka ea oel' kdkRo dks y?kq; kl okys okfgdh;] rRo tS s V&hM , oa okfgdk rRo l s Hkh l gk; rk feyrh gß

idk'k&l áy'sk.k i fØ; k oel fy, ty dh vko'; drk gkrh gß tkbye okfgdk; i i kuh dks t: jr oel vuq kj tM+l s i Ükh dh f'kjkvkard igpkrh gß ysdu og dks l h 'kfr gß tks i kuh oel v.kq/ka dks i Ükh oel enrd rd t: jr oel vuq kj [khp ykrh gß tS s gh ok" i k&l tzu gkrk gS vksj pfid i kuh dh iryh ijr dks' kdkvka oel Åij yxkrkj gkrh gß vr% ; g tkbye l s i Ükh rd i kuh oel v.kq/ka dks [khp us ea ifri ofyr gkrk gß v/kja' h xfgdk rFkk varjk dks' kdk txr oel ctk; okrkoj.k ea tyok" i dh l k&rk de gkrh gß vr% i kuh ikl dh gok eafol fjr gks tkrk gS vksj ; g f[kpko i ßk djrk gS (fp=k 11-9) A ekiu l s Li "V gkrk gSfd ok" i k&l tzu } kjk i ßk fd; k x; k cy i kuh dks tkbye oel vkdkj oel Lrñk ea 130 ehVj dh Åpkbz rd [khp us oel fy, i ; k&r gkrk gß



fpɛ 11-9 ty , oa vk; u vo' kʰk.k , oa tMka ea pɩyu oɩ fl ɔyɩfLVd , oa , i kʰyɩfLVd i Fk

11-4-1 ok'i kʰl tɩ , oa i d k' k & l ɔyɩk.k% , d l e > kʰk

ok'i kʰl tɩ ea , d l s vf/d mnɛs ; fufgr gkrs gɔ tks fd fuEufyf [kr g%

- i kʰka ea vo' kʰk.k , oa i fjoɣu oɩ fy , ok'i kʰl tɩ f [kɔko i sɩk djuk
- i d k' k & l ɔyɩk.k fØ ; k oɩ fy , i kuh dk l ɔk j.k
- enk l s i kʰl [kfutka dk i kʰka oɩ l Hkɩ vɔka rd i fjoɣu djuk
- i ɔkɩ oɩ l rg dks ok' i h d j.k } k j k 10 l s 15 fMxh rd B M k j [kuk
- dks' k d k v l o d k s l i h r j [krs gɩ i k n i k a oɩ v k d j , o a c u k o v d k s f u ; ɛ k r j [kuk

, d l fØ ; i d k' k & l ɔyɩk.k ea j r i kʰs d k s ty dh v R ; r gh v k o' ; d r k j g r h g ɔ i d k' k & l ɔyɩk.k ea m i y C / ty l h e k d k j h g k s l d r k g s f t l s o k' i kʰl tɩ v k s i H k k f o r d j r k g ɔ o' k k z u k a e a v k n z k b l h ty & p Ø oɩ d k j . k o k r k o j . k e a r F k k i q % e n k e a n s [k h x b z g ɔ

l h & 4 (c 4) i d k' k & l ɔyɩk.k r ɛ k d k Ø e & f o d k l] l ɔ k o r % d k c z u & M k b v k d l k b M d h m i y C / r k d k s c < k u s r F k k i k u h d h { k f r d k s d e d j u s d h j . k u h f r oɩ r g r g q v k g ɔ c 4 i kʰs } c 3 d h r g y u k e a d k c z u (' k o z j k c u k u s e ɔ) d k s l q l F k j c u k u s e a n k s q u k l { k e g k r s g ɔ c 4 i kʰs } c 3 i kʰs l s l e k u e k = k k oɩ d k c z u M k b v k d l k b M oɩ ; k s x d h j . k g r q v k / h e k = k k e a ty d k s [k k r s (d e d j r k) g ɔ

11-5 [kfut i kʰk d k m n x g . k , o a l p j . k

i kʰs v i u h d k c z u , o a v f / d r j v k d l h t u d h v k o' ; d e k = k k o k r k o j . k e a m i y C / d k c z u M k b v k d l k b M l s i k l r d j r s g ɔ g k y k f d m u d h ' k s k i k s k . k d h v k o' ; d r k g k b M k s t u g r q e n k l s i k l r [kfutka r F k k ty l s i j h g k r h g ɔ

11-5-1 [kftu vk; uka dk m n x g . k

ty oɩ l e k u] l H k h [kfut r R o t M k a } k j k f u f " Ø ; r k f o f / } k j k v o ' k k s " k r u g h a f d , t k l d r ɔ b l o ɩ fy , n k s d k j d f t E e n k j g k r s g ɔ (i) e n k o ɩ v m j [kfutka dk v k o f ' k r : i e a j g u k g s t k s d d k s ' k d k f H k f u k d k s i k j u g h a d j l d r s g ɔ v k s (i i)

enK oð vaxz [kfutka dh lkmrk] tMæoð vax dh lkmrk lsik; % de gkrh gð bl hf, vf/drj [kfut tMæ ea cã Ropk dh dks'kdkvka oð dks'kdk nð; ea lfð; vo'kkk.k oð }kjk iðsk djrs gð blea ,Vhvh oð : i ea Åtkz dh vko'; drk gkrh gð vk; u dk lfð; mnxg.k ey eaty foHko ið.krk oð fy, vkr% ftEenKj gkrk gð vr% iklj.k }kjk ty oð iðsk oð fy, Hkh oðN vk; u cã Ropk dks'kdk eafuf"ð; : i ls Hkh lpyu djrs gð ey jkæ dks'kdk dh f>Yyh eaiK, tkusokysfof'k"V ikv/hu] vk; u dksenk ls lfð; iã }kjk cã Ropk dh dks'kdkvka oð dks'kdk nð; ea Hkstrh gð l Hkh dks'kdkvka dh Hkkâr var%Ropk ea Hkh dks'kdk dh f>Yyh eadbz ifjogu ikv/hu ik, tkrsgð osoðN foys dksf>Yyh oð vkj&ikj vkus tkus nrs gð yfdu vU; dks ugha var%Ropk dh dks'kdkvka oð ifjogu ikv/hu fu; ak.k fcmgkrs gð tgl; iKs'foys dh ek-kk , oaiðkj dks tkbye ea igpkrsgð rFkk lek; kstr djrs gð ; gk; è; ku nafd ey var%Ropk ea lpsjr dh iVvh gkus oð dkj.k , d fn'kk ea gh lfð; ifjogu djus dh {kerk gkrh gð

11-5-2 [kfut vk; Ukkadk LFkkukarj . k

tc vk; U lfð; ; k fuf"ð; mnxg.k ls ; k fiOj nkska dh lfEefJr ifð; k oð ekè; e ls tkbye ea igp tkrsgð rc mudk ifjogu ikni rus, oa l Hkh Hkkxkard ok"i kkl tzu iðkg oð ekè; e ls gkrk gð

[kfut rRoka oð fy, eð; oðM iKs'ka dh of¼ dk {skk gkrk gS tS sfd f'k [kxzx , oa ik'oz foHkkT; ksd] r#.k&i fUk; kj fodkl 'khy iOy] iOy , oacht rFkk HkkMkj.k vaxA [kfut vk; Ukkadk fol tzu eghu f'kjkvka oð väre Nkj ij dks'kdkvka oð }kjk folj.k , oa lfð; mnxg.k ls gkrk gð

[kfut vk; uka dks tYnh gh i q% ðkfvR fo'kSk : i ls igkus tjko LFkk okys Hkkx lsfd; k tkrk gð igkuh rFkk ejrh gðz i fUk; kj vius Hkhrj oð [kfutka dks ubz i fUk; ka eafu; kZrr dj nrh gð Bhd bl h iðkj ls i fUk; kj i. kã krh o{k ls > Mæus oð igys vius [kfut rRoka dks vU; Hkkxka dks nsnrh gð tks inkFkz ik; % Rofjr l pKfjr ; k l ðkfvR gkrsgð os gð i QM i Qkj l] l YiOj] ukbVrstu rFkk iKs'k; ea oðN rRo tksfd l pjkred dkjd gkrsgð tS sfd oðYI ; e] blga i q% ðkfvR ugha fd; k tkrk gð tkbye l ko dk fo'ySk.k ; g n'kkzk gSfd oðN ukbVrstu vdkçud vk; Ukkaoð : i earFkk bl dk vR; f/d Hkkx dkaçud , feuks vEy rFkk l aã/r dkjdka oð : i ea <k tkrsgð bl h rjg i QM i Qkj l , oa l YiOj Hkh dkaçud ; kSxdka oð : i ea igpK, tkrsgð bl oð vykok tkbye , oa ÝyKs e oð chp Hkh inkFkka dk vknku&inku gkrk gð vr% ge Li"V : i lsvrj ugha dj ikrSfd tkbye oðoy vdkçud iKs'kka dk ifjogu djrk gS rFkk ÝyKs e dkaçud inkFkka dk] tS k fd igysfo'okl fd; k tkrk FkA

11-6 ÝyKs e ifjogu% mnxe ls oðM dh vkj iðkg

vkGkj eð; r% 'koðkj okfgdk Ård oð ÝyKs e }kjk mnxe ls oðM dh vkj ifjogfur fd; k tkrk gð l kku; r% l kS dks iKs'k dk og fgLI k ekuk tkrk gS tgl; vkGkj l áys"kr gkrk gð tS sfd i fUk; kj vkj oðM (fl ad)A ; g og Hkkx gð tgl;

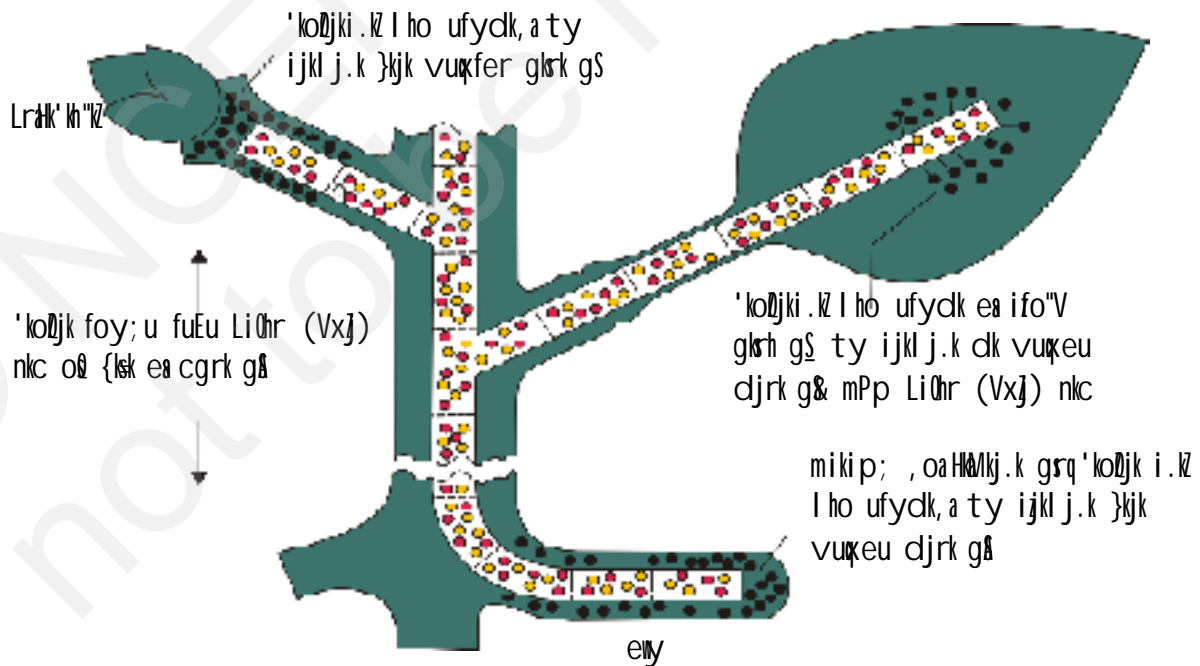
Hkkstu, d-k gkrk gð yfdu; g lkr vks oðm viuh Hkkredk, j eks e, oat: jr oð vud kj cny Hkh l drsgð tMkaea, d-k dh xbz 'koðjk ol r oð vkjðk eavkgkj dk lkr cu tkrh gð bl le; iknika ij ubz dfy; k; oðm dk dke djrh gð izlk'k&l áysk.k lk/uka dh of¼, oafjo/ú gsrqÁtkz dh vko'; drk gkrh gð pðid lkr vks oðm dk lca/ ifjorú'khy gð vr%xf r dh fn'kk Áij; k uhps dh vkj vFkkz~nkrji Ok gks l drh gð tkbye oð l kFk; g foijhr gð tgk; xfr l nð uhps l sÁij dh vkj, d fn'kk ea gkrh gð; |fi| ok'i k&l tzu dk ty, drji Ok izkg djrk gðfoðr qÝyks e oð jl ea Hkkstu dk ifjogu l Hkh fn'kkvkaea gks l drk gð tc rd lkr vks oðm 'koðjk dk mi; kx l azg.k rFkk viknu ea l {ke gla

Ýyks e jl ea eð; r% ty vks 'koðjk gkrk gð yfdu vl; 'koðjk, j gkekzu rFkk, ehuks vEy vkfn Hkh Ýyks e oð }kjk LFkkukarfjr gkrk gð

11-6-1 nkc izkg; k l kefgd izkg ifjdYi uk

lkr l soðm dh vks 'koðjk oð LFkkukarj.k oð fy, vko'; d LohÑr fØ; kfof/ dks nkc izkg ifjdYi uk dgrsgð (fp-k 11-10) A ts sgh lkr ij Xymkst (izlk'k&l áysk.k }kjk) l áys'kr gkrk gð 'koðjk (, d Mkl bðjkbM) ea cny fn; k tkrk gð bl oð ckn; g 'koðjk l [kh dks' kdkvka earFkk ckn ea l fØ; ifjogu }kjk thor Ýyks e pkyu ufydk dks' kdk ea l pðjr gkrh gð lkr ij ynku (yksMak) dh; g ifØ; k Ýyks e ea, d vfri jkl kjh voLFkk dks iðk dj nrk gð

fudVorth tkbye ty ijkl j.k oð }kjk Ýyks e ea pyk tkrk gð tc ijkl j.kh nkc Ýyks e ea curk gð rks Ýyks e jl fuEu nkc oð {ksk ea pyk tkrk gð oðm ij ijkl j.kh nco fuf'pr: i l s?kvuk pkfg, A, d ckj fi Oj Ýyks e jl l s'koðjk dks



fp-k 11-10 LFkkukarj.k dh ifØ; k dh vkjðk; i l rðjr

ckgj djusrFkk ml dks'kdk rd tglk 'koDjk Åtkj LVkpZ ; k l syykst eacnyrh gš ystkusod fy, l fØ; ifjogu vko'; d gkrk gš ts sgh 'koDjk, i gVrh gš ijkl j.kh nkc ?kVrk gš vks ty Ýyke l scckj pyk tkrk gš

l kjk k ea Ýyke 'koDjkvka dk ifjogu l kr l s'kq gkrk gš tglk 'koDjkvka dks , d pkykuhufydk ea (l fØ; ifjogu }kjk) yknk tkrk gš Ýyke dh ; g ynku , d ty foHko id.krk dh 'kq vkr djrk gš tksfd Ýyke ea l kefgd idkg dks l øe cukrk gš

Ýyke Ård l ho V;w dks'kdkvka (pkykuh ufydk dks'kdk) l scuk gkrk gš tksyach lrbk dh jpuk djrk gš ft l od väre fhkfk ea fNnz gkrk gš ft l ga pkyuh i Vfvdk dgrsg dks'kdk nð; h rarq pkyuh i Vfvdk od fNnzea id s'kr gkrh gsrFkk l rr rarq cukrh gš ts sgh nðLFkrd nko Ýyke od pkyuh ufydk ea c<fk gš nkc idkg 'kq gsk tkrk gsrFkk nð (jl) Ýyke l spyu djrk gš bl chp od M ij vkusokys 'koDjk dks Ýyke l s l fØ; ; i l srFkk 'koDjk od ; i eackgj fd ; k tkrk gš Ýyke ea foys dh {kfr l s, d mpp ty foHko idk gkrk gš vks ikuh var ea tkbye od ikl vk tkrk gš

, d l k/kj.k iz kx] ft l sfxMfyax dgk tkrk gš ml dk iz kx Hkkstu od ifjogu ea gks okys Ård dks igpkuuseafd ; k x; ka i m+od lrbk ij Nky dk , d oy; (fjx) Ýyke rd l ko/kuhi od gVk; k tkrk gš uhps dh rji od vc Hkkstu dh xfr u gks od dkj.k oy; od Åij dh Nky od N l rkg od ckn i oy tkrh gš ; g l k/kj.k iz kx n'kzk gšfd Ýyke Ård Hkkstu od LFkkur j.k od fy, mlkjnk; h gsrFkk ifjogu dh fn'kk , d fn'kh; gš vfkz-ey dh rji od bl iz kx dks vkl kuh l sfd ; k tk l drk gš

I kjk k

i s' sfofHku vdkcud rloa (vk; u) , oa yo. wa dks vius vkl & ikl od i ; kbj.k l s fo'kldj] gol] ikuh rFk enk l s yrs gš bu i kldla dh xfr i ; kbj.k l s i s' l o e] rFk , d i s' s dh dks'kdk l s nð j s i s' s dh dks'kdk rd] vko'; d : i l s f>Yyh od vkj&ikj ifjogu od }kjk gsrh gš dks'kdk f>Yyh od vkj&ikj ifjogu] fol j.k] l d ke; ifjogu ; k l fØ; ifjogu od }kjk gkrk gš ey od }kjk vo'kkr [krut , oa ikuh dks tkbye od }kjk l pkr fd ; k tkrk gsrFkk i fuk; ka od }kjk l ays'kr dlcud inkrz ikni od fofHku Hkxla ea Ýyke od }kjk ifjogu fd, tkrsgš

fuf'Ø; ifjogu (fol j.k] ijkl j.k) rFk l fØ; l pj.k] thola ea i kldla dks f>fydkvlo od vkj&ikj l pkr djus od nkrjho od gš fuf'Ø; ifjogu ea fol j.k od }kjk f>Yyh od vkj&ikj fcuk Åtkz ; ; fd, i kldla dh xfr l krk id.krk od vuq kj gsrh gš inkrz dk fol j.k vdkj rFk ml od ty ea ; k dlcud foys u ea ?kyu'khyr ij fuHj djrk gš ijkl j.k , d fo'kkr idkj dk fol j.k gš ft l ea ty v/ l kjxE; f>Yyh od ikj tkrk gsrFkk nkc , oal krk id.krk ij fuHj djrk gš l fØ; ifjogu ea, Vhik dh Åtkz v. kvla dks l krk id.krk od fo: ¼ f>Yyh od ikj ia djrh gš ty foHko ikuh dh l fkr Åtkz gš tks ty dh xfr ea l gk; rk djrh gš ; g foys var%'kDr rFk nkc var%'kDr }kjk fu/krj gsrh gš dks'kdk dk ; g 0; ogkj vkl & ikl od foys ula ij fuHj djrk gš ; fn dks'kdk od vkl & ikl dk foy; u vfrijkl kjh gsrh thonð; o fpr gsk tkrk gš chtla , oa 'kq dks'kdk }kjk ty

dk vo'Wsk.k fo'Wsk izdkj oð fol j.k l s glrk gSft l s var%'Wsk.k dgrs gð

mPp ik/ka ea oðfgdk rak tboye vlg Ýyls e LFKularj.k oð fy, mUkjnk; h glrk gð ty [krut rFk ikSkd ikni 'kjhj oð vnj oðoy fol j.k }kjk l pkrj ughags l drsgð bl fy, ; sl ketigd izkg rak }kjk l pkrj glrs gð rRokadk l ketigd : i ea, d txg l snl jh txg ifjogu nksfcmy/ka oð chp nlc oð varj oð dkj.k glrk gð

ew jkela }kjk vo'Wsk'kr ty tMledh xgjkZeanksvyx&vyx iFka l stkrk gð mnkgj.WFZ& , ikyLV rFk fl elyKVA enk l sfofo/ vk; u rFk ty rusdh de ÅpkZ rd ewnkc l sifjofgr fd, tkrsgð ok'iRl tZ f[lpkoemy ikuh oð ifjogu dk l ok/d LohNir : i gð ok'i oð : i ea ikni oð foFHku Hkxla }kjk ikuh dk {k; ja'ka }kjk glrk gð rki} izdk'kj vknz'kj ok; qdh xfr ok'iRl tZ dh nj dls iHkfor djrh gð ikuh dh vf/d ek-ek ikni dh iFk; ka oð 'kr'iz l sfcnd ko oð }kjk fudkyk tkrk gð iknila ea Hkstu e[; r%'kodjk dk ifjogu mnxe l soeM rd oð fy, Ýyls e ftEenskj glrk gð Ýyls e ea LFKularj.k f)fn'kk; h glrk gS rFk mnxe rFk oðM l ea' ofoe; i w'z glrs gð Ýyls e ea LFKularj.k nlc&izkg ifjdYiuk oð }kjk of. kr fd; k x; k gð

vH; kl

- 1- fol j.k dh nj dls dks l s dkjd iHkfor djrs gð
- 2- ikshul D; k gS fol j.k ea ; s D; k Hkredk fuHkrs gð
- 3- iknila ea l fØ; ifjogu oð nlgku ikshu ia oð }kjk D; k Hkredk fuHkZ tkrh gð 0; k[; k djð
- 4- 'kq ty dk l dls vf/d ty foHko D; ka glrk gð o. kZ djð
- 5- fuEu oð chp varj Li"V dj&&
 - (d) fol j.k , oa ijkl j.k ([k] ik'iRl tZ , oa ok'ihdj.k
 - (x) ijkl kjh nlc rFk ijkl kjh foHko (?k) fol j.k , oa var%'Wsk.k
 - (p) iknila ea ikuh oð vo'Wsk.k dk , ikyLV vlg fl elyKVA iFk
 - (N) fcmq ko , oa ifjogu (vfHkxeu)
- 6- ty foHko dk l {kr o. kZ djð dks l s dkjd bl s iHkfor djrs gð ty] foHko] foys foHko rFk nlc foHko oð vki l h l ea'ka dh 0; k[; k djð
- 7- rc D; k glrk gS tc 'kq ty ; k foys u ij i; kZj.k oð nlc dh vi\$kk vf/d nlc ykxwfd; k tkrk gð
- 8- (d) j\$Widr fp-k dh l gk; rk l s ik/ka thond; oðpu dh fof/ dk o. kZ mnkgj.k nsdj djð ([k] ; fn ik/s dh dks'kdk dls mPp ty foHko okys foys u ea j[k tk, rls D; k glrk
- 9- ikni ea ty , oa [krut oð vo'Wsk.k ea ekOzjib tyh; (dodew l gthou) l ea' fdrus l gk; d gð
- 10- ikni ea ty ifjogu grq ewnkc D; k Hkredk fuHkrk gð
- 11- iknila ea ty ifjogu grq ok'iRl tZ f[lpkoemy dh 0; k[; k djð ok'iRl tZ fØ; k dls dks l k dkjd iHkfor djrk gð iknila oð fy, dks mi; ksh gð
- 12- iknila ea tboye j l kjkg.k oð fy, ftEenskj dkj dka dh 0; k[; k djð
- 13- iknila ea [krut oð vo'Wsk.k oð nlgku var'Ropk dh vko'; d Hkredk D; k glrk gð
- 14- tboye ifjogu , dfn'kh; rFk Ýyls e ifjogu f)fn'kh; glrk gS 0; k[; k djð
- 15- iknila ea 'kodjk oð LFKularj.k oð nlc izkg ifjdYiuk dh 0; k[; k dhft, A
- 16- ik'iRl tZ oð nlgku j{kd}kj dks'kdk [kyus , oa cm gks oð D; k dkj.k gðs