



# dk; kȳ; uxj i kfyd fuxe jk; x<+1N-x-1/2 id foKflr

## vku cku 'kku l s ygjk; k frjæk 0 uxj fuxe dk; kȳ; eaqvk /otkjkq.k

### jk; x<%

Loraerk fnol ds ekds ij uxj fuxe dk; kȳ; i Eke ry fLFkr cjenk ea vku cku 'kku l s frjæk ygjk; kA bl nkjku egki kȳ ekuuh; e/kq ckbZ us l Hkh depkfj; ka l s l nHkkouki dZl vi us nkf; Roka ds fuogZu djus dh vihy dhA

'kkl u ds funZkku d kj 15 vxLr fnu eayokj dks /otkjkq.k dk; Zde dsfy, l qg 7-30 dk l e; fu/kkZjr fd;k x;k Fkka bl ij uxj dh i Eke ukxfjd egki kȳ ekuuh; e/kq ckbZ us fuxe dk; kȳ; i Eke ry fLFkr cjenk ea r; l e; ij /otkjkq.k fd;kA bl nkjku dk; Zde dks l æk/kr djrs gq mlgkas Loraerk fnol ds bfrgkl ij izk'k Mkyrs gq l Hkh depkfj; ka o vf/kdkfj; ka l s l nHkkouki dZl vi us nkf; Ro o drD; ka dk fuogZu djus dh vihy dhA l Hkifr Jh 'ks[k l yhe fu; kfj; k us Loraerk l æke l sukfu; ka ds thoh ij izk'k Mkyrs gq l Hkh l s bækunkjh l s dk; Z djus dh l dYi yus dh ckr dghA bl ekds ij iHkkjh vk; Dr Jh vkjds



Hkkt fl ; kj dk; kȳ; v/khkd Jh vkj, u iVsy l fgr l Hkh mi vfhk; rk] i k'kzx.k] vf/kdkjh o depkjh cMh l q; k ea mi fLFkr FkA

gj jkst gks jgk nok fNMelko  
o l at; ekdV/ xqjkrh ikjk o brokjh cktkj ea pyk;k  
x;k fo'kSk l QkbZ vfHk; ku

jk; x<%&

ePNj ds izkSi l s fucVus gj jkst okMka ea nok fNMelko o fo'kSk l QkbZ vfHk; ku pyk;k tk jgk gA xqjokj dks l at; dkEiyDI ifjIj o xqjkrh ikjk ea fo'kSk l QkbZ vfHk; ku pykdj l kQ&l QkbZ djus ds l kFk nok fNMelko dj;k;k x;kA

'kgj ea yxkrkj eyfj;k o Mæw dh f'kdk; r dks nq[krs gq fuxe vk; q r Jh foukn ik.Ms us fo'kSk vfHk; ku pykdj nok fNMelko o l kQ&l QkbZ ds funk fuxe LokLF; foHkkx dks fn, gA LokLF; foHkkx }kjk okMZ okj fujrj nok dk fNMelko dj;k;k tk jgk gA gj okMZ ea ekg 15&15 fnu ds varjky ea nks ckj nok dk fNMelko dj;k;k tk jgk gA orzku ea okMZ dkd 34 o 35 ea nok fNMelko dk;Z py jgk gA



bl h rjg 'kgj ds cktjka ea Hkh fo'kSk l QkbZ vfHk; ku pyk;k tk jgk gA ctkokj dks brokjh cktkj ea l QkbZ vfHk; ku pyk;k x;kA bl nksku ; gka ukyka dh l QkbZ dV/sj l QkbZ dj Cyhfpax ikmMj o puk dk fNMelko dj;k;k x;kA bl h rjg cktkj ifjIj ea ePNj jkdFkke ds fy, esykFk; u jI k; u dk fNMelkok dj;k;k x;kA xqjokj dks l at; dkEiyDI o okMZ dkd 18 xqjkrh ikjk ea l QkbZ vfHk; ku pyk;k x;kA bl nksku l qg 6 l snki gj 1 cts rd cktkj ifjIj ea l kQ&l QkbZ dh xBA l QkbZ vfHk; ku ds nksku fuxe

vk; Ør Jh foukn ik.Ms Hkh mifLFkr jgA bl nk\$ku ukys dh I Qkbz  
 vk\$ dpjk Mái x txgka dh I Qkbz dh xbA I kFk gh Cyhfpax ikmMj o  
 puuk dk fNMelko fd;k x; kA bl ds ckn ePNj jkdFkke ds fy, nok  
 fNMelko djk;k x; kA fuxe vk; Ør Jh foukn ik.Ms us dgk fd 'kgj  
 dh LoPNrk fuxe izkkl u dh ftEenkjh g\$ y\$du bl dsfy, ukxfjdka  
 dks Hkh tkx: d gksuk iMxkA bl ea dpjk ugha Qsykuk] ikfyFkhu dk  
 mi ; kx ugha djuk] Mkj VwMkj dyD'ku okys txgka ij I v[kk o fxyk  
 dpjk vyx&vyx nuk 'kkfey gA mlgkaus dgk fd 'kgj ea ePNjka dh  
 jkdFkke ds fy, igys l s gh dk; z kstuk r\$ kj dj yh xbz Fkha fi Nys  
 nksekg l sfujarj okMbkj nok dk fNMelko djk;k tk jgk gA  
 &&&&&&&&&&&&

**Ik'kzh o ukxfjdka dk iek.k t: jh**

fuxe vk; Ør Jh foukn ik.Ms us crk;k fd nok fNMelko okMbkj  
 jk\$Vj vuq kj gj jkst fd;k tk jgk gA okMz  
 ea l gharjhds l s nok dk fNMelko g\$vk g\$; k ugha bl dsfy, ik'kzh o  
 ukxfjdka l s iek.k&i= yus l e\$kr 0; oLFkk Hkh dh xbz gA fNMelko  
 djus okys delz ik'kzh l s feyrs gA vk\$ muds fun\$kkud kj nok dk  
 fNMelko djrs gA nok fNMelko gkus ij ik'kzh ds gLrk{kj o l hy ; Ør  
 iek.k i= vk\$ ukxfjdka ds uke o irs l fgr gLrk{kj ; Ør iek.khdj.k  
 l e\$kr 0; oLFkk dh xbz g\$ tksfujarj tkjh gA

**I at ; ekd\$ o brokjh cktkj ea gks jgk gj jkst**  
**nok dk fNMelko**  
**0 fudkyk x; k ukys dk eyok] ePNj ekjus i kmMj o**  
**fyfDoM nkuka dk fNMelko**



jk; x<%

eyfj; k o Maxw ij dkcw ikus gj jkst l at; dklyDI o brokjh cktkj  
ea fo'kšk l QkbZ vfHk; ku pyk; k tk jgk gA l keokj dks ukys dk eyok  
fudkyk x; kA l kFk gh {ks= ea ePNj ekjus ikmMj o fyfDoM nksuka dk  
fNMeko dj; k x; kA

Maxw o eyfj; k dh f'kdk; r l at; dklyDI o brokjh cktkj {ks= ea  
T; knk fey jgh gA bl s ns[krs gg vk; Dr Jh foukn ik.Ms us ; gka  
fo'kšk vfHk; ku pykus ds funšk fn, gA bl ij yxkrkj pKksfnu nksuka  
txgka ea l QkbZ djkbZ xbA l keokj dks l qg l s gh vrfjDr l QkbZ  
delZ yxkdj ukys dh l QkbZ dj eyok dks fudyok; k x; kA bl ds ckn  
cktkj ea fLFkr l dMjh dpjk dyD'ku ikbZ dks iwkZ% l QkbZ djkbZ  
xbZ vkš {ks= ea ePNj dks ekjus ikmMj o fyfDoM nksuka dk fNMeko  
dj; k x; kA b/kj l QkbZ njksk }kjk Hkh vius&vius {ks= ea nok  
fNMeko dj; k tk jgk gA l keokj dks okMZ dekad 30 cktjko  
egjikjk] dshetMk] ekšnkikjk] l ekf/k xyh] HkV/ku xyh ea Lis ia }kjk  
nok dk fNMeko dj; k x; kA bl h rjg okMZ dekad 32 ds QVgkeMk]  
fiz n'kZuh uxj dgjk ikjk] cd xyh] ik"kn xyh] okMZ dekad 41  
NkrkeMk cLrh] l gnoikyh cLrh] fVdjikjk ea Lis ia l s nok dk  
fNMekok dj; k x; kA b/kj iSyk jkM ea eyfj; k QSyus dh f'kdk; r  
feyus ij {ks= dh l QkbZ l fgr ikmMj o fyfDoM nksuka dk fNMeko  
dj; k x; kA

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## **Ukxfjdka dh l rQVh t: jh**

fuxe vk; Dr Jh foukn ik.Ms us dgk fd 'kgj ea tgka Hkh l QkbZ o  
nok fNMeko gks jgk gš ogka ukxfjdka o {ks= ds tui fufuf/k; ka dh  
l rQVh t: jh gA bl fy, gh nok fNMeko dk; l ea yxs dfeZ ka dks  
iek.k&i = ukxfjdka o ik"knka l s vyx&vyx ysus ds funšk fn, x,  
gA l QkbZ o nok fNMeko l s l rQV gkus ds ckn gh ukxfjd o  
tui fufuf/k uke] gLrk{kj o l hy ; Dr iek.k&i = nsjgs gA

# vk; Ør us yh cPpka dh Dykl



0 cPpka dks i <kus ds

I kFk yh dk\$ky ijh{k

0 Ldwy ea t: jh

I Øo/kvka dk fy; k

tk; tk

jk; x<%

x#okj dks vk; Ør Jh foukn ik.Ms us dkM/rjkbZ ek/; fed 'kkyk dk fujh{k.k fd; kA bl nk\$ku vk; Ør Jh ik.Ms us cPpka dh Dykl yus ds I kFk dk\$ky ijh{k Hkh yhA bl h rjg cPpka ds 'k\$kf.kd o ekufI d fodkl dsfy, miyC/k I Øo/kvka dk tk; tk fy; kA

'kkl u }kj k Mk- , ihts vCngy dyke f'k{k xqkoRrk vfHk; ku ds rgr Ldwyka ea fujh{k.k dj k; k tk jgk gA 'kkl u us i= fy[kdj vk; Ør Jh foukn ik.Ms dks ek/; fed 'kkyk dkM/rjkbZ dk fujh{k.k dj fjiks/Z I kA us dh ckr dgh FkhA bl ns[krs gq vk; Ør Jh foukn ik.Ms us dkM/rjkbZ Ldwy dk fujh{k.k fd; kA bl nk\$ku vk; Ør Jh ik.Ms us igys I Hkh d{k kvka ea ntZ o mi fLFkr cPpka dh I ; k dh tkudkj yhA bl ds ckn , d ds ckn , d d{k kvka ea cPpka dks vxsth o xf.kr ds I keku; tkudkj nhA Dykl yus ds ckn cPpka dk dk\$ky ijh{k Hkh yh xbA vk; Ør Jh ik.Ms us cPpka dks I æk\$kr djrs gq dgk fd I Eeku ikus dsfy, I Eeku nsuk iM/rk gA vki Hkh viuh iqr] dkih o f'k{k ds I kekuka dks ftruk I Eeku nA mruk gh oks I c Kku ds : Ik vki dks I Eeku nA i<+fy[kdj gh , d vPNk ba ku vk\$ ns k dk , d vPNk ukxfjd cuA bl fy, [k eu yxkdj i<kbZ djA mUgkaus LoPN Hkkjr fe'ku dh tkudkj nrs gq dgk fd I Hkh cPpka dh ; g ftEenkjh g\$fd os vius ?kj o vkl &ikl dh I QkbZ j[kA u [kys ea 'kk\$ tk, a

vkj u gh ifjokj o iMkd dsfdl h dks [kys ea 'kkp djus nA LoPNrk  
dk l h/kk iHkko LokLF; ij iMrk vkj LokLF; l s gh LoPN efL"d dk  
fuezk gksrk gA Jh ik.Ms us bl nksku fe'ku Dyhu fl Vh ds vrxr  
l [kk o fxyk dpjs dks vvx&vyx j [kus vkj nks MLVchu ds mi ; kxs  
djus dh vihy dhA bl ds ckn 'kkl u }kjk miyC/k QkeV ds vk/kkj  
ij Ldny iz/kkuikBd l s cPpka ds ekufi d o 'k{kf.kd fodkl ds fy,  
miyC/k l qo/kkvka dk fl yfl ykj tk; tk Hkh fy; kA fujh{k.k ds nksku  
l gk- tul i dz vf/kdkjh y{ehukjk; .k fo'odekz o vk; q r fut l gk; d  
Jh l fer dskjokuh Hkh mi flFkr FkA

&&&&&&&&&&&&&&&&&

**e/; klg Hkstu dh Hkh l eh{k**

fujh{k.k ds nksku Ldny ea cPpka ds fy, cuus okys e/; klg Hkstu dh  
Hkh l eh{k dh xbA bl nksku dhpu ea e/; klg Hkstu cukus dh l qo/kk  
vkj miyC/k [kkn; l kexh dk ijh{k.k fd;k x; kA bl h rjg r; esuw  
vuq kj e/; klg Hkstu dh miyC/krk dh tkudkjh Nk=ka l s yh xbA  
l Hkh cPpka us e/; klg Hkstu ds esuw l s l r qVh tkfgj dhA

&&&&&&&&&&&&&&&&&

**dkSky ijh{k ea [kjs mrjs Nk=**

fujh{k.k ds nksku d{k 6oha 7oha o 8oha ea , d ds ckn , d dkSky  
ijh{k yh xbA bl nksku vxsth ds iks e] vxsth Li fya o fefuax]  
xf.kr o foKku ds l keku; izuka ds l kFk fgnh ds fucak fy [kok, x, A  
l Hkh d{k kvka ds cPpka us dkSky ijh{k ea cgrj in'ku fd; kA