

kf7 !

9f8 ePsf / 9f8 gePsf hgij /x;

s]ltdln]cfçgf]z/l/sf]k5fl8 5fðbf alrdf s8f xf8 ePsf]cgej u/\$f
 5f} sxl hgij / / dflg; x; sf]z/l/sf]k5fl8k6k6sf]alr efudf /x\$]bfpsf]v
 hffBP/ sDd/; Dd /x\$]hndf]xf8 g}9f8 xf]. o; nf0{d?b08 klq elgG5 . ltdln]
 cfçgf]3/ j /k/ o:tf 9f8 ePsf hgij /x; bly\$ 5f}
 hgij /x; lj leGg k\$f/sf xG5g\ Ps k\$f/sf hgij / csf]k\$f/sf hgij /; u
 gfk, cfsf/ / agfðdf km/s xG5g\ xfd] j /k/ dVo u/L b0{k\$f/sf hgij /x;
 5g\ sg}hgij /sf]z/l/df 9f8 xG5 t sg\$]z/l/df 9f8 xG5 . uf0{e}l,
 sv'/f, ss', df5f, ; k{ Eofut] k/]f cflb 9f8 ePsf hgij /x; xg\.
 lrknl]s/f, u8ðf, k'tnl, Ç6ðf^aðf, dfs'/f cflb 9f8 gePsf hgij /x; xg\

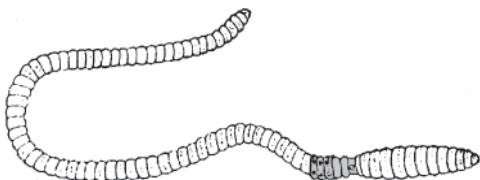


9f8 ePsf hgij /x; sf]z/l/leq xf8 xG5 . To; h]loglx; sf]z/l/ bxf]
 xG5 . 9f8 gePsf hgij /x; sf]xf8 xG5 / loglx; sf]z/l/ g/d xG5 .
 hgij /sf z/l/sf]; Dk0f{xf8x; sf]; dñnf0{s^asf -skeleton_ elgG5 .

ltdln] cfçgf] 3/ j f lj Bfno j /k/ 9f8 gePsf hgfj /xç klg bly\$ f
 xfhf . lenuf, nfdv6ç] lrkn]s/f, u8çfhf cflb 9f8 gePsf hgfj / xg\ ltdf]
 3/, lj Bfno / 5/l5d\$sf j /k/ xf8 gePsf hgfj /xç klg wj}5g\ xf8
 gePsf sxl hgfj /xçsf] ; /lffsf nflu aflx/l s8f vfhxç xG5g\
 h:t}M z^av]s/f, ; lkl, uü6f cflb . gf^auf cfvfn] gblvg] AofS6l/of h:tf
 ; -; fgf hlj blv lnP/ uü6f, lj R5L, z^av]s/f, u8çfhf h:tf hlj xç xf8
 gePsf hgfj / ; dçdf k5ç\ o; /l hgfj /xç nf0{9f8 ePsf / 9f8 gePsf
 u/l dVotof b0{; dçdf lj efhg ul/Psf]5 .

xf8n]z/L/nf0{cfwf/ lb65

xfdl s; /l 7f8f]eP/ pleg ; s\$ f 5fç s]ltdln]lj rf/ u/\$ f 5fç xfdlnf0{
 pleg uf8fsf]xf8n] ; xofu u5{eg] 9f8sf]xf8n]7f8f]eP/ pleg dbt
 u5{. xf8 gePsf]hgfj / xf8 ePsf]hgfj /h:tf]7f8f]eP/ pleg ; Sbç . s]
 ltdln]lrkn]s/f, u8çfhf 7f8f]eP/ plePsf]bly\$ f 5fç



xf8n]z/L/nf0{lgIzrt cfsf/ lb65

sfxl dflg; clunf] sfxl dflg; k8\$ f] s; \$f]lhp 7hf]/ s; \$f]lhp ; fgf]
 lsg xG5 xfhf < xf8n]c8çfpg]dfq xf0g, xfdl]z/L/sf]sb 7hf]j f ; fgf]
 kfgdf klg dbt u5{. xf8n]g}dflg; sf]sb -prf0_ / cfsf/ lgwf{0f
 ub5 . 9f8 / uf8fsf xf8 nfdf eP dflg; sf]sb s:tf]xfhf < nfdfnfdf xf8

ePsf dflg; cUnf / 5f6f xf8 ePsf dflg; k8sf x65g\ sS' / dflg; sf] cfsf/ lsg leGg ePsf]xf]f < dflg; sf]cgxf/ klg xf8sf]cfsf/sf sf/0f Pscsf6 km/s ePsf]xf].

IzIfOf lgbZg M

sXl ls/fx₂ h:tM z^av]s/f, uf]s/f cflbsf]z/l/sf aflx/ s8f vf]h x65 t/ of]9f8 xf0g eGg] hfgsf/l lbgxf] \

Ijpfsnfk !

ltdf]j l/kl/ kf0g]lj leGg k\$ f/sf hgfj /x₂sf]cj nf\$g u/l 9f8 ePsf / 9f8 gePsf hgfj /x₂df s\$]km/s kfp5f} 5nkm u/ .

Ijpfsnfk @

cfCgf]3/ j f lj Bfno j /k/ kf0g]kfrkfrcf6f 9f8 ePsf / 9f8 gePsf hgfj /x₂sf]; Fl tof/ u/ .

cEof; !

7ls j fSodf -3_ / a]ls j fSodf -5_ lrÅg nufpmM

-s_ z/l/sf]k5f8k66 sDd/ / 6fpsfsf]alr efudf kf0g]xf8nf0{9f8 eGb5g\

-v_ 9f8 ePsf hgfj /x₂sf]lg|Zrt cfsf/ x65 .

-u_ xf8n]z/l/nf0{g/d / alnof]agfp5 .

-3_ xf8 gePsf hgfj /x₂sf]z/l/ s8f x65 .

cEof; @

vfnl 7fpdf ldNg]zAb e/ M

-s_ xfdl]z/l/sf]k5fl8sf]alrsf]s8f efunf0{==== eGb5g\

-v_ xfdlnf0{uf8fsf xf8x₂n]pleg dbt u5{eg]9f8sf]xf8n]==== /xg
; xofl₄ u5{.

-u_ km/skm/s hgij /sf]xf8sf]cfsf/ ===== xG5 .

-3_ 9f8 ePsf hgij /x₂sf]z/l/leq ===== xG5 .

cEof; #

tnsf k₂gx₂sf]pQ/ n₂ M

-s_ 9f8 ePsf / 9f8 gePsf hlj x₂alr b0cf₇ km/s n₂ .

-v_ xf8sf b0cf₇ sfdx₂ n₂ .

-u_ xf8x₂sf sf/0fn]dflg; x₂ s; /l Pscsf₆ km/s xG5g\

-3_ s^asf₅fn eg₃sf]s]xf]<

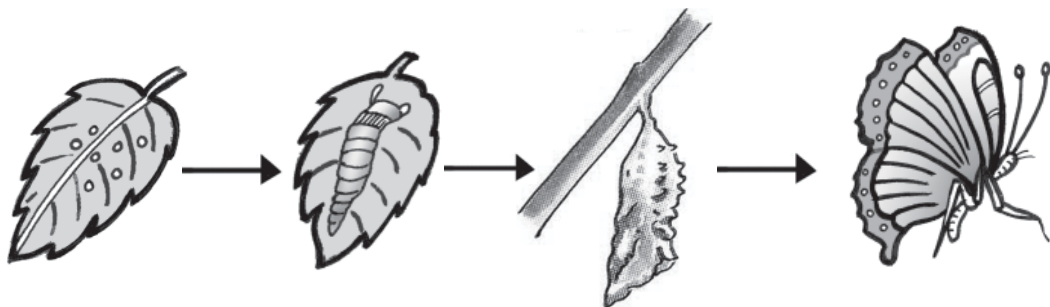
kf7 @

klm kfg/ aRrf hGdfpg]hgj /x;

sv'/fsf]klmaf6 rNnf lg:s\$fb]y\$ 5f} < ltdf]3/ j f l5d\$df ePsf ss',
la/fnfn]klm kf5{ls aRrf kfp5 < ltdln]slxNo}lj rf/ u/\$f 5f} < ; a}
; hlj x;n]cfklh:t}hlj kf ub5g\ o; nf0{ ; Gtfg pTkfbg eGb5g\
; hlj n]; Gtfg pTkfbg gug[ePsf]eP s]xGyof]xfhf <



; Gtfg pTkfbg ug{; hlj sf nlf0fdWo]Pp6f dVo nlf0f xf]. hgj /n]aRrf
hGdfP/ j f klm kf/] ; Gtfg pTkfbg u5g\ hgj /x;n]; Gtfg pTkfbg gug[e
xf]eg]o; sf]cl:tTj g}/xg]lyPg .

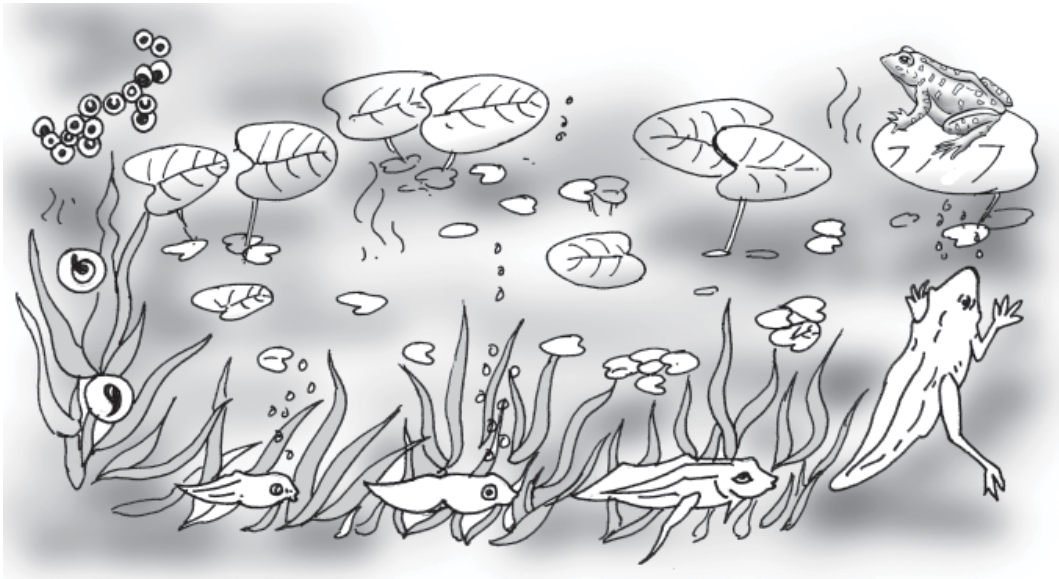


klm

nfef{-en; nls/f_

kokf

k'tnl



Eofutfsf]hlj grj 卞

sgsg hgij /n]kln kf/\$f]b]y\$ 5f<
 kln kfg[hgij /n]klnaf6}aRrf lgsfN5g\ kln kfg[hgij /x¿dW0]s; 卞]
 klnnf0{5fk}] Gofgf]agf0/fv\$]ltdln]b]y\$}xfnf . kfpM r/fx¿n]klnnf0{
 Gofgf]agf0/fv g kv¿f klnfP/ 5fk}] a:g]u5g\ o; /l rNnf sf9g klnnf0{
 5fk}] a:bf kf]lnf0{cf]y/f]a; \$f]elgG5 . o; /l a:bf dfpn]u8sf]5pdf
 k/\$f]klnnf0{v6&f / rRrfh]tfg] dfendf kf5{. klnnf0{sv'/fn]5fk}]
 /fv]k]5 lhpsf]tftf]kln tf5 . klnnf0{Gofgf]kfl//fv g; s]To; leq rNnfsf]
 lj sf; x¿g . To; 卞]; w]kln 5fk}] /fv5 . o; /l kln Gofgf]kfl/; s\$]sl/a @!
 lbgdf To; af6 rNnf lg:sG5 . hgij /x¿n]klg xfdln]h:t}cfÇgf]aRrfsf]
 x]lj rf/ / arfj 6 u5g\

df5f, Eofutfn]sxf"kln kf5g\xfnf < s]ltdl eGg ; S5f< df5f / Eofutfn]
 kfgldf kln kf5g\ ls/f kn6f"v]x¿n]la?j fsf kftx¿df kln kf/] 5f85g\ ol
 klnx¿nf0{sd tfk rfxg]ePsfn]; 卞af6 kf(t tfkn]o; nf0{Gofgf]agf0/fv5 .
 df5f, Eofut'f, ; k{/ ls/f cflbn]r/fn]h:tf]kln / rNnf j f ar]fsf]:ofxf/
 ubg\

aRrf hGdfpg]hgfj /x;

ltdln]sgsg hlj sf aRRfx; b\sf 5f< tl aRrfx; aRrf g]k\ ePsf xg\ ls k\haf6 lg:s\sf xg\s]ltdl eGg ; S5f< hgfj /x; sg\]k\haf6 aRrf sf]N5g\eg]sg\]aRrf g]hGdfp5g\ ss/, la/fnf h:tf hgfj /n]k\ kfbg\ loglx;n]k\leq}lj sf; ePsf]aRrf hGdfp5g\ e}ln]kf8f]jf kf8lnf0{ rfl6/x\sf]b\sf 5f< aRrf hGdfpg]hgfj /n]cfCgf]aRrfnf0{:ofxf/; ; f/ u5g\ aRrfnf0{dfpsf]bW r'; fp/ xsfp5g\ loglx;n]cfCgf]aRrfnf0{ ; k\ ; U3/ /fvgsf ; fy}zq\af6 arfp5g\ ss'/n]cfCgf 5fp/fx;nf0{bW r'; fPsf]t b\sf]x\rf . 5fp/fnf0{rnfpb\ l/; fp/ es\sf]klg ofb u/\sf x\rf . uf0{ dflg; , ss/, 5rGb\ d; f, rd\rf] Aj h cflb hgfj /x;n]aRrf hGdfp5g\ aRrf hGdfPk15 bW r'; fp/ xsfp5g\ o; /l lj leGg hlj hgfj /x;sf]; Gtfp pTkfbg ug\]tl/sf km/skm/s xG5 .

Izlf0f lgb\g M

; Dej eP Eofutfn]k\ kfg\; dodf Eofutfsf k\hx; ; a\ng u/l k\haf6 r\kfuf8f / Eofutf s; /l lj sf; xG5g,\b\fpgx\ \

Ij\pfsnfk !

cfCgf]3/ j l/kl/ kf0g]k\ kfg\kfrcf\ hgfj /x;sf]; Fl tof/ u/ .

Ij\pfsnfk @

cfCgf] 3/ j f lj Bfno j l/kl/ kf0g]bW r'; fpg]kfrcf\ hgfj /x;sf]; Fl tof/ u/ .

Ij\pfsnfk #

tn lb0Psf hgfj /x;dWo]cfCgf aRrfx;nf0{x\]lj rf/ / :ofxf/; ; f/ ug\ / gug\5b\dfpm M

Aj h

dfp; hl

sfu

dflg;

df5f

la/fnf]

; k{

k/]f

ss/

Eofutf

vfñ

r/fx;sf s:tfs:tf u8 ltdln]b]y\$ f 5f} vfñ / c]nf\$gsf cfwf/df
lrq agfpm. tl u8x; agfpg s\$]j:t\$ f]køf] ePsf]5, kQf nufpm.

cEof; !

7ls j fSodf -3_ / a]ls j fSodf - 5 _ lrAg nufpmM

-s_ uf0ñ]aRrf hGdfp5 . - _

-v_ Eofu'tfn]kftdf kñ kf5{. - _

-u_ df5fn]kñ kf5{t/ kñsf]x]rfx ubø . - _

-3_ kfpM aRrf kfpq]; h]j n]cfçgf aRrfnf0{bW r'; fp5g\ - _

cEof; @

hføf ldnfpmM

-S_

-V_

-c_ d'; f

- _ kfgldf kñ kf5{.

-cf_ k/]f

- _ aRrf g}kfp5 .

-0_ df5f

- _ la?j fsf]kftdf kñ kf5{.

-0{ ktnl

- _ kfgldf kñ kf5{clg :ofxf/ u5{.

- _ u8df kñ kf5{/ kñsf]:ofxf/ u5{.

cEof; #

tn lb0Psf hgfj /x;dWo]sgn]kñ kf5{/ sgn]aRrf hGdfp5, 5bdfpmM

8fkñ

u8f

afvñ

rd]f]

xf",

k/]f

uf0{

3f8f

af3

e8f

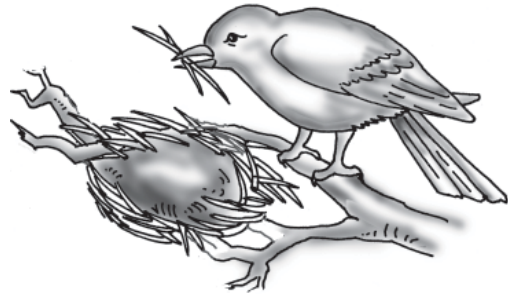
cEof; \$

tnsf lraq xyl jnd ldnfpmM

-S_



-V_



-u_



-3_



cEof; %

-s_ sv'/fn]h:t}ltdf]j /k/ kf0g]sgsg hgfj /n]klnaf6 aRrf sf95g\ ; f]w / Itgsf gfd n]y .

-v_ ss'/n]h:t}ltdf]j /k/ kf0g]sgsg hgfj /n]aRrf h6dfp5gV b'w r' fp5g\ Itgsf gfd n]y .

cEof; ^

- s_ aRrf kfpq]; hlj x¿n]cfçgf aRrfsf]:ofxf/ s; /l u5g\
- v_ r/fn]kln kf/kl5 aRrf glg:s] Dd s; /l x]rxf u5g\
- u_ klnsf]x]rxf gug]sg}rf/cfçf hlj x¿sf]gfd n\ . Itglx¿n]r/fsf] h:tf]klnsf]:ofxf/ ug{kbo, lsg <

vfh

- s\’/f kflnPsf]7fpdf u0{x] j f ; fvk5 u/l tn lb0Psf s’/fx¿ kQf nufpmM
- s_ s\’/f slt dlxgfsf]ePkl5 kln kfg{yfn5 <
 - v_ cfyf/f]a; \$f]slt lbgkl5 rNnf sf95 <
 - u_ s\’/fn]Ps k6ssf]cfyf/f]a:g] ; do; Dddf ; fdfGotof sltcfçf kln kf5{<
 - 3_ ; a}klnaf6 rNnf sf95 ls sf95g <
 - a_ sg\$g}klnaf6 rNnf aGg g; Sgfsf sf/0f s\$]xg ; S5g\