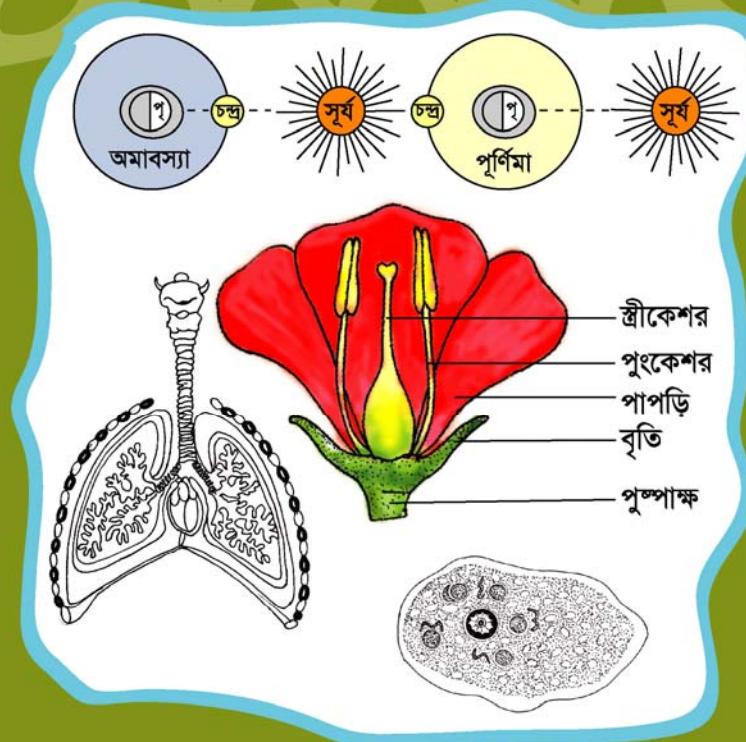


বিজ্ঞান

সপ্তম শ্রেণি



জাতীয় শিক্ষাক্রম ও পাঠ্যপুস্তক বোর্ড, ঢাকা

RvZxq wkp̄ug | cWc̄K teWc̄KZK 2013 wkp̄veI c̄_tK
mB̄g tk̄Yi cWc̄K i tc̄ bañi Z

weÁvb

mB̄g tk̄Y

i Pb̄v

m¤úv` bv

RvZxq wkPvug | cW'cýÍK teW© XvKv |
 RvZxq wkPvug | cW'cýÍK teW©
 69-70, gZISj ewYR"K Gj vKv, XvKv-1000
 KZK cKwKZ |

[cKvkK KZK me©^Zj ms i wPZ]

cwi Pvgj K ms^-< i Y :

cÜg gy Y : tm‡P¤^i , 2012Bs

KwúDUvi K‡¤úR
 Kyj vi M¤d.

cÜQ`
 my k¤ evQvi
 mRvDj Av‡e` xb

Qwe A½b
 wU‡Uv

wWRvBb
 RvZxq wkPvug | cW'cýÍK teW©

mi Kvi KZK webv‡j " weZi ‡Yi Rb"

gy ‡Y :

Ch_½-K_v (vid)

RvZxq Dbøtb wkpvi fngKv AZxe iyzcY® Avi G Dbøb GKwU wbierQbaPj gvb cñuqv| -vaxbZv DÉi
eisj v- tki Dbøtb AævnZ avi vq RbM®Yi Avkv-AvKv0Pv, Av_©mvgwRK I mvs<ñZK Rxebcœvn
cWcý ÍK cñZdñj Z nq, tmB j†P MwZ RvZxq wkpviug | cWcñPx cñqb KrgwUj i mçwi kptg Awki
`kÆKi cñi fæc cñvZQ nq wbgœgrawgK | grawgK -Íti i wkpvi_®`i Rb bZb cWcý ÍK |
mncWcý ÍK |

„xN©mgq aſi mnclVcý ſK cPjy Z wQ | wKš' Avgiv Rwb RvZxq AMmZi -^#_©wK¶v e'e-'wK
MwZkxj , Rxebgjx I hJmcthMx Kivi Rb" wK¶vug I ciV'mPi avivewnK ms- | bevqb cÖqjRb | G
cÖqjRtbi K_y wetePbvq títL lô, mBg I Aog tkIMi evsj v mnclVcý ſK 0Abv` ciVØ bvtg ms- |
bevqb Kiv n tqfQ | G bevqb cÖqjvq me©vB tKijg gjZ wK¶v¶` i fvij j Mv, Abv` j vf | ÁvbvRØtK
. i‡Zj m‡½ wetePbv Kiv n tqfQ | i ay ZvB bqÑ Avgv‡` i mgvR-ms-Z, BwZnm | HwZtn`i m‡½l
bvbm‡† thb Zv‡` i ciV Pq N‡U, tm w KwlJ wetePbv Kiv n tqfQ | Abw` tK Aog tkIMi wK¶v¶` i
Dc‡hMx K‡i wekjmwnZ t‡K AwUJ Kwnbx msKwj Z n tqfQ | cÖZuJ Kwnbx wbeP‡bi t¶‡† wPinqZ
Rxeb, mZ" | tm§` h©Zvrch©YFvte cÖzdij Z n tqfQ wK bv tm w KwlJ i‡Zj mv‡ wetePbv Kiv n tqfQ |
cÖZuJ t¶‡† fvI MZ mnR mjej xj Zv | MwZkxj Zv i¶v Kivi tPov Kiv n tqfQ | G MÖS' evsj v GKvWgxi
evvbi wZ Abjmi Y Kiv n tqfQ |

¶¶¶¶¶gi AvtjvK gj "qbK Avti v dj cñ~Kivi Rb † tki maxRb | ¶¶¶¶¶M¶Yi cingtk¶ tc¶¶¶¶Z
mi Kvi x mñší Abñwqx cñZu Aa"qtk¶l eñbePib | mRbkxj cñkomsfhvRb Kiv ntq¶Q| cñZvkv Kiv
hvq, GtZ ¶¶¶¶¶gj "bfpZv eujvstk nmv cüte Ges ¶¶¶¶¶Zvi AwRZ Ávb | Abaveb ev-Íe Rvetb
cñqM Ki¶Z ev thKvfbv nel qtk¶ Pvi netkøl Y A-ev gj "qb Ki¶Z cvi te|

Avgiv Rwb ~~wkPv~~ug Dbq̄b GKwU avivewnK c̄l̄gv Ges Gi wFÉtZ cVc̄yÍK iPZ nq| Kv̄RB
cVc̄yÍK Av̄i v Dbaq̄bi Rb" th̄Kv̄bv MVbgj K I h̄j³msMZ c̄vngk^o, iZjí mv̄_ nētePZ nte|
2021 mv̄j ^vaibZv mȳRqšÍxtZ c̄l̄wkZ mḡv̄ evsjv̄ k Mto tZj vi wbiší c̄Póvi m½x mn̄mte
~~wkPv~~ i m̄p̄z neKv̄k eZḡvb ms- <i t̄Y ḡj³h̄j³ c̄KZ BwZnm I tPZbv c̄Z- 'wicZ n̄q̄tQ| AwZ Áí
mḡtqi ḡta" c̄wicwRZ cVc̄yÍK, t̄j v c̄Kv̄k Ki t̄Z M̄q wKQy T̄WU-nePwZ t̄tK th̄Z c̄ti | cieZ^o
ms- <i t̄Y cVc̄yÍK, t̄j v Av̄i v mȳ, tkv̄fb I T̄Juḡ Kivi tPóvi AēvnZ _VKe|

hui v GB cW'cȐKw i Pbv, m̄cv` bv I thši³K gj̄qb, mRbkj c̄k̄e c̄qb I c̄Kvbvi Kv̄R Av̄šom̄ Kf̄te tgav I k̄g w̄ tqtQb, Zut̄ i RvbvB ab̄ev` | h̄t̄ i Rb̄ cW'cȐKw c̄xZ nt̄j v, Avkv Kw̄i Zv̄v DcKZ nt̄e |

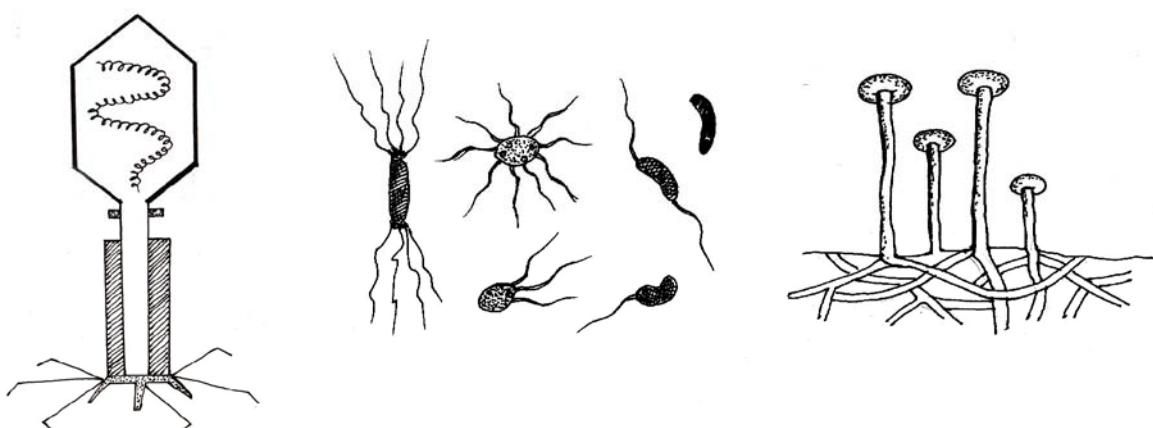
c̄dm̄i tḡt t̄gv̄ Ídv Kv̄gv̄ D̄v̄i b
t̄Pq̄v̄ ḡv̄b
Rv̄Zq̄ w̄k P̄v̄ug | c̄w̄c̄y ZK tew̄c̄ Xv̄Kv̄

mPcÍ

Aa iq	Aa iq wktivbvg	cþv msLü
cög	wbgkñYi Rxé	1-10
WZxq	Dw™c I cØYxi tKvI xq msMVb	11-22
ZZxq	Dw™t` i ewn"K ^enkó"	23-31
PZl [©]	kþb	32-40
cÄg	cwi cVZšč Ges i³ msenbZšč	41-53
Iô	c` v‡_P cVb	54-65
mßg	kí³i e"envi	66-79
Aög	k†ai K_l	80-89
beg	Zvc I ZvcgvÍv	93-98
kg	we`jr I Pz^tKi NUbv	99-109
GKv` k	cwi cwkR cwi eZø I newfbøNUbv	110-120
Øv` k	tmši RMr Avgv‡` i cwl_ex	121-131
Í‡qv` k	cÖKwZK cwi tek Ges `+Y	132-142
PZi R	Rj evqycwi eZø	143-159

cõg Aa"vq wbgoetkñi Rxé

fñBivm, eñKtñwi qv, QñvK, ^kevj, Añger BZñññ K wbgoetkñi Rxé ejv nq| Gñ` i gñta" fñBivm, eñKtñwi qv | Añger AyexññY hñsj mñvhñ Qrov t` Lv hñq bv| Giv AyRxtei Añfñp | KQyñKQyQñvK I ^kevj Lvj tPñL t` Lv tMñj | AwñKusk QñvK I ^kevj t` LñZ AyexññY hñsj mñvhñ jñM | Gme Aw` Rxé gñbñ, Mncñj Z cñ cñL | A_Rix Dñññt` i tñM mñó Kti | Averi cñtñtñk Gñ` i AtbñK DcKvix fñgKñl iñqñQ |



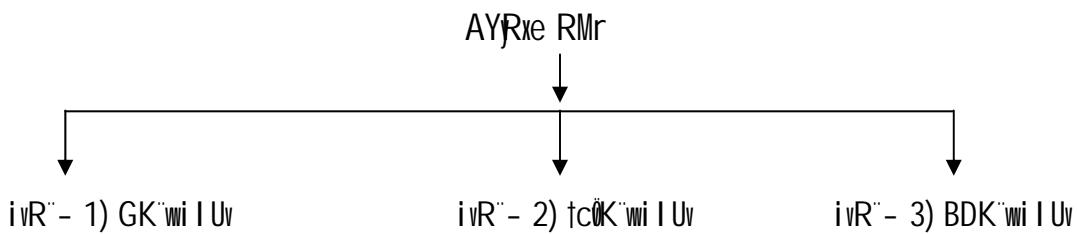
Aa"vqi cñW tkñl Avgiv

- AyRxtei ^enñkó" eñLñ KiñZ cñie |
- AyRxtei tkññebñm KiñZ cñie |
- fñBivm, eñKtñwi qv | Añgeri ^enñkó" eñLñ KiñZ cñie |
- gñbet` tn "ñññ SñK mñóñZ fñBivm, eñKtñwi qv | Gñgevi fñgKñ eñLñ KiñZ cñie |
- fñBivm, eñKtñwi qv | Gñgevi KññY mñó gñbet` tn "ñññ SñK cñññtñva Ges cñññKñ eñLñ KiñZ cñie | cñññKñi wñR mñPZb nñe Ges Abññt` i l mñPZb Kñter |
- ^kevj | QñvKi %enñkó", DcKvix Zv | AcKvix Zv eñLñ KiñZ cñie |
- Kxññte QñvK msñgñY cñññtñva Kññ hñq eñLñ KiñZ cñie |
- QñvKRñbñZ tñM msñgñYi wñtñq wñR mñPZb nñe | Abññt` i mñPZb Kñter |

cW-1, 2 : AbRxe RMr

Avgut[†] i Pvi cvt^k evZv^m KZ th AYRxe Qwofq Av^q Zvi wK tKvb Lei Avgiv iwl? tPvtL † Lv hvq Ggb Rxtei tPtq tPvtL † Lv hvq bv Ggb Rxtei msL^v A^tbK tekx|

AYRxe Lwj tPvflL t` Lv hvq bv| Gf` i t` LfZ ZvB cflqvRb AYxepTY htšči | fvBivm RvZxq AYRxe
mvari Y AvtjvK AYxepTY htšči t` Lv hvq bv| Gf` i t` LfZ ntj PvB Btj KUb AYxepTY hšči gvi ,wj m |
ubtUKvi cAiivR cfl-vebvq AYRxe ,tj vK gtbiv, tcflvK vR -'vcb Kti qb| eZ@vbKvjtj
AYRxe MY AYRxe RMrtK vZbvU vR fM Kiv nq|



iR⁻¹ : GK'wi I Uv ev A‡Klqx : Gme AYRxe GZB tQw th Zv mwavi Y Av‡jvK Abjex¶Y htšj
wb‡PI t` Lv hvq bv| G‡ i t` L‡Z B‡j KUb AYer¶Y htšj c‡qyRb nq, thgb- fvBivm|

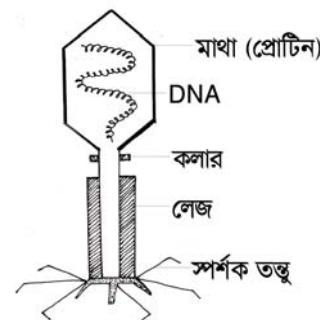
iR⁻²: tcOKwi | Uv ev Aw~ tKvlx : th me AYRxt ei tKvt i tKw`Kv mMNZ bq Zvi vB G ivtR i
m`m` | mMNZ tKw`Kv bv _vKvq Gt` i tKvl tK Aw~ tKvl ej v nq, h_v- e"vKtUwi qv|

iR-3 : BDK wi | Uv ev cKZ tKv x : thme AbRx e tKv i tKv mWZ Zt i B cKZ tKv ej |
^kej , Q tUv Rqy G ai tbi AYRx e

bZb kā : GKʷwi | Uv, tɕökʷwi | Uv, BDKʷwi | Uv, AYRxe, fVBi|m|

CW-3, 4 : fvbim | evKtUwiqv

wbDwKK GimW I tc Ub  iv MwZ A Z  i  ci Rxex hv i  agv  RxeZ
tKv I B Rxetbi wKQy wKQyj  Y c k Kti ZviB fvBivm|  fvBivm  A_ 
weI | Btj K Uib AYx   Y h ; Qov G  i t_ Lv hq bv| fvBivm t_ tn tKvI
c Pxi , cuRgutj gv, msMwZ wbDwKewm, mvB UciRg BZ ` wKQB tbB|
ZvB fvBivm t_ n K AtKvI xq etj | Giv i  agv  tc Ub AveiY I wbDwKK
GimW (WGbG ev Avi GbG) wb q MwZ| fvBiv mi gv_v, tjR I  ukRZ 
_ K| fvBivm, wi KUm, Q vK, e vK Uvi qv, ^kevj, tc UvRvqv BZ `
w fb  ai Yi AYRx  Avgv ` i cwi tejk Qw tq wQw tq Av Q| Giv
A wKskB Avgv ` i DcKvi Kti | Z e wKQy wKQy AYRx  Av Q hviv Avgv ` i
t_ tn t M m o Kti | Givi Avgiv K qKwU AbRx  m u K Rvbe|



WPI-3.1 : GKU fvBi vñ KU YKv

Giv mij Zg Rxel | Gi t`n c̄ávZ Awgl | wDwKK GmW Øvi v MwZ | Awgl Avei Y t_‡K wDwKK GmW tei n‡q tM‡j Giv Rxtei mKj j¶Y nwi‡q tdtj | Zte gRvi e^vci nj th, thB ḡl G‡ i GK† Kiv nj Agib Giv Rxtebi me j¶Y wdti cte|

fBivm : fBivm cKZ ci Rxex A_F Rxet`n Qov G‡ i tKvb Aw-Zj Kí bv Kiv hq bv | Rxet`tni evBti Giv Rxtebi tKvb j¶YB cKvk K‡i bv|

KvR : GKU fBivm Gi wP† tcvóvi Km‡R G‡K newfbœAsk wPiyZ K‡i t` qv‡j Uwb‡q `vl |

fBivm tMyj vKvi, `ÜvKvi, e^vOwPi b^vq, cvDiJi b^vq n‡Z cv‡i | fBivm gvbe t` tn emš-, nvg, mw, Bbd‡qÄv BZ^w` tiM mjo K‡i | av‡bi Us‡iv | Zgv‡Ki tgvRv‡qK tiM fBivm Kvi ‡Y nq | emš-, nvg, mw, BZ^w` evqewmZ tiM |

e^vK‡Ui qv : e^vK‡Ui qv wKQy K_v Avgiv c‡eP tkiY‡Z tR‡bvQ | Gevi GKUz we^-mi Z Rvbter | e^vK‡Ui qv nj Aw wDwKewmhjP, AmeR, GK‡Kvix AYex¶wYK Rxel |

meÁvb A^vUib dY wj D‡qb nK me^c‡g e^vK‡Ui qv
t`L‡Z cvb | e^vK‡Ui qv tKvI tMyj vKvi, `ÜvKvi, Kgv
AvKvi, c^vP‡bv BZ^w` bv bv ai‡Yi n‡Z cv‡i | t` tn
AvKvi AvKvZi wF‡Z G‡K wgi‡c tkyx Kiv nq :
K) K°m : tKvb tKvb e^vK‡Ui qv tK‡I i AvKvZ
tMyj vKvi | Giv K°m e^vK‡Ui qv | Giv GKKf‡e A_ev
`j‡eta _vK‡Z cv‡i, thgb- wD‡gbqy tiM mjoKvix
e^vK‡Ui qv |

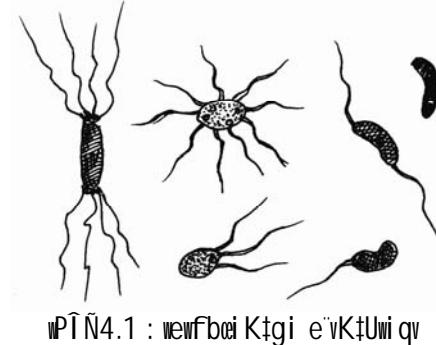
L) e^v‡m : Giv j^v `‡Üi b^vq t`L‡Z | abyosKvi,
i^v‡v‡kq BZ^w` tiM Giv mjo K‡i |

M) Kgv : Giv euKv `‡Üi b^vq AvKvZi e^vK‡Ui qv | gv‡j i K‡j iv tiv‡Mi e^vK‡Ui qv G ai‡Yi |

N) ^vBvij^g : G ai‡Yi e^vK‡Ui qv‡gi AvKvZ c^vP‡bv |

e^vK‡Ui qv DcKvi Zv :

- gZ Rxet`n | AveRbv cP‡Z mnvh K‡i |
- GKgv† e^vK‡Ui qvB cKvZ t_‡K gwU‡Z bvB‡U‡Rb ms‡i ¶Y K‡i |
- cvU t_‡K Avk Qov‡Z GKgv† e^vK‡Ui qv mnvh K‡i |
- `B ^Zvi Ki‡Z | e^vK‡Ui qv mnvh w‡Z nq |
- newfbœRxebi ¶vKvi x GvUer‡qwUK ^Zvi nq |
- M‡el Ym‡i wRb cÖKš‡j Gi , iZj Acwi mnq |



wP†N4.1 : newfbœ K‡gi e^vK‡Ui qv

cW-5-6 : ^kev̄ | Q̄v̄K

^kev̄ : mgv̄½ e‡MP c̄wbZ tK̄t̄iwdj h̄B | ^‡fvRx Dv̄M¢ iV̄B ^kev̄ | Gi v̄ A†j w̄KZ ^'v̄b cQ̄` K̄i | Gi v̄ ḡU, c̄wb I Ab̄ M̄‡Qi Dci Rb̄‡Z c̄t̄i |

Ḡt̄ i t̄n GK̄t̄Kv̄x ev̄ eūt̄Kv̄x n̄Z c̄t̄i | Ḡt̄ i t̄n tK̄b c̄w̄ emb K̄v̄ _v̄K b̄ | Gi meR, jv̄, ev̄ vḡ BZ̄w̄ b̄b̄v̄ i‡0i n̄Z c̄t̄i | mḡ‡ev̄ c̄K̄i Ḡt̄ i 0c̄‡4Ub̄ w̄nt̄m̄te t̄ Lv̄ hv̄q |

Ḡt̄ i c̄z̄iU tK̄l t̄‡KB th̄šv̄½ m̄o n̄Z c̄t̄i | Gi v̄ A†šb I th̄šb Dc̄t̄q esk e‡x K̄i | 0̄w̄Bt̄iM̄Bv̄ th̄ tK̄t̄b̄ Rj v̄kt̄q c̄v̄ qv̄ hv̄q | el‡K̄t̄j Ḡt̄ i AwaK msL̄v̄q t̄ Lv̄ hv̄q |

DcK̄wi Zv̄ : mgv̄K ^kev̄ t̄‡K Ḡv̄‡Rb c̄' Z K̄v̄ nq̄ hv̄ A†Bm̄v̄ug ^Zv̄‡Z ēen̄vi K̄v̄ nq̄ | A†q̄w̄b I c̄Uw̄kq̄t̄gi GK̄U fv̄j Drm mgv̄K ^kev̄ | grm̄ Pv̄‡I d̄v̄B‡Uv̄c̄‡4Ub w̄et̄kl f̄gK̄v̄ i‡L | Gi c̄wb AskB ^kev̄ |

AcK̄wi Zv̄ : Gi v̄ KLbI ḡvb̄j I Dv̄M‡` i t̄iM m̄o K̄i | Pv̄v̄Zv̄i t̄iW iV̄‡ GK̄U ḡiv̄ZK t̄iM| c̄K̄i ^kev̄ I q̄Uv̄iey m̄o K̄i | dt̄j Rj R c̄Oy I ḡ‡Qi Aw̄ ‡Rt̄bi Af̄ve nq̄ |

Q̄v̄K : Avḡv̄ tR̄t̄b̄Q Q̄v̄K AmeR mgv̄½‡`nx Dv̄M¢ | t̄n tK̄t̄iwdj tbB Zv̄B Gi v̄ m̄‡j v̄Kms‡kH̄Yi ḡva‡g Lv̄‡%Zv̄i Ki‡Z c̄t̄i b̄ | GRb̄ Q̄v̄K c̄‡fvRx Dv̄M¢ | A_‡P Lv̄‡`i Rb̄ Zv̄‡i R̄v̄eZ A_ev̄ ḡZ Rxet̄‡ni Dci w̄fP̄ Ki‡Z nq̄ |

ḡZR̄ex Q̄v̄K ^Re c̄‡v̄‡cY‡ḡU ev̄ ḡZ Rxet̄‡tn R̄t̄b̄‡ em̄, cPv̄ Lv̄‡`ē, dj gj̄, kv̄K-m̄eR, t̄fRv̄ iU, t̄fRv̄ Pv̄gov, t̄M̄ei BZ̄w̄‡Z Rb̄‡q̄ |

Ḡt̄ i t̄n GK̄t̄Kv̄x A_ev̄ eūt̄Kv̄x m̄‡v̄Kv̄i | GK̄t̄Kv̄x Q̄v̄K w̄fv̄Rb, em̄ws BZ̄w̄ c̄‡uq̄q esk wē-v̄i K̄i |

Q̄v̄‡Ki A_‡b̄w̄ZK , iZj : Q̄v̄K Avḡ‡i AcK̄vi I DcK̄vi `‡Uv̄ Kv̄RB K̄i | tc̄wbim̄j bmn eū gj̄ ev̄b JIa Q̄v̄K t̄‡K c̄v̄B k̄‡eaR Av̄iM̄U w̄gKPvi Q̄v̄K t̄‡K c̄v̄ qv̄ hv̄q | c̄DiU t̄dij‡Z C‡ b̄gK Q̄v̄K ēen̄vi K̄v̄ nq̄ | C‡ w̄fUw̄gb mḡx ej̄ Uv̄et̄j U w̄nt̄m̄te ēen̄vi K̄v̄ n‡0 | GM̄wi K̄v̄ eZ‡q̄b tm̄‡Lb Lv̄‡` ej̄ w̄et̄ePZ | eZ‡q̄b Avḡ‡i t̄ km̄ eū t̄‡k Gi Pv̄l K̄v̄ nq̄ |

Lv̄‡`‡ēi cPb I t̄iM m̄o‡Z Q̄v̄K L̄eB cU‡ ḡvb̄j, Rx̄eR̄‡I Dv̄M‡`i eū t̄i‡Mi Rb̄`v̄q̄ GB Q̄v̄K | AveR̄‡v̄ cP‡q ḡU‡Z tgkv̄‡ZI Ḡt̄ i f̄gK̄v̄ i‡q‡0 |

Q̄v̄K ḡvb̄j, c̄i c̄v̄Lx I A_‡Rix dm̄‡j i t̄iM m̄o K̄i _v̄K | `v̄ | Qj x (t̄Qj g) Q̄v̄‡Ki A†ug‡Y n‡q _v̄K | ḡvb̄j i k̄ymbv̄j xi c̄v̄n m̄o Ki‡Z c̄t̄i | Dv̄M‡` i t̄iM m̄o‡Z Q̄v̄K L̄eB `¶ | thgb- Av̄j j wej w̄‡Z aYmv̄ t̄iM, c̄‡Ui Kyj c̄w̄E t̄iM, A†Li jv̄j cPv̄ t̄iM m̄o K̄i | Gi v̄ mn‡RB K̄v̄ I teZ ev̄e‡ki Amevec‡ cP‡q t̄dij Avḡ‡i ¶‡Z K̄i |

Q̄v̄K msugb c̄‡t̄iAkiY : w̄fboai‡bi Q̄v̄K w̄fboai‡bi t̄iM m̄o K̄i | Gme t̄iM t̄‡K w̄bi‡`v̄ _v̄K‡Z th̄U mePvB‡Z , iZ‡cY‡Zv̄j w̄Kf̄te t̄iM R̄xeYjQ ov̄q tm̄ m̄‡u‡K‡fj av̄i b̄v̄ iV̄L | Q̄v̄K RbZ t̄iM L̄eB t̄Qq‡P | A_‡P A†uš- e‡w̄3i ms̄‡u‡k‡G‡j G t̄iM ms̄u‡gY n‡Z c̄t̄i | GRb̄ hv̄ hv̄ Ki Yxq Zv̄ w̄t̄get̄`qv nj t

- `v` ev Qj x (tQvj g) Aþmuš-e~w³i e~eüZ KicoþPico e~envi bv Kiv|
- gv_ví LjwK GK aiþbi Q~vK RwbZ t~M| Gi t~K e~PþZ Aþb~i wþbx ev Pþj i eik, wKe, BZ~w` e~envi bv Kiv| GgbwK Aþb~i Uic hv c~Moxl e~envi bv Kiv|
- G~þj Um&dU t~vM c~þi i c~þqi Zj v w~kI K~i t~Mowj t~dþU h~q| G aiþYi t~Mx th tgþSþZ n~tU tmLwþb Lwj c~þq bv n~Uv|
- Aþmuš-gvþþi i m~t_ tgj~gkv Kg Kiv Ges tgj~gkv ciciB m~verb w~þq n~Z g~L I c~w~v~vi Kiv|
- Dw~M~t` G Q~vþKi AþugY n~j J~a w~QUþbv A~ev Dw~M~w~UþK Z~j c~þþq t~dj v|
- k~mbuj xi msþgb t~vta c~Zi~t~t~k~evi c~þþeb c~w~þZ K~j Kiv|

A~wgev : tc~M~v i~R~i m~m~ A~wgev GK~KvI x c~Yx| G~i t~n ~P~i K~i | A~y~v~b h~S~Q~v G~i t~L~v h~q bv| Giv m~v~v~Y t~n~i A~K~i c~w~e~Z~þ~ K~i~Z~c~i | t~n t~K~A~v~Z~þ~j~i b~v~q w~K~Q~y~A~s~M~ ~Z~i~n~q~| G~i~ ~P~Y~c~ e~j~| Gi~ m~v~v~t~h~ A~wgev~ L~v~M~Y~ I~ P~j~v~P~j~ K~i~| G~i~ t~n~c~w~b~M~n~Y~i~, L~v~M~n~Y~i~ I~ m~s~t~K~v~P~b~M~n~Y~i~ _~v~K~| Gi~ m~v~v~t~n~G~K~v~U~c~Z~j~v~ I~ ~~Q~c~P~v~v~t~N~v~_~v~K~| G~t~K~c~R~g~t~j~g~e~v~n~q~| A~wgev~c~w~b~þ~Z~ m~v~Z~m~v~þ~Z~ g~w~U~þ~Z~ c~K~i~i~ Z~j~v~ c~P~v~ ~R~e~R~v~i~ g~t~a~ R~þ~b~þ~| c~P~v~c~w~b~h~þ~ t~W~þ~b~i~ K~v~i~ g~t~a~ G~i~c~v~l~q~h~q~| thgb A~wgev~tc~M~q~v~m~(Amoeba proteus)| Gi~ K~v~Z~c~q~m~m~t~M~m~ó~K~i~| thgb G~U~w~gev|

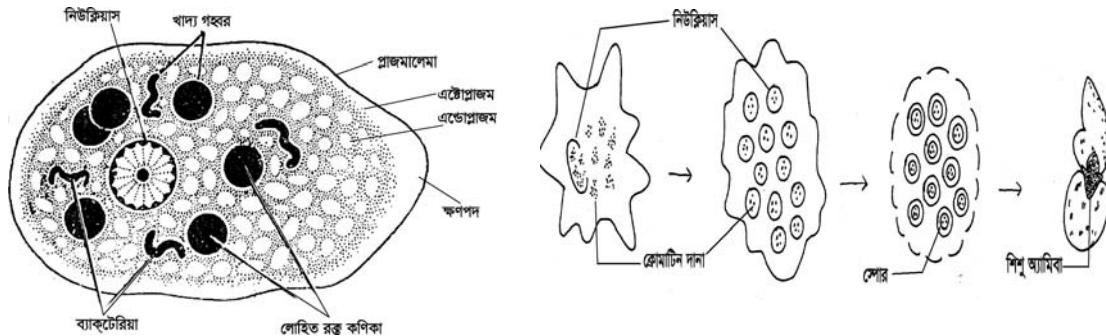
c~R~b~b~ : Giv m~v~v~Y~ A~t~h~þ~b~ D~v~þ~q~ eske~w~x~ K~i~| A~t~h~þ~b~ c~R~b~b~Z~: ~þ~a~i~þ~b~i~h~v~-~t~K~v~l~w~f~v~R~b~ I~t~ú~v~i~m~þ~ó~| t~K~v~l~w~f~v~R~b~A~w~g~e~v~i~t~K~v~l~w~U~ ~þ~f~v~M~w~f~v~3~n~q~G~e~s~ ~þ~v~U~A~w~g~e~v~i~m~þ~ó~K~i~| t~ú~v~i~m~þ~ó~i~t~P~i~t~K~v~l~i~w~b~D~w~K~v~m~ A~t~b~K~_~t~j~v~f~M~n~þ~q~ ~P~i~ ~P~i~w~b~D~w~K~v~m~þ~ó~K~i~| c~i~c~Z~i~w~b~D~w~K~v~m~K~Q~y~c~w~g~b~m~v~B~t~U~v~c~R~g~w~b~þ~q~w~k~i~A~w~g~e~v~M~v~K~i~| G~c~x~w~Z~þ~Z~G~K~v~U~t~K~e~u~A~w~g~e~v~D~r~c~b~v~q~|

c~V~7 : Avg~k~q~t~i~v~M~i~K~v~Y~

Avg~k~q~t~i~M~m~v~v~Y~Z~ ~þ~a~i~þ~Y~i~ , h~v~-~G~g~w~E~K~ I~ e~w~m~j~w~i~| e~w~m~j~w~i~ Avg~k~q~i~ K~v~Y~w~t~m~t~e~G~K~a~i~þ~Y~i~e~w~m~j~w~i~e~v~þ~w~i~q~þ~K~ ~v~q~K~v~i~n~q~| G~U~w~g~e~v~b~g~K~G~K~a~i~þ~Y~i~G~K~v~l~x~c~Y~x~i~A~u~g~þ~Y~G~g~w~E~K~Avg~k~q~n~þ~Z~þ~K~|

G~U~w~g~e~v~:

G~U~w~g~e~v~G~K~a~i~þ~b~i~G~K~v~l~x~R~x~| m~v~i~t~K~v~g~w~w~t~M~þ~d~v~i~v~ (sarcomastigophora) c~þ~þ~A~s~í~M~L~w~j~t~P~þ~L~G~i~t~L~h~q~bv| G~i~t~n~i~t~K~v~b~w~v~G~A~v~K~v~Z~b~v~B~K~v~Y~G~i~v~A~w~g~e~v~b~v~q~A~v~K~v~I~A~v~K~v~Z~m~e~v~B~c~w~e~Z~þ~K~i~Z~_~v~K~| G~i~t~n~ ~~Q~t~R~j~x~i~b~v~q~| K~L~b~I~K~L~b~I~c~Z~K~j~c~w~t~e~k~G~i~t~M~v~j~v~K~v~i~K~3~A~v~i~þ~Y~w~b~þ~R~i~t~n~t~X~þ~K~i~v~L~| G~A~e~ ~v~q~G~þ~K~w~v~ ÷~e~j~| K~L~b~I~t~j~w~n~Z~K~v~Y~K~v~I~e~v~K~v~w~i~q~t~K~v~I~G~i~v~L~ ~i~c~M~v~Y~K~i~|



MP1 - 1.3 : G>Ungew

WPT - 1.4 Gigaevi eufvRb cÖuqv

Giv gwbj, eub i RvZxq cÖy, weovj, KKj, t̄Ki | B`‡i i en` v‡ši evm K‡i | m̄wavi Yfv‡te Giv ¶WZKi
bv ntj | t̄Kjb GK ARvbj Kvi †Y gw‡S g‡a" Aigikq tiv‡Mi m̄o K‡i |

KvR : GKU A^Wgevi t^Witj kb c^WI Z tc^WUvi KvM^WR A^WY K^Wi te^WW^WUb^Wtq `vI

GÜNGEYEV TKIL WEFLRb | AYEXR(t-úvi) mío i gva:tg eske:ix Kti | t-úvi:j kb cxi:ZtZ GKU tKvli
tc:tUcRg eULtU wef³ n:q ¶i:¶i:AYEXR ev t-úvi Mvb Kti | AbKj ci:tetk Giv cÖZtK GKU
bZb AYGEV inm:te eo nq| GigileK Argikq cÖZtiva KitZ wbtge c:t¶c:tj v wbtZ nte :

- K) gjZv‡Mi ci Ges LvI qvi Av‡M mvevb ev QvB w‡fq fv‡j vf‡e nvZ a‡Z n‡e |

L) nv‡Zi bL w‡qwgZ tK‡U tdj‡Z n‡e |

M) wei x c‡w cwb cwb Ki‡Z n‡e Ab„_vq cwb d‡U‡q tL‡Z n‡e | bj K‡ci c‡wl w‡ivc` ZvB mi v‡wi cwb
Ki v, tMv‡j I evmb tavqvi Kv‡R e„envi Ki v hvq |

N) -v-“m‡‡Z c‡qLbv e„envi Ki‡Z n‡e |

cW - 8, 9 : -γ-'' SiK mјóťZ AbRxtei fнgKv

e"vKtUwi qv RxevYj t` nvf"Š#i newfbecuqvq c"ek Ki‡Z cr‡i | Acwi®<vi nvZ n‡Z cr‡i RxevYj Rb" GKwJ myeavRbK evnY | hvi gva"fg mn‡RB Giv gtMnY‡i X‡K th‡Z cr‡i | Avgiv th Rvgv KvcO e"envi Kwi Zv‡Z tj‡M e"vKtUwi qv i t"uvl "vbuŠ#i Z n‡Z cr‡i |

evZvfm th ajvewij Dto teovq Zvi mv‡_ A‡Z mn‡RB e¤K‡Uwi qv ev Zvi t-úri GK -"vb t‡K Ab -"vb th‡Z cv‡i | Avgiv ci-ú‡i i mv‡_ t`Lv n‡j mv‡g t`B | nvZ ugjvb| nvZ tgjvbvri gva‡gI e¤K‡Uwi qv GKRb t‡K Ab‡R‡b A‡Z mn‡R -"vbvši Z ntZ cv‡i | cPv | evmx Lv‡`i gva‡g RxerYy

KvR : †Zvgvi v †Zvgv‡ i M̄ig N‡i † L tKvb tKvb ewo‡Z -^~"m¤§Z cvqLvbv i †q‡Q | Zvi GKU
Zwj Kv Ki Ges h‡` i -^~"m¤§Z cvqLvbv tbB Zw‡` i Ge`cv‡i m‡PZb Ki Ges †Zvgvi Kv‡Ri eYBv
wj †L †` LvI |

MögÅtj AtbK -'vþb -'v-''mɔ̄sZ cvqLvb tbB Ges Gme AÂtj gvbþl gw ev Kipv cvqLvb eenvi Kti |
GUmgevq Avþvš-eW³i gj gvtVi gwUþZ wgtk hvq | G gwU nvZtþj ev G gwUþZ th meR PvI Kv nq
ZtþZ Gme RxevYy tM _vtK | meRi wfZtþl Giv cœk Kti | iþbi ci l tLv hvq H RxevYy ZLbI
teþP AvþQ | G fvþe GUmgev msþwngZ nq |

fívBívm Øvi v Ávjuš-n̄tj AþbK mgq 2/4 w` þb Ggjlb Ggjlb t̄iM t̄mti hvq | Zt̄e wKQygvivZK t̄iM AvtQ
hvi Rb` xNqgq` x wPwKrmvi c̄qqRb nq| nwp, Kwkki gva`tg mw` °Kwkki fívBívm Qovq| ms-úk®vi v
DwM t̄ i tgvRvtqK t̄iM Qovq| Avevi GBWn t̄iM GKevi n̄tj Avi wbiwgq nq bv| Am- t̄iMxi i³ MðY,
gv` K MðY, GK mBtq eû tjvþKi BbtRKkvb MðYI AmvgwRK KgRvtÛ G t̄iM Qovq| gvgm& nvg,
emš-BZw` LþB KóKi t̄iM fívBívmRwbZ G mKj t̄iM evZvtmi gva`tg Qovq Ges Avgvþ` i
kjmbij xZ c̄lek Kti| Gfvþe bvbv gva`tg fívBívm m-` t̄ i n c̄lek Kti|

cW-10 : gwbet̚ tñ AYRxe mó -γ- "Sik cöztiva | cöZkvi

fiBim, eñKtUwiqv, QñiK | Gñmgev thme tiM mñó Kti Zvi cñZtiva | cñZKvi KiñZ nñj
mñpñj Zfñte "ñ" iñvi wbggñj hZmnñKti cñjb KiñZ nñt | gñb iñLñZ nñt `yñ "ñ" tiMñpñs-
nñqñi SiñK tekñ enY Kti | ZB mKtji DiñPr mñg Lñ "cñqñRb gZ wbgwñZ MñY Kiv|

KvR : tZvgvi tk*Y*i hv*t* i bL eo, hviv AvR `vZ eik Ktiw Z*t*^h i Zwj Kv evbvI Ges G e*v*c*t*i
Z*t*^h i m*t*PZb Ki |

í aytm̥m̥Z Avi g̥v̥Q tL̥t̥j B Zv̥ m̥g L̥t̥`í Nv̥w̥Z c̥Y nq bv̥| GKBm̥t̥_ Zv̥Rv̥ kv̥Kme̥R tL̥t̥j Z̥teB m̥g L̥t̥`í Nv̥w̥Z c̥Y nq| wfUw̥gb | L̥wbR j̥eY m̥y̥v̥`í | t̥iM c̥o̥Z̥t̥iv̥t̥ai Rb̥ L̥eB̥ i̥y̥C̥Y̥® Gici Av̥t̥m̥`í|m̥x̥Z̥ c̥v̥qL̥b̥v̥ e̥en̥vi, ^v̥`í w̥ella t̥gt̥b̥ n̥v̥Z̥ | g̥l̥ c̥w̥i®<vi Kiv̥, w̥bq̥w̥Z̥ `íZ̥ e̥lk̥ Kiv̥, n̥t̥Z̥i b̥L̥ Kv̥Uv̥ | m̥ve̥b̥ e̥en̥vi K̥t̥i t̥M̥m̥j̥ Kiv̥| iv̥`í Nv̥t̥U h̥t̥Z̥í _y̥ev̥ Kd̥ bv̥ td̥j̥v̥| c̥ Pj̥t̥Z̥ w̥et̥k̥l̥ K̥t̥i aj̥v̥v̥j̥ y̥D̥o̥t̥Q̥ Ggb̥`í v̥t̥b̥ Pj̥v̥P̥t̥j̥ i̥ mg̥q̥ Aek̥B̥ g̥v̥`í ev̥ i̥g̥y̥ e̥en̥vi K̥i̥t̥Z̥ n̥t̥e̥| n̥w̥P̥ ev̥ K̥w̥k̥ t̥`í q̥i̥ mg̥q̥ Aek̥B̥ g̥l̥ | bv̥t̥K̥ i̥g̥y̥ P̥c̥v̥ w̥t̥Z̥ n̥t̥e̥| i̥g̥y̥t̥j̥ m̥w̥®g̥o̥t̥j̥ Aek̥B̥ ev̥m̥q̥ w̥d̥t̥i̥ Zv̥ ḁj̥q̥ td̥j̥t̥Z̥ n̥t̥e̥| t̥Z̥g̥i̥v̥ m̥x̥e̥ n̥t̥j̥ bv̥K̥ S̥t̥ovi̥ Rb̥ w̥Um̥y̥ t̥cc̥v̥ e̥en̥vi K̥i̥t̥Z̥ c̥v̥i̥| Av̥v̥š̥-e̥w̥`í e̥en̥h̥®K̥v̥ w̥K̥Q̥y̥ e̥en̥vi ev̥`ík̥®G̥w̥t̥q̥ Pj̥v̥ D̥w̥Pr̥| L̥ve̥i̥ c̥w̥b̥ w̥b̥i̥v̥`í n̥l̥q̥ L̥eB̥ Rij̥x̥| K̥t̥j̥ iv̥, w̥B̥d̥t̥q̥W̥ B̥Z̥`í

e^uK^uU^u qv m^o t^uM t^uK e^uP^uZ Aek^uB^ubiv^u c^uwb e^uenvi K^utZ n^ut^u| c^uwb K^uv, t^uM^um^uj | K^uco K^uP^uv,
e^uwb t^uav^u qv BZ^uw^u i R^ub^ubiv^u c^uwb e^uenvi K^uv D^uPr| A^ut^um^uK^ug^u³ w^uUDel t^uq^ut^ui c^uwb biv^u | c^uK^u
I b^ux^u c^uw^u[®]<vi c^uwb l e^uen^ut^ui i c^ut^ue^uf^ut^uj v f^ut^ue d^uut^uq w^utZ n^ut^u|

gvb) I cii cwl Avvus-ntj Zt` i wPkrmv KivtZ nte| Zte fvBim, thgb ewndzntj cwl tgti
gwUtz ctZ iLtz nq| gWKvD | Aib_i. tiM Avvus-Miy-gin|| tgti tdjv DPr KviY Gi wPkrmv
PjvKj xb mgtaq Abib cii Avvus-ntZ cti |

KvR : †Zvg‡` i Mög N‡i †` L †Kvb †Kvb ewo‡Z †bivc` cwb‡i e‡e-`v i‡q‡Q| bv _K‡j c‡q‡Rbxq
Ki Yxq m‡úK‡Av‡j vPbv Ki |

GjvKvi mevBtK ~v~ m¤Z füte Rxeb hvc tb DrmwnZ Ki tZ nte | Kxfüte Gme RxevYgvbet` tn xtk
cto Ges wK Ki tj Gt i cÖZtiva Kiv hvte tm m¤utKwbtR fij füte Rvb tZ nte | we vj tq, gmwRt` ,
gw` ti , tljvi gvV, nvU, evRvti thLvtb tjvK mgwMg tekx tmLvtbB G we tq AvtjvPbv ii yKiv hvq | G
e vci i gvbj tK mRwM KivUb mefkö cÖZtiva ti wmuš-nij AekB ZtK GKRb fij wPKrm tKi wKU
w t q cingk wbtZ nte | cÖqRtb JIa tmeb Ki tZ nte | nvZto w3vii wPKrmvq ti wbiq tqi e` tj
ti wRuj -ti tcitQ hvq | G e vci i tZgvf` i AtbK ` wqZj i tqtQ |

G Aa ütq wK wLj vg :

- fñBim, eñKñUwi qv, QññK, Aññgev BZññ ` mñgotkññi Rxæ |
 - fñBim AññKvI xq Rxæ |
 - fñBim, eñKñUwi qv, QññK, Aññgev BZññ ` tñM mññóKvi x Rxæ |
 - cñb, evqy | Acññ "QbñññZ tñM RxæYyQovq |
 - -^--' mñññZ fññe Rxæb hñcb tñM cñññiva Kññi |

Ab~~j~~^{xj} bx

‘i b’-’b cɪY :

1. gubſt i UvBdum tivtMi Kvi Y ÑÑÑÑÑÑÑÑÑÑÑÑÑÑÑÑÑÑÑÑÑÑ |
 2. Avgvkkq tivm mjoKvix AYRxteti bvg |
 3. Rxes-†-tni evBt i tKvb Rxetbi j¶Y cKvk Kti bv|
 4. bvgK Q†vK cvDiui Kvi Lvbg eñni Kiv nq |
 5. `UvKuZi eñKtUi qv‡K etj |

msvPβ DĒi cōkæ

1. cōKZ ci Rxex K_ví A_øK?
2. e᷇vK‡Uvi qvRvbZ Pri vu tiv‡Mi bvg vj L|
3. AYRxex Kvñiv?
4. tKvb tKvb Dcv`vb vbtq fvBiv‡mi t`n MvZ?

eūmbePib cōkæ

1. vD‡gwbqv tivM mjoó K‡i tKvb e᷇vK‡Uvi qv?

K. -úBvi jvg	L. e᷇wmjvm
M. K°vm	N. Kgv
2. ^kevj e᷇eüZ nq-
 - i. AvBmug cō' ZKi‡Y
 - ii. g‡Q P‡l i t‡l‡†
 - iii. Jla ^Zvi Ki‡Z
3. vbtPi tKvbvU mWV?

K. i l ii	L. i l iii
M. ii l iii	N. i, ii l iii

DīxckvU cto 3 | 4 b¤^i cōki DĒi `vI :

Zv‡i K AvL Lv̄vi mgq j¶" Kij Av‡Li Mv‡q jvj `vM cto‡Q | Zvi ever ej‡jb GvU GK ai‡bi ci Rxex Rx‡ei Kvi‡Y mjoó nq |

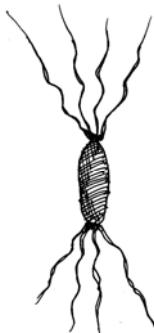
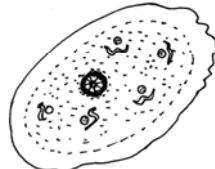
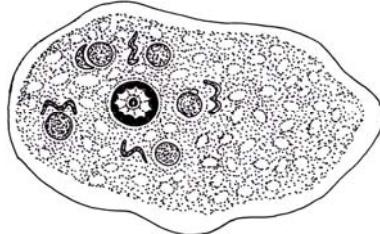
3. Dīxck‡Ki ci Rxex RxexU mjoó K‡i -
 - i. tiv iv÷
 - ii. UmKqvi cōvn
 - iii. gv_ví Ljv‡K
4. vbtPi tKvbvU mWV?

K. i l ii	L. i l iii
M. ii l iii	N. i, ii l iii
4. Zv‡i‡Ki j¶" Kiv tivMvUi Rb" tKvbvU `vq?

K. Q†vK	L. ^kevj
M. e᷇vK‡Uvi qv	N. fvBivm

m̄Rbk̄j c̄k̄e

1.



A

B

1.2 ēvK̄t̄Ūw̄i q̄

A

B

- K. ^kēj K̄?
 L. 0̄vK̄t̄K ḡZRx̄x ej̄ v nq̄ t̄Kb?
 M. A 0̄iv m̄ō t̄iM c̄iZ̄t̄īt̄ai Dc̄q ēvL̄v Ki |
 N. B Ȑw̄ZK̄vi K̄ R̄x̄ nt̄j I c̄i t̄ēt̄ki Rb̄ ḠŪ īZ̄c̄Ȳn̄ȳmn̄ t̄Z̄ḡv̄i ḡZ̄ḡZ̄ `v̄l̄ |

2. t̄m̄t̄nj Bbd̄t̄q̄Āv̄q Av̄p̄v̄S̄-n̄t̄q̄t̄Q | Z̄v̄i ēv̄v̄ Z̄t̄K n̄w̄P I K̄w̄k̄ t̄` I q̄v̄i mḡq̄ īḡv̄j ēv̄v̄i K̄i t̄Z̄ ej̄ t̄j̄ b̄ |

K. f̄vB̄īm̄ K̄?

L. f̄vB̄īm̄t̄K Āt̄K̄v̄īq̄ R̄x̄ ej̄ v nq̄ t̄Kb?

M. t̄m̄t̄nj t̄K īḡv̄j ēv̄v̄i K̄i t̄Z̄ ej̄v̄i K̄v̄Y ēv̄L̄v̄ Ki |

N. t̄m̄t̄nj t̄īm̄Ū t̄_t̄K īP̄v̄ c̄īl̄ q̄v̄i Rb̄ Ab̄t̄` ī K̄f̄v̄t̄e m̄t̄P̄Z̄b̄ K̄i t̄e?

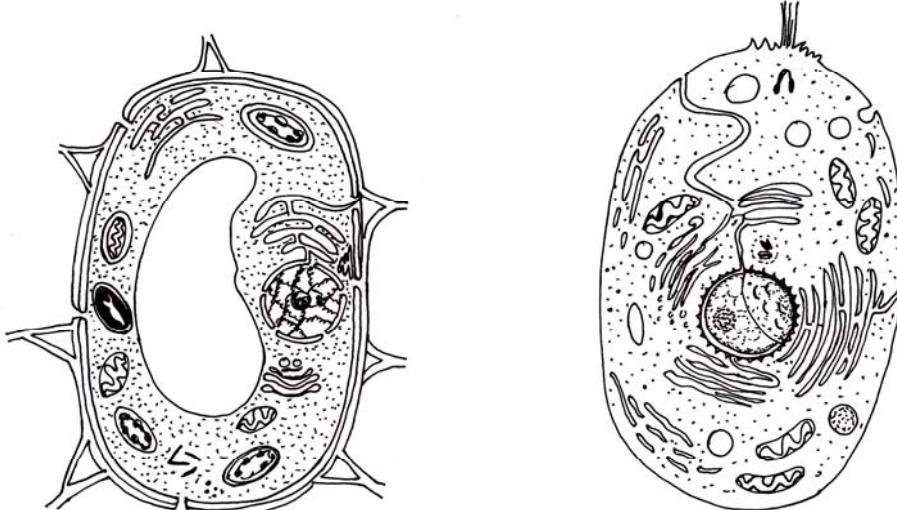
m̄b̄t̄R̄īv̄ Kī:

- 1) GK L̄U c̄vD̄īU w̄f̄w̄R̄t̄q ĀÜK̄vi N̄t̄i K̄t̄qK̄w̄b t̄īt̄L̄ `v̄l̄ | Gi ci īw̄i Dc̄t̄i th̄ m̄v̄v̄ ev̄ K̄j Av̄-īY t̄` L̄v̄ h̄t̄e t̄m̄t̄j̄v AȲp̄x̄P̄Y h̄t̄š̄j̄ m̄b̄t̄P̄ t̄` L̄ Ges h̄v̄t̄ L̄Q Z̄v̄i Q̄v̄e Āv̄K̄ | w̄e l̄q̄Ū m̄b̄t̄q̄ Ȑk̄P̄t̄K̄i m̄t̄j̄_ Āv̄j̄v̄P̄b̄v̄ Kī |
- 2) t̄X̄b̄k̄ c̄vZ̄v̄, t̄c̄t̄c̄c̄v̄Z̄m̄n̄ Ab̄v̄b̄ M̄t̄Q̄i K̄P̄K̄t̄b̄v̄ c̄vZ̄v̄ m̄sM̄b̄ Kī Ges w̄e l̄q̄Ū m̄b̄t̄q̄ `t̄j̄ ī ḡt̄ā Av̄j̄v̄P̄b̄v̄ Kī | c̄vZ̄v̄ Ḡ īK̄ḡ c̄īl̄ ēZ̄b̄ī K̄v̄Y ēv̄L̄v̄ Kī | c̄īq̄v̄R̄t̄b̄ Ȑk̄P̄t̄K̄i m̄v̄v̄h̄` b̄v̄l̄ |

WZxq Aa'vq

DwTM | cÖxixi tKv|xq msMvb

cÖKuZK cwi tefk ¶i wZ¶i Rxeft`n t_ki Auz ep`vKvi | DwTM | cÖxixi tni
msMvbK Ges KvhëVj xZ cÖpi wj -Awj i tqfQ| wKšyGKuU weftkI t¶fI mKj Rxeft`tni gta
mavi Y wj ev mv` k_wU ntjv th, Rxeft`nB gwB tKvI Øvi v MwZ | weMZ KtqKök eQi ati weAvbxMY
bij m cÖPövq tKvI i Mvb, AvKuZ, cÖKuZ | AbvB weftq cÖpi MteI YvgjK KvR Kti fQb| GKuU
Rxeft`tni me tKvI i Mvb cÖKuZ GK iKg bq eis wfbd Avgiv G cwi f"Qf` tKvI i Mvb eYDv Kie wKšy
wbfgæwYz mKj A½vYy GK mft_ GK tKvI cvl qv hvq bv| ZvB tgwUgju me ai tbi tKvI thme ¶i
A½vYcwi jwZ nq tm_tjvK eYDv Rb" GKuU tKvI i Avl Zvq Gfb Dc"vcb KvI ntqfQ| cÖg w fK
thšMK AYexTY htsj i mnvfh" RxewAvbxiv tKvI i th avi Yv tcqfQj b Zv Btj KUb AYexTY hši
Awe®<v|i i ci Avl mpuo | we-Íwi Z ntqfQ| tmB AvfjvK Av`kqKvI AvfjvPbv KvI ntjv|



G Aa'vq cW tKvI Avgiv-

- DwTM Ges cÖx tKvI i wPiyZ wP AsKb Ki fZ cve|
- cÖx Ges DwTM tKvI i Zj bv Ki fZ cve|
- tKvI i wewfboA½vYj Mvb | KvR e"vLv Ki fZ cve|
- DwTM | cÖx wUmji cv_R Ki fZ cve|

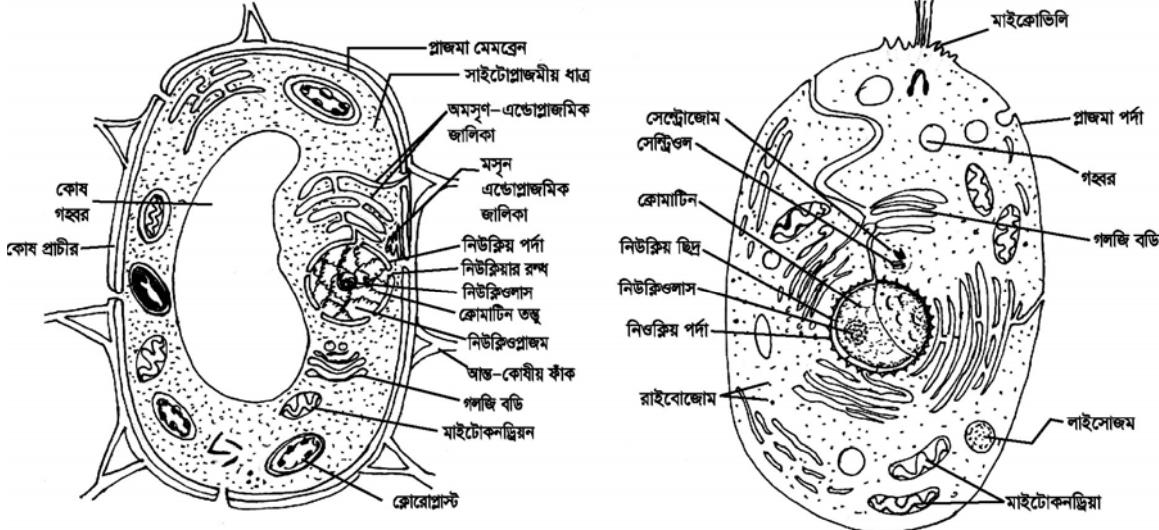
cW 1-2 : GKvU Dw^{MC} tKvI i eYøv

cÖZU Rxet` n GK ev GKvA K tKvI w` tq MvZ nq | GKvU Av` k^CDw^{MC} tKvI cÖvbZ `yU Ask wbtq MvZ - tKvI cÖPxi Ges tcÖUvcRg |

tKvI cÖPxi : Dw^{MC} tKvI i tP[†] tKvI c`y evBti Ro c`v^C tq ^Zwi GKvU cÖPxi _yK, G^yK tKvI cÖPxi etj | GuU tmjtjvR Øiv MvZ | cÖYtKvI G ai^ybi cÖPxi _yK bv | cÖYtKvI i Ayei YU cÖRgic^C Øiv MvZ | tKvI i mRxe Ask^yK i P^yKiv Ges tKvI i mxgyti Lv wbt^yR Kiv tKvI cÖPxi i cÖvb KvR |

tcÖUvcRg : tcÖUvcRg tKvI i AaZij, tR^yi g^yZv Aw^ytv I `vbi vi eY^ykb mRxe Ask | tcÖUvcRtgi bvbw ea w^yqu d^yj Rxetbi ^ekó^y, t^yjv cwi j^yZ nq | GuU w^yfba^yRe | A%Re thSM mg^yfq MvZ | tcÖUvcRtg c^ymbi c^yg^y m^yavi YZ kZKiv 67 t^yK 90 fM |

m^yBtUvcRg : tKvI i tcÖUvcRtgi w^yDw^yKe^ymenib tR^yi g^yZv Ask^yK m^yBtUvcRg etj | m^yBtUvcRtgi Af^ys^yti Ae^yZ tKvI i w^yfba^yRe^ybK w^yquKj^yci m^yms^y mRxe e^y mg^ytk GK^y tKvI m^yBtUvcRg q A^yYje^y nq | GKvU Av` R tKvI m^yavi YZ w^yg^y LZ A^yYje^y t^y Lv h^yq - 1. c^yW, 2. g^yBtUvKv^y, 3. Mj^yW e^yW, 4. G^yUvcRgK R^ywj Kv, 5. i^yBt^yR^yg, 6. j^yBt^ym^yR^yg | 7. t^ym^yU^yj |



চিত্র : ক. আদর্শ উদ্ভিদকোষের বিভিন্ন অংশ

চিত্র : খ. আদর্শ প্রাণিকোষের বিভিন্ন অংশ

tKvI i mRxe A^yYje^y Ges w^yR^ye e^y mg^y m^yBtUvcRtgi av^y t^yK | Dw^{MC} tKvI i w^yR^ye e^y mg^yni gta^y Av^yQ w^yfba^y K^ygi m^yAZ c`v^C eR^C c`v^C | P^yi Z c`v^C tKvI i m^yBtUvcRtg Zij c`v^CY^C(tKvI i m) tQvU eo Mn^yi _yK Zt^y i tKvI Mn^yi etj | cÖYtKvI m^yavi YZ tKvI Mn^yi _yK bv Zte tKvI bv tKvI bv tKvI h^y _yK Zv AvKvI L^y tQvU | Dw^{MC} tKvI tKvI Mn^yi teik _yK Ges AvKvI eo | bv bv c^yKvI ^Re G^yW, j^yEY, K^yPv, AwgI BZ^y tKvI Mn^yi ^exfZ Ae^y vq t^yK tKvI i m c^yZ K^yi |

KvR : w^yT t^yL `j MZfite cÖYx | Dw^{MC} tKvI i gta^y c^yR^y, t^yjv tcv^yvi Km^yR w^y tL Dc^y vcb Ki tZ nte |

cW 3 – 5

tKvI A½vYy tji vi cwi Pq : mvBtUvcRtg myb` S Avei Yxh³ mRxe e⁻ , tji v tKvI A½vYy wbP G, tji vi msPjB Avtj vPbv Kiv ntjvi |

cW : mRxe D^m tKvI i mvBtUvcRtg eYxh³ tMj vKvi ev wN^avKvi A½vYy cW etj | mvavi YZ cYtKvI cW tbB | G A½vYy D^m tKvI i GK Abb^b eik^o | cW D^m i Lv^c ms^dk^e, eY^fMV^gb Ges Lv^c mAtq gt^h fngKv MⁱY Kti | iÄK c` v^jP Dcv^kZ I Abgv^lZi I ci wbP Kti cW W^kK c^lbZ `B fvM fM Kiv ntqQ | tpuvgcW ev eY^lP cW Ges wj D^mKvCⁿW ev eY^lP cW | tpuvgcW `B i Kg-tKvI vCⁿ | tpuvgcW | G^o i gta^p ZbU Ask cwi j^qZ nq | h^r- Avei Yx, t^sgv Ges M^tvC^u tWi gta^v tKvI vCⁿ meR D^m _v^wK Ges meR etY^x tKvI vC^y bvgK iÄK c` v^zY Kti | mvjvKmstkh^zY mnqZv Kiv Gi c^zb KvR |

tKvI vC^y dtj i cwi | dtj i M^zq wewfbaeY^x P^y m^zo Kti | meR dj cvKvi mgq tKvI vC^y tpuvgcW i ev^z Z ntq eY^x P^y m^zo Kti | UtgtUvi th jv UKU^zK is tL Zv G tpuvgcW i jvBtKvcb bvgK iÄK c` v^zP Rb^y nq | tpuvgcW jv , Kgv I njy e^xY^y K^zv^zUb^zqW bvgK iÄK c` v^zY^yK |

D^m i thme Astk Avtjv tc^zQq bv tmme Astki tKvI wj D^mKvC^y W _v^zK | thgb g^zj i tKvI i cW | mh^zj v^zKi c^zft^z G cW , tji v ev^z Z ntq tKvI vC^y cwi YZ nq | tZgiv wbDq j^z Kti _v^zKte hv^z meR y^zNm BU w^zq w^zKo^z b XvKv _v^zK Zte Nm , tji v mv^z v ntq hvq Kvi Y tKvI vC^y , tji v wj D^mKvC^y i ev^z Z ntq hvq | cieZ^z Z BU mw^zq wb^zj m^zh^z Avtj vq Nm , tji v Avei meR e^xY^y ntq hvq | G^zZ c^zwYZ nq th GK ai tbi cW i ev^z Z ntq Ab^z ai tbi cW tW cwi YZ nq |

gvBtUvKvUq^y : mRxe D^m I cYtKvI i mvBtUvcRtg we^zP v^zKv tQv tQv
`^zEi AvKvI i A½vYy tji v^zK gvBtUvKvUq^y ej^z
(GK eP^zb) gvBtUvKvUq^y) | c^zZw^z
gvBtUvKvUq^y w^z i c` P^zv^z AveZ _v^zK | Gi
ewntc^z gmY | w^zK^zA^ztc^z gmY Avotj i g^zZv^z
A^zbK fwR m^zo Kti |

Rxtei hueZxq weciKxq Kv^zRi k^z³ i Drm nt^zQ
gvBtUvKvUq^y | G Rb^z gvBtUvKvUq^y tKvI i
ÔcvI qvi nvDm^z ej^z | Rvi Y I weRvi Y c^zuq^z G
kw^z Drcb^zq | meR D^m tKvI Gi msL^z te^z Zte c^zXi hKZ tKvI Gi msL^z mn^zak |

Mj w^z : G , tji v c` P^ztNiv tMj vKvi ev m^zvKvi A½vYy hv wbD^zKv^zmi Kv^zQ Ae^z v^zb Kti | Dr^zmPK,
ni tgvb BZ^z w^z j^z Kiv Gi KvR |

tm^zU^zj : cYtKvI i wbD^zKv^zmi Kv^zQ `ju d^zcv bj vKvi ev `EvKvi A½vYy tL hvq, Z^z i tm^zU^zj
ej^z, tm^zU^zj mvavi YZ GKv^z ~^zQ `vbwenxb mvBtUvcRtg Øv^z AveZ _v^zK | G Gj vKv^zK tm^zU^zRvg
ej^z | D^m tKvI tm^zU^zj mvavi YZ _v^zK bv Zte wbgetKv^zI D^m tKvI thgb- Q^zv^zK _v^zK | cYtKvI
wefvRtbi mgq A^zv^zi MVb Kiv tm^zU^zj i c^zb KvR |

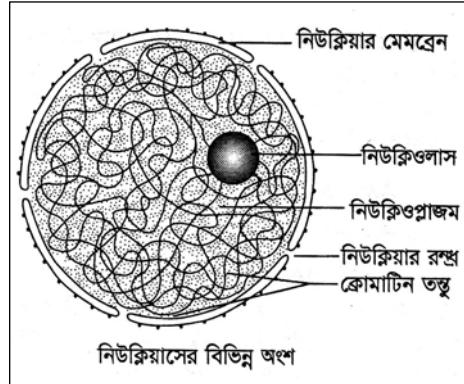


ବିଦ୍ୟୁତୀକରଣ : Ask iv tRବିନ୍ଦୁ Rାଖେଇ tKvI i cାହିଁ ଯା Ask h_v- mବିଲୁଚିର୍ଗ | ବିଦ୍ୟୁତୀକରଣ | tବିଲୁଚିର୍ଗ
c`Pବିଂତ୍ବ ତେବୋଜ ମେଟ୍ରିକ୍ ଏବଂ Nb e^-' tକ ବିଦ୍ୟୁତୀକରଣ eଜ୍ |

cାନ୍ଦୁ ବିଦ୍ୟୁତୀକରଣ Pvi ଏବଂ Aଶ୍ଵି ମ୍ଗ୍ଶିତ୍ତ ମନ୍ଦିର ନାହିଁ. ବିଦ୍ୟୁତୀ
ଏବଂ ବିଦ୍ୟୁତୀକରଣ c`ରେ. ବିଦ୍ୟୁତୀକରଣ iii. ବିଦ୍ୟୁତୀକରଣ Rାଜ୍ୟ କ୍ଷେତ୍ର ଏବଂ
ବିଦ୍ୟୁତୀକରଣ |

ବିଦ୍ୟୁତୀକରଣ-Gi tବିନ୍ଦୁ MVb cାନ୍ଦୁ ଏବଂ କାନ୍ଦୁ mgq tକି ଏଫିର୍ବ-
Gi ceଗ୍ନିଟିଜ୍ ବ୍ୟୁତି ଏବଂ ଏକିର୍ବିନ୍ଦୁ | ବିଦ୍ୟୁତୀକରଣ Pvi ଏବଂ Ask ବିଦ୍ୟୁତୀ
ଆପିନ୍ଦ୍ରିଯା ଏବଂ nj |

i. ବିଦ୍ୟୁତୀକରଣ c`ପି: mର୍ବେ I ମୁଣ୍ଡିନ୍ଦ୍ରିଯା ଏବଂ କାନ୍ଦୁ
ବିଦ୍ୟୁତୀକରଣ AveZ _ଏକି, Zଏକି ବିଦ୍ୟୁତୀକରଣ c`ପି eଜ୍ |
ବିଦ୍ୟୁତୀକରଣ c`ପାମସିଲି ଏବଂ ଏକି | Gme ମୁଣ୍ଡିବିନ୍ଦୁ ବିଦ୍ୟୁତୀକରଣ
ଏବଂ ଉଚ୍ଚିତ୍ତି |



ବିଦ୍ୟୁତୀକରଣ c`ପିମବିଲୁଚିର୍ଗ-Gi mବିନ୍ଦୁ_ବିଦ୍ୟୁତୀକରଣ ଏବଂ ବିନ୍ଦୁବୋଇଁ' i ଥିମବିନ୍ଦୁ M i ଏବଂ Kକି Ges ବିଦ୍ୟୁତୀକରଣକ
ଏବଂ Yଏପି Y କିମି |

ii. ବିଦ୍ୟୁତୀକରଣ : ବିଦ୍ୟୁତୀକରଣ Af`ଶିର୍ବିନ୍ଦୁ ବିଦ୍ୟୁତୀକରଣ tବିନ୍ଦୁ ଏବଂ AveZ ^~Q, ^ବିନ୍ଦୁ vi I tର୍ବି i gଜ୍ଵି
Aଶ୍ଵିj c`ପାମସିଲି ବିନ୍ଦୁ ବିଦ୍ୟୁତୀକରଣ ଏବଂ Kକି I ଏବଂ gଜ୍ଵି |

ବିଦ୍ୟୁତୀକରଣ I tବିନ୍ଦୁଗିର୍ବିନ୍ଦୁ ଏବଂ ଏବଂ ଏବଂ ଏବଂ ଏବଂ ଏବଂ ଏବଂ ଏବଂ

ବିଦ୍ୟୁତୀକରଣ ଏବଂ tବିନ୍ଦୁଗିର୍ବିନ୍ଦୁ ଏବଂ ଏବଂ ଏବଂ ଏବଂ ଏବଂ ଏବଂ

iii. ବିଦ୍ୟୁତୀକରଣ : ବିଦ୍ୟୁତୀକରଣ Af`ଶିର୍ବିନ୍ଦୁ Aଶ୍ଵି'Z ଏବଂ tକି, DRj I Aଶ୍ଵିକାନ୍ଦୁ Nb e^-' ଏବଂ
ବିଦ୍ୟୁତୀକରଣ ଏବଂ ଏବଂ cାନ୍ଦୁ ଏବଂ ଏବଂ | mବିନ୍ଦୁ YZ: cାନ୍ଦୁ ବିଦ୍ୟୁତୀକରଣ GKU ବିଦ୍ୟୁତୀକରଣ _ଏକି |

iv. ବିଦ୍ୟୁତୀକରଣ ଏବଂ tବିନ୍ଦୁ ଏବଂ Zଶ୍ଵି: ବିଦ୍ୟୁତୀକରଣ fିନ୍ଗିବ ଏବଂ ଏବଂ cାନ୍ଦୁ ଏବଂ ଏବଂ
ବିଦ୍ୟୁତୀକରଣ ଏବଂ tବିନ୍ଦୁ ଏବଂ Rାଜ୍ୟ ଏବଂ ଏବଂ cାନ୍ଦୁ | tକି ଏଫିର୍ବିନ୍ଦୁ mgq Zଶ୍ଵିଗିର୍ବିନ୍ଦୁ KZK, ଏବଂ
UKi ଏବଂ cାନ୍ଦୁ ଏବଂ ଏବଂ hବିନ୍ଦୁ | cାନ୍ଦୁ UKi ଏବଂ tବିନ୍ଦୁ ଏବଂ ej ଏବଂ nq |

KvR : GKUv Avj y tKtU mvgvିବ ଏବଂ ଏବଂ ଏବଂ GKUv tKtU mvgvିବ ଏବଂ GKUv tKtU mvgvିବ
mବିନ୍ଦୁ YZ | G, tକି ଏବଂ tକି tKtU i Aଶ୍ଵି'Yb ଏବଂ Ab" e^-' ? G, tକି ଏବଂ tKtU i Kx?

Aଶ୍ଵି'Yb G cାନ୍ଦୁ t"Qବିନ୍ଦୁ th kାନ୍ଦୁ tକି Rବିନ୍ଦୁ ଏବଂ

tକି c`ରେ tବିଲୁଚିର୍ଗ, mବିଲୁଚିର୍ଗ, cାନ୍ଦୁ W, gବିଲୁଚିର୍ଗ, Gବିଲୁଚିର୍ଗ K ଏବଂ UKj ଏବଂ jବିଲୁଚିର୍ଗ,
Dcାନ୍ଦୁ, ବିଦ୍ୟୁତୀକରଣ ଏବଂ tବିନ୍ଦୁ

ଚାପ 6-7 : DwMC ମୁମ୍ଭି ଏକିକ୍ରମ ଏବଂ KvR

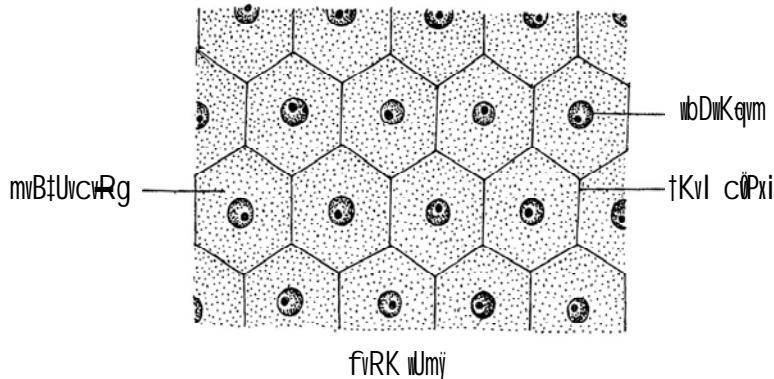
Rxet`n GKtKvI x A_ev eକିକରଣ nକିକରଣ cାନ୍ଦୁ | th me Rାଖେଇ t`n GKU tKvI w` tକି Mନ୍ଦିର ଏବଂ Zବିନ୍ଦୁ GK tKvI x
GKU gବିନ୍ଦୁ tKvI w` tକି Gବିନ୍ଦୁ i cାନ୍ଦୁ, tକି Pb, kମ୍ବ, Rbb BZ`w` hବିନ୍ଦୁ Zବିନ୍ଦୁ ^Rାଜ୍ୟ KvR mବିନ୍ଦୁ ଏବଂ
mବିନ୍ଦୁ Rxet`n tକି eକିକରଣ Rxet`n Mବିନ୍ଦୁ x mବିନ୍ଦୁ tକି gବିନ୍ଦୁ GK tK thgb

tkiMiebim NtU tZgb Aci w tK kq wefvRbI nq _vK| Kvi Y h w mKj tKvl GKB mv_ Ges GKB
i Kg fvte ^RweK Kvhm ubcK Z Zntj Rxet` tn MVb ^ewP^ Ges kvi xi eEjq | ^RweK KvR ,w j tZ
bv bv i Ktgi wek; Lj v t` Lv w Z| GtZ mjp ^RweK aviv eRvq _vKZ bv| mjp ^RweK wq Ges mjp Rxeb
aviv i Pjq wewfbaekvi tKvl mgteZ fvte ev GK#^t KvR Kvi Rb^ Rxet` tn , "QvKvti _vK|

hLb DrcEi w` K t_#K GK n#q KZK ,tjv tKvI AvqZtb I AvKwZtZ Awfbaev wfbaen lqv m#Ej h w` jMZ fvte Ae^-`vb Kti GKB ai#bi KvR Kti ZLb tmB `je x tKvI ,tjv tK wlmj e#j |

Dw™c wUmy :

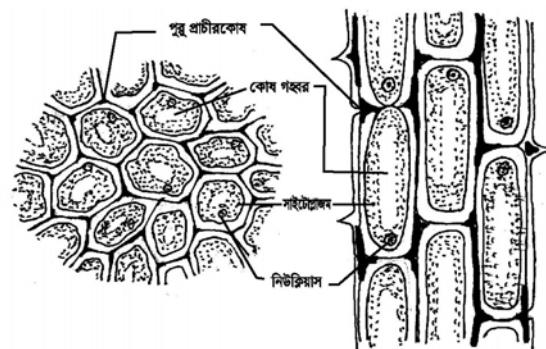
Dw^{mc} I cōy t` n weſfbœc̄ Kvi wUmj̄ Øvi v MwZ Ges G‡KK ai †bi wUmj̄ bw` Œ KiRm‡úbœK†i |
weſvRb ¶gZv Abjy†i wUmj̄ cōvbZ `þ i Kg h_v- K) fvRK wUmj̄ I L) -'vqx wUmj̄ | wUmj̄‡K weſfbœ
‐ewk‡ó i wfvE‡Z K‡qKwU Dcfv‡M fM Kiv n‡qtQ |
fvRK wUmj̄ : Dw^{mc} i t` th me wUmj̄ i K‡l i weſvRb ¶gZv i †q‡Q tm, tj‡K fvRK wUmj̄ e‡j |
fvRK wUmj̄ Dw^{mc} i eaðkjij A‡½ Ae -'vb K†i |
weſkl Z KiE I g‡j i AMfv‡M Ae -'vb K†i |



KvR : 1. μgMZ ወቻRቻbi dቻj fቻRK ወUmj bZb bZb tKvl I ወUmj mቻÓ Kቻi |
2. GwJ DቻWt i ^ N° I cቻ- i ewx NUvq |
3. fቻRK ወUmj ወUmj i DrcwE NUvq |

-'vqx wUmy :

fvrK wJmj t_‡K DrcbæwfvrB ¶gZvnxb wbow G
AvKuZhj³ cwi YZ wJmj‡K ^'vqx wJmj etj | Dw™‡ i
cjq me[¶] ^'vqx wJmj t_ Lv hq |



KvR : fvRK I ^ 'vqx uJmji wP^ t L Gt` i ^ eukó, t j v Avj ` v Kti tcv ÷ v i wj t L ` t j Dc ^ 'vcb Ki t Z n t e |

cW 8-10 : cÖYx wUmij i ^ewkÓ | KvR

Avgiv Kxfvte nUv-Pj v Kv? Kxfvte Lvvi LvB, Kxfvte kJm-ckJm tbB jP Ki | G KvR, tj v thgb Avgiv v tZgwb wfbaecKvZi | Avgiv cv w` tq nU, nZ w` tq wjL, gL w` tq Lvvi LvB, `wZ w` tq Lvvi wPeiB | G KvR, tj v Kti Avgiv v Avgiv v A½ | GB A½, tj vi tKvI i MvB | KvR Avgiv v | Avgit` i t` tni nvo, gw-®< BZ`w AtbK , tj v tKvI w` tq ^Zvi hvf` i MvB | KvR wfbaecKvZi |

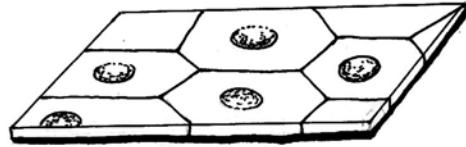
eütkvI x cÖYtZ Gfvte AtbK , tj v tKvI hLb tKvB wbi S KvR Kivi Rb GKt̄ wgi Z nq ZLb H tKvI , tj v tK GKt̄ wUmj (Tissue) ev Kjv ejv nq | Gme tKvI i Df̄ K GK ntj I Gt̄ i AvKvi, AvgZb I MvB wfbaentZ cvi | GUwbfP Kti wUmj I tKvI i KvRi ai tbi Dci | cÖYt` n newfbœKvI wUmj w` tq MvZ | wUmj mavi YZ Pvi ai tbi nq | h_v-

K. Avei Yx Kj v

L. tcik Kj v

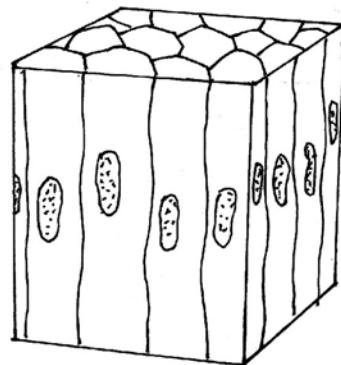
M. thRK Kj v

N. møy Kj v



K. Avei Yx wUmj ev Gicw_wj qyj wUmj :

th wUmj t` tni tLvj Ask tXtK ivL Ges t` tni
tfZti i AveiY ^Zvi Kti ZtK Avei Yx wUmj etj |
Avgit` i ZtK evBti i AveiY gL Mnytii tfZti i
AveiY BZ`w Avei Yx wUmj w` tq MvZ | t` tni newfbœ
MöS , tj vI Avei Yx wUmj w` tq ^Zvi |



Avei Yx wUmji ^ewkÓ :

চিত্র : আবরণী টিস্যু

Avei Yx wUmj , tj v GK ev GKwak -ti mvRt bv _vK |
tKvI , tj v GKwU cvZjv wfWE c` A Dci mvRt bv _vK |
Gai tbi wUmjtZ tKvB AvSttKvI xq av (matrix) _vK bv |

KvR : G wUmj t` tni tfZti i | evBti i A½ , tj vK AvNvZ t` K i P v Kti , cvK-`wj | AtSj i Avei Yx wUmj cvPK im PjY Kti wRnYi Avei Yx wUmj KvR Kti |

KvR : tZgvi t` tni evBti i , gL Mnytii tfZi , btki tfZi , Kvbi tfZi Kv Kj v w` tq MvZ chfePY Ki | GB Kj vi KvR wjce x Ki |

L. tcmk wUmj̥ ev gwmKj vi wUmj̥ :

†̄ t̄ni t̄Kv̄ t̄Kv̄ tc̄lk Avgiv B"QngZ P̄j bv Ki‡Z c̄wi | thgb- nv̄Z ev c̄t̄qi tc̄lk | G tc̄lk, †j̄ Avgiv
thf̄te P̄j v̄Z PvB tmf̄teB P̄t̄j | Awei †̄ t̄ni t̄Kv̄ t̄Kv̄ tc̄lk Avgiv B"QngZ P̄j bv Ki‡Z c̄wi bv |
Gai‡bi tc̄lk Zv̄` i †b̄‡RI B"QngZ P̄t̄j | thgb- c̄iK- †j̄ i tc̄lk |

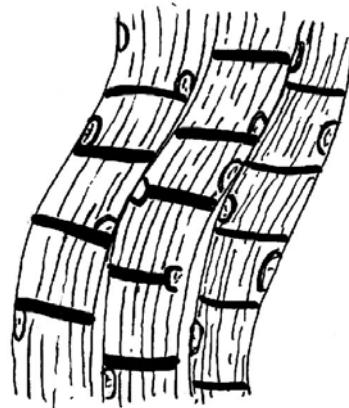
G Avtj vPbv t_‡K Rvbj vg tcw̄k `B cKvi | h_v-

1. Hw'OK tcmk Ges
 2. A%b'OK tcmk |

KvR : tZvgvi nv‡ Zi KbB eukvI | tmvRv Ki | G‡Z tZvgvi nv‡ Zi tcwki Kx cwi eZØ NU‡Q? tKb cwi eZØ
NU‡Q? Kxfv‡e G cwi eZØ NU‡Q? j¶ Ki |

1. HW'QK tcuk;

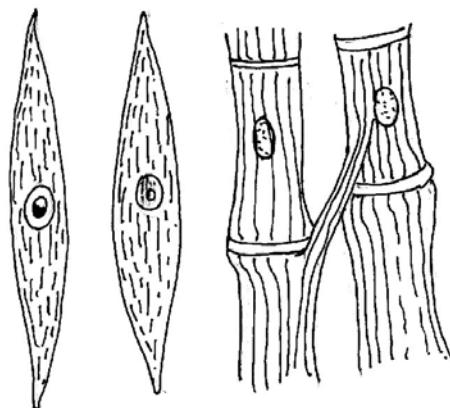
Augiv hLb KbB eukv Kwi ZLb EaÝ©evui mvgtbi
w tki tcuk msKuPZ ntq wbxs evutK tu tb eukv Kti |
th tcuk Augiv B"QigZ msKuPZ I cñwi Z Kti t`tni
newfbœA½ mÄvj b Ki tZ cwi ZtK HwQK tcuk etj |
gube t`tn HwQK tcuki msLv teuk | G tcuk ntoi
mvt_ tj tM t_tK Augut` i A½ bovPor Ki tZ mnvh
Kti |



চিত্র : এক্ষিক পেশি

2. A%bW'QK tcwk

Augit` i Lv`` b̄v̄j x̄Z Lv`` c̄wi en̄bi ` w̄qZj c̄vj b Ki t̄Q
A t̄š̄j i tc̄lk| Gai t̄bi tc̄lk Dci Augit` i t̄Kib w̄bqš̄j
tbB| A_ P̄ thme tc̄lk Augit` i B''QvgZ msKipZ nq bv
Zit` i A%bw'QK tc̄lk et̄j | ü` tc̄lk b̄t̄g Av̄t̄i K ai t̄bi
w̄et̄kI A%bw'QK tc̄lk Av̄t̄Q| G tc̄lk w̄bR Qt̄` ch̄qut̄g
msKipZ | ^v̄f̄w̄eK n̄t̄q t̄ t̄ni i^3 m̄Av̄j b Ki t̄Q| īay
ür̄w̄cÜ G tc̄lk Øvi v M̄wZ| (P̄T : A%bw'QK tc̄lk

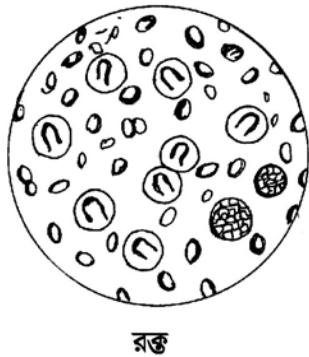


চিত্র : অনৈচ্ছিক পেশি

KvR : GKUJU tUmetj i Dci Ggbfite em hifZ cv\` jUr Stj _\`K| nvUi wP t_\`K GKUJ cv tmvRv Ki |
Avevi GKUzeKvI | tKib tcuk, t\`i v GB bvoiPvoiq Ask wbf\`Q? nvZ `t q a\`i tevSvi tPov Ki |

cW : 11

thvRK wUmj ev KvtbKwUf wUmj : thvRK wUmj cÖYt` tni newfbæwUmj Ges A½i gta" msfhM mwab Kti | GB wUmj cÖvbZ KwNb, Zij | tg`gq nq | thgb-i³, nvo, ZiYw-, tg`gq wUmj BZ'w thvRK wUmj i D`vnjY |



রন্ধ



হাড়

চিত্র : যোজক কলা

thvRK Kj vi KvR :

nvo t` tni KvWtgv MVb Kti , t` tni fvi enb Kti | `pZv`vb Kti | nftoi MVtbi GKwU cÖvb Dcv`vb nj Kvj mqaq, tcwkeÜbx ev tuÜb tcwktK nftoi mft_ hß Kti , tg` wUmj tma c`v_ CmAZ iwl, ZS gq thvRK wUmj dmdm I i³bvj xi cÖPxi msftKvPb I cÖvvi tY mnvh Kti | ZiYw- nftoi tPfq big | Ab`vb Kj vi tPfq teuk PvC I Uvb mn" KiZ cvi | thgb- bvK I Kvbi ZiYw- | i³ newfbæ`e`w (Aw tRb, Lv", tPb c`v_ P`t` tni GK -`vb t_tK Ab" -`vb cwi enb Kti | GQvor i³ tivM RxevYj AwugY cÖZtiva Kti | i³ Zij thvRK Kj v |

møyKj v ev bvfq wUmj :

cÖYt` tni th wUmj DÖxcbvq mvov w`fq Dchß cÖZte`b mjo
KiZ cvi ZtK møyKj v ev møywUmj etj | møyKj vi GKK nt"Q
møyKvI ev wDib | gw-®< møyKvI ev wDib w`fq ^Zwi |
cÖZwU wDib wZbwU Ask wftq MwZ | h_v-

(K) tKvI t`n, (L) tWbWb Ges (M) A`v· b |

møyKj vi KvR :

1. t` tni newfbæBw`q | msfe`b MÖYKvi x A½ t_tK MpxZ
DÖxcbv t` tni newfbæAsfk tcÖY Kti |
2. t` tni KvRi Ask G DÖxcbvq mvov t`q | thgb- gkv
Kvgotj G AbfñZ gw-®< cWvq | gw-®< nVZtK G
K_v Rvbvq ZLb nVZ gkv gvi vi tPov Kti |



চিত্র : একটি স্নায়ুকোষ

3. Dī xcbv ev NUbvtk - ſZtZ avi Y Kti |
4. t̄ tni weifbokvi xi eExq KvRi gtā mgš̄q mwab Kti |

KvR : Zing tPvL eÜ Ki | wKQyt L̄Z cr̄Q Kr? Kv̄b n̄Z w̄ tq eÜ Ki | wKQyt b̄Z cr̄Q Kr? Zing cov ḡb iVL Krfvte? GB KvR, t̄j v Ki t̄Zvgvi t̄ tni t̄Kv̄b wUm̄y mwvh̄ Kti | Zvi GKwU t̄Kv̄l i wP̄ AsKb Ki | Gi weifbokvi b̄g t̄j L |

G Aāq cW tk̄l Rvbj vg

- Rxet̄ tni MvbmZ | Kv̄hM̄Z GKt̄Ki b̄g t̄Kv̄l |
- meÁvb i eŪuK c̄g t̄Kv̄l Aw̄ēv̄i Kti b̄ |
- t̄Kv̄l -gā - m̄uȲmRxe Ask̄K t̄c̄wic̄Rg et̄j |
- mwB̄t̄Uic̄Rtgi gtā Aew̄'Z mRxe A1zvȲt̄j vi b̄g h̄_μtg w̄Dw̄Kq̄m, c̄w̄-W, gwB̄t̄UvKw̄Uq̄v, Mj wMē', tm̄wUj BZ̄w̄ |
- c̄w̄-W wZb c̄Kv̄i | h̄y- t̄Kv̄i c̄w̄-W, t̄p̄t̄gyc̄w̄-W | w̄j D̄t̄Kv̄c̄w̄-W |
- gwB̄t̄UvKw̄Uq̄t̄K kw̄3 i Ni ej v nq Kv̄i Y k̄mb c̄w̄q̄q Drcbokw̄3 gwB̄t̄UvKw̄Uq̄t̄Z mw̄A Z _v̄t̄K |
- Drc̄Ei w̄K t̄t̄K GK n̄q mg-AvKw̄Zi A-ev̄f̄b̄AvKw̄Zi t̄Kv̄l , w̄j h̄w̄ `j MZf̄te GKB ai t̄bi Kv̄R Kti, ZLb tm̄B `j ex t̄Kv̄l , "Q̄t̄K wUm̄y et̄j |
- wUm̄y c̄w̄bZt `B c̄Kv̄i - fvRK wUm̄y | -'vqx wUm̄y | fvRK wUm̄y t̄t̄K -'vqx wUm̄y i Drc̄E |
- th wUm̄y i t̄Kv̄l , w̄j μḡM̄Z wef̄wRZ n̄q bZb t̄Kv̄l mw̄o Kti Zv̄t̄K fvRK wUm̄y et̄j |
- fvRK wUm̄y t̄t̄K DrcbokfvRb ¶gZvnb w̄w̄-Ø AvKw̄Zh̄B c̄w̄Y Z wUm̄y t̄K -'vqx wUm̄y et̄j |
- ǖt̄c̄k GK ai t̄bi wef̄k A%b̄w̄QK t̄c̄k |
- tḡ` wUm̄y t̄ma c̄v̄_mw̄A Z i v̄t̄L |

Ab̄kxj bx

k̄b̄-v̄b c̄t̄Y Ki

1. ————— wUm̄y wef̄Rb A¶ig |
2. Dv̄m̄ wUm̄y `B ai t̄bi ————— wUm̄y | ————— wUm̄y |
3. ǖt̄c̄k GK ai t̄bi ————— t̄c̄k |
4. gw̄-®< AmsL̄ ————— Øvi v̄Mw̄Z |
5. ————— t̄Kv̄l i cv̄l qvi n̄Dm et̄j |

msv^mB D^öi c^ök^e

1. ta^mki KvR eY^mv Ki |
2. Aie i Yx uUm^mj i ^ewkó^m wj L |
3. w^mDwKew^mmi M^mb eY^mv Ki |
4. c^mw^m tWi KvR Dtj^mL Ki |
5. g^mB^mtUvKw^mE^mqvi M^mb eY^mv Ki |

e^mbe^mib c^ök^e

1. f^mRK tKu^mI Abc^m Z tKvbu^m?

- | | |
|----------------------------|--------------------------------------|
| K. tKvI c ^ö Pxi | L. w ^m DwKew ^m |
| M. tKvI Mn ^m Y | N. tmjtj ^m vR |

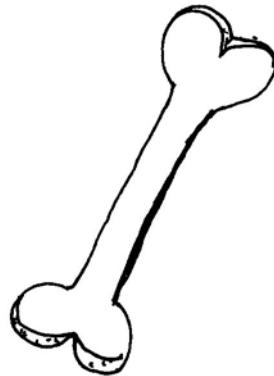
2. tKvI Mn^mY^mi we^m "g^mb _^mK-

- i. ^Re G^mW I j eY
- ii. AwgI I kK^mV
- iii. A%Re G^mW I ^Re G^mW

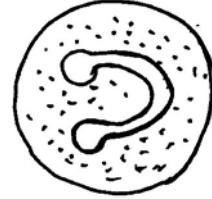
w^mtPi tKvbu^m m^mWK?

- | | |
|-------------|----------------|
| K. i I ii | L. i I iii |
| M. ii I iii | N. i, ii I iii |

D^öixKu^mj^m Ki Ges 3 I 4 b^mx^mi c^ök^e D^öi `vI :



W^mP^m : A



W^mP^m : B

3. DÍ xc‡Ki A wPwýZ AskwJi KvR n‡"Q -

- i. `pZv cõvb Ki
- ii. PweRgv iwl
- iii. i³ Kwykv ^Zwi Ki

wb‡Pi tKvbwU mwK?

- | | |
|-------------|----------------|
| K. i ii | L. i iii |
| M. ii iii | N. i, ii iii |

4. A | B Gi ^ewkó" ntjv-

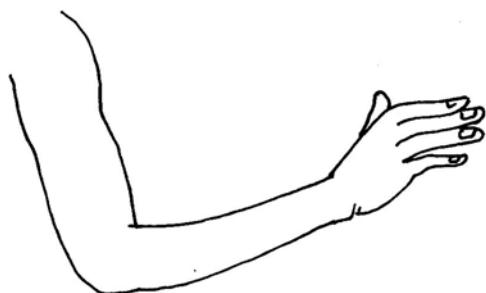
- i. Gi v thwRK Kj
- ii. Gi v Aw ‡Rb cwienb K‡i
- iii. G‡ i cõvb Dcv`vb Kvj wmqg

wb‡Pi tKvbwU mwK?

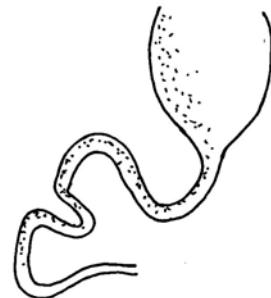
- | | |
|-----------|----------------|
| K. i | L. iii |
| M. i ii | N. i, ii iii |

mRbkxj ckæ

1.



wP† P



wP† Q

K. i³ Kj?

- L. Avei Yx wUmj ej ‡Z Kx eSvq?
- M. P wP† Aw-i iZjevlv Ki |
- N. P | Q wP† tcwki wUmj i Zj bvqj K Av‡j vPbv Ki |

2.



M



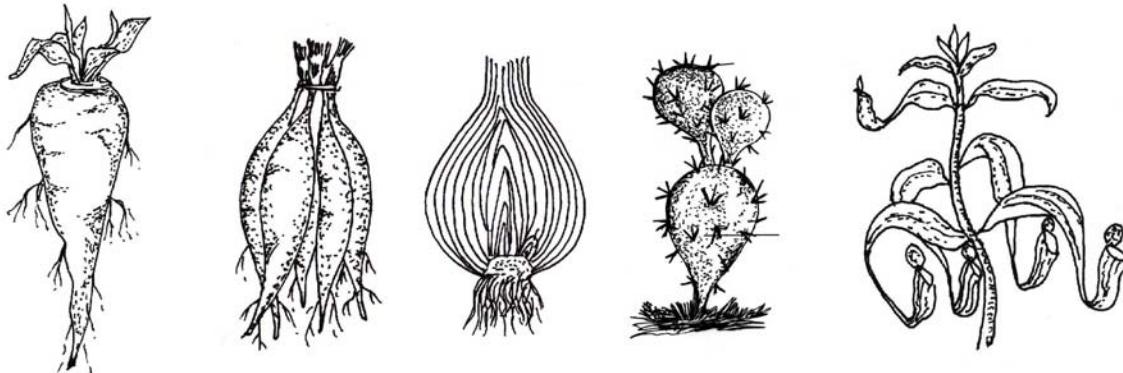
N

K. tKvI c^ñxi Kx?L. g^vBtUvKwE^vq^tK k^w³Ni ej v nq tKb?M. wP^t N gj nI qv -^tE^vl eY@q tKb? e^vL^v Ki |N. wP^t M Gi Dw^mc w^tZ 8-10 w b ci th cwi eZ^v NUte Zv w^tkH Ki |wb^tRiv Ki :1| tZvgvi t`tni wewfbaewUmj Dcw`wZ ch^ve^tY Ki , G^tjv t`tni tKvb tKvb RvqMvq Ae`vb Kti
G^ti ^e^vkó^t, t^tjv wj wce^x Ki |

ZZxq Aa"vq

Dw™t` i ewn"K ^enkó"

KLbI Dw™t` i gj , KvÈ I cvZv Ggb fñte i evšm Z nq th Zñt` i tPbvB hñq bv| tKb Giv i evšm Z
nq Ges wK fñteB ev Zñt` i wR i ñc tPbv hñte G Aa"vq Zv Avtj vPbv Kiv nte|



G Aa"vq cW tkll Avgiv

- i evšm Z gñj i Mvb e"vL"v Ki‡Z cvie|
- i evšm Z Kv‡Èi Mvb e"vL"v Ki‡Z cvie|
- i evšm Z c‡l i Mvb e"vL"v Ki‡Z cvie|
- i evšm Z gj , KvÈ I cvZvi , i ÿj e"vL"v Ki‡Z cvie|
- Avgit` i Rxetb i evšm Zgj , KvÈ I cvZvi , i ÿj Dcj w× Ki‡Z cvie|
- i evšm Z gj , KvÈ I cvZvi wP† A½Y Ki‡Z cvie|

cW- 1 : cāv b g‡j i i eiŠt

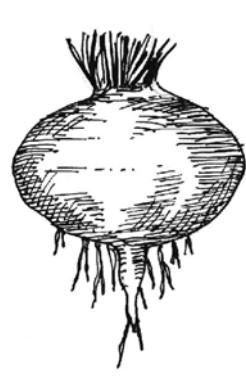
gj KLbI we‡kl KivR m¤ur` ‡bi Rb" i eiŠt Z n‡Z c‡ti | Gvi Lv" mÂ‡qi Rb" cāv b g‡j i i eiŠt m¤u‡K^cA‡j vPbv Kie | gjv, MvRi I kuj Mg Argiv mevB t‡LQ Ges Lv" wntme MôY K‡ti Q| G‡j v gj bv KvE? GKU wntme wgvj ‡q bv | G‡i M‡q wK tKub ÔMU ev ce‡Av‡Q? cvZv Av‡Q? gjKj Av‡Q? bv tbB| gmUi Dcti th cvZv t` Lv hvq Zv g‡j i Dcti Aew" Z ¶i^aK‡Ei Mv t‡K tevi tq‡Q| AvKvZMZ wK t‡K Giv Pvi cKvi h_v- 1| gjvKvZ gj, 2| MvRi vKvZ gj 3| kuj Mg vKvZ gj Ges 4| K` vKvZ gj |



(ক)



(খ)



(গ)

চির- : বিভিন্ন ধরনের রূপান্তরিত মূল, ক. মূলাকৃতি মূল, খ. গাজরাকৃতি মূল, গ. শালগমাকৃতি মূল।

gjvKvZ gj : Giv Lv" mÂq K‡i ZvB cāv b gj tgvUv I i mvj nq| GB g‡j i ga" fM tgvUv wKšy` B c‡s- µgk: miyj thgb - gjv|

MvRi vKvZ gj : Giv Lv" mÂq K‡i ZvB, cāv b gj wU tgvUv I i mvj nq| GB g‡j i Dcti i w` K tgvUv Ges wbtPi w`‡K µgk: miyntq hvq| thgb - MvRi |

kuj Mg vKvZ gj : GB t¶‡i cāv b gj wU Dcti i Ask Lv" mÂ‡qi dtj tMvj vKvi Ges wbtPi Ask nVr K‡i miyntq hvq| thgb - kuj Mg |

K` vKvZ gj : Lv" mÂ‡qi dtj KLbI KLbI cāv b gj wU AwbqwgZ fvte tgvUv nq| G‡i tKv‡bv wbw` Ø AvKvi ev AvKvZ tbB| h_v- mÜvgvj wZ |

cW-2-4 : i eiŠt Z A" wibK gj

A" wibK gj we‡kl we‡kl Kvh^mva‡bi Rb" cwi ewZØ ev i eiŠt Z n‡q _‡K| A" wibK gj mvavi YZ wZb ai‡Yi KivR Kivi Rb" i eiŠt Z n‡q _‡K, h_v- Lv" mÂq, hwšK fvimvg" i ¶v I kvi xi ZE^aq Kvh^mur` b|

Lv" mÂ‡qi Rb" i eiŠt : wewfbaeai‡Yi A" wibK gj fwel‡Zi Rb" Lv" mÂq K‡i uxZ nq Ges wewfbaeAvKvi avib K‡i, thgb wgmó Ayjj K` yj gj, kZgjx I Wwj qvi wQZ K` gj I Kij vi gyj vKvZi gj BZ w` | wgmó Ayjj K` yj A" wibK gj gmUi KvQvKwQ K‡tEi ce‡ntZ tei nq Ges Lv" mÂq Kivi dtj AwbqwgZ fvte uxZ n‡q Awbw` Ø AvKvi avib K‡i | Lv" mÂq Kiv GB g‡j i cwi ewZØ KivR |

K`yj gj : A`'mbK gj KLbI A'lbqigZfite ଉଚ୍ଚ nq, h_v- wgiō Avj y|

wQZK` gj : Bnv K`yj gj i b'vq Lv` mÂtqi Rb` A'lbqigZfite ଉଚ୍ଚ nq| Zte ଉଚ୍ଚ gj ,tj v GKvJ ,tQ Ae`'vb Kti KvY GK ,tQ A`'mbK gj i me ,tj vB Lv` mÂtqi Rb` Kt` i b'vq ଉଚ୍ଚ nq _vK GB Rb` GB gj tK wQZ K` gj ejv nq| Lv` mÂqB Gi c'lb KvR| D`vniY- kZgj x, Wwj qv|

bWjR gj : hLb gj i AMFWM Lv` mÂq Kti ଉଚ୍ଚ nq, thgbñ Avg Av` v|

gvj v AvKvZi gj : hLb tKv b A`'mbK gj ch'qutg ଉଚ୍ଚ I msKvPZ nq, h_v- Kijvi gj |

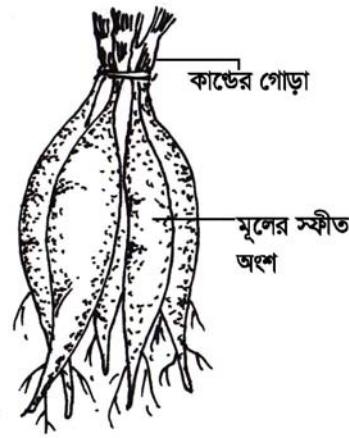
hvišK fvi mvg" i Pn‡_v eišt :

G gj DwM‡ tK gwUi Dci Lvov fite `wofq _vKtZ, AvtivnY Ki‡Z ev cwb‡Z fvm‡Z mvnh` Kti | G Rb` A`'mbK gj i wevfbœi Kg i eišt N‡U _vK, thgb- -vqj, tVm gj, AvtivnX gj, fvmgb gj BZ`w` |

-vqj : GB ai‡Yi A`'mbK gj KvE ev kvLv n‡Z Drccbœ nq| Giv Lvov fite wb‡Pi w‡K bvg‡Z bvg‡Z gwUi gta" c'ek Kti Ges tgvUv n‡q -vqj AvKvi avib Kti, thgb- eU |

tVm gj : tKv b tKv b DwM‡` i c'lb KvE `v‡P n‡qvi Rb` tmvRv fite `vov‡Z ci‡i bv | ZvB Kv‡Ei tMovi w‡K t‡K KZ, wj A`'mbK gj tei n‡q ZxhRfite gwU‡Z c'ek Kti, thgb- tKvvi tVk gj |

AvtivnX gj : GB gj `v‡P Kv‡EhP DwM‡` i ce‡n‡Z Drccbœ n‡q Ab` tKv b DwM‡ ev Ae j v‡b‡K A'Kto ati Ges DwM‡ w‡K Dc‡i DV‡Z mvnh` Kti, thgb- c'lb |



চিত্র : ডালিয়ার শুচিত কন্দমূল



চিত্র : বটের সতভূম



চিত্র : কেমার ঠেস মূল

Kvi xi eE^Eq Kvh⁹ma^tbi Rb["] i ei^Si

g^tj i ^yfweK kvi xi eExq KvR Qovl we^tkI we^tkI tP^t
 kvi xi eExq KvR mgav Kvi Rb["] A^wbK g^tj i i ei^Si NtU
 _vtK |
 ci^wkq evqexq gj : GK cKvi gj evZm t^tK Rj xqer[®]ú
 M^oY K^ti | G^t i evqexq gj etj | h_v- i vme



চিত্র : রাম্ভার বায়বীয় মূল

ci Rxex ev tkv^tK gj : ci Rxex Dw^Mt` tK^ti w^tdj _vtK bv Z^wB
 Lv^t["] i Rb["] A^tkq`vZv Dw^Mt` i t^tn we^tkI ai^tYi gj c^tek
 Kvi t^tq _vtK | G gj , t^tj vtK tkv^tK gj etj , thgb- ^Y^oZv |



চিত্র : স্বর্ণতার শোষক মূল

k^tmgj : mg^t DcK^tj jeYv³ | K^tg^tv³ gwU^tZ Dw^Mt` i
 c^tvb gj ntZ kvLv gj gwUi Dcti Lvovfite D^tV Av^tm |
 GB mKj g^tj tQvU tQvU wQ^t^a _vtK | GB ai^tbi i ei^Si Z
 gj t^tK k^tmgj ev wbDgvtUvtv^t etj | thgb- my^t ix, Mi vY
 BZ^w |

Rbb gj : tKvb tKvb Dw^Mt` i gj cRbtb Ask M^oY K^ti
 _vtK thgb- wgw^o Ayj |



চিত্র : শাসমূল

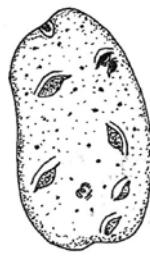
cW 5-7 : i ei^Si Z KvE

tZigiv Rvb KvE mvavYi Z: gwUi Dcti Ae^tb K^ti Ges ciZv, dj I dj avi Y K^ti | K^tsh^tP^t we^tk^tI
 mvavY KvR Qovl we^tfba^tYi KvR m^tub^teKivi Rb["] Kv^tEi AvKvZMZ | Ae^tWZ ci^weZ^t NtU | G
 ai^tYi ci^weZ^tK Kv^tEi i ei^Si etj | Ae^tb Abjhq^t i ei^Si Z KvE wZb cKvi , h_v- 1) f- wbge^t
 2) Aa^tevqexq | 3) evqexq |

f- wbge^t i ei^Si Z KvE

c^tZKj ci^wte^tk wJ^tK _vKv, Lv^t m^tAq Ges A^tzR Dct^tq esk^te^t-vi Kvi Rb["] wKQywKQy Dw^Mt` i KvE
 gwUi wbP e^tix ciq| G ai^tYi Kv^tEi f- wbge^t i ei^Si Z KvE etj | Gi^w Pvi cK^tii , h_v- u^tZ
 K^t, tg^tj KvE ev i vBtRvg, K^t | , wOK^t |

WUDeri ev ĉe Z K` : tMyj Avyj ĉe Z K` i D` vniY| ĉe Z K` ce[©]
cega", kécī I KwP|K gKj _vK| kécī i KtP| MzP gZ AsktK ðPvLÓ
etj | AbKj FZtZ ðPvLÓ n̄tZ KwP|K gKj eix tcq bzb DmP` i myÓ
KtI | Lv` mAtqi Rb" ĉe Z n̄tq Giv tMyj vKvi i e avi Y KtI |



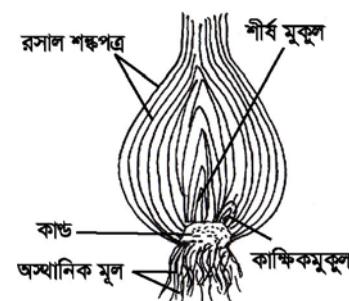
চিত্র : টিউবার

iVBtRvg : Av`v, njy cFZ DwM`i KvE iVBtRvg RvZxq| Giw
gwUj wbtP Lv`` mAq Kti mgvštj ev Lvov fvte Ae-`vb Kti |
Gt`i mýúó ce@ ce@_tK| ce@tZ kécí | A-`wbK gj |
kécí i Kt@ Kwt@K gKj Drccbøng |



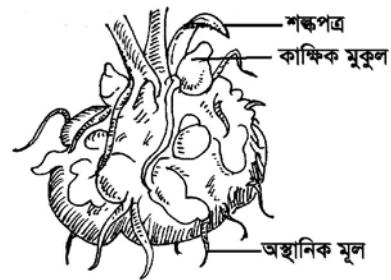
চিত্র : রাইজোম

K` : wcavR, i mb BZ`w` Dmt` i KvÈ GB cKv*i* i | Gt` i KvÈW
(K`) LjeB Tz^o, tMjvKvi | DEj | ceql cega” ,tjv msKPZ | cijy
I i mtjv kec” ,tjv Ggb fvte Ae⁻vb Kti th K` WK t Lv hiq
bv | G KvÈ*i* wbtPi w` K t_K cOi A⁻wbK , ”Q gj tei nq |



ଚିତ୍ର : କନ୍ଦ

, mOK` : Ij KPz , mOK` i D`vniY| G ai:bi KvE tek eo |
AvKvZtZ cIq tMj vKi | GtZ mjuÓ ce©I ce©ga" _vK| kéc:t|i
KtP Drcbœcik,©er KvPTK gKj , wj eo nq Ges wki' , mOK` i
mjuÓ Kti |



ଚିତ୍ର : ଗୁଡ଼ିକନ୍ଦ

Aa qeqx i ev   Z Kv  : big Kv  h  (weir) Dw ` GK ai  Yi we kI kvLv Drcb nq| G kvLv t v
A R c Btbi gra g bZb Dw ` i m o K i _v K| gwUi Dc i ev m gib  bx P Aew Z G ai  Yi
` e  kwa Z i ev   Z Kv tK Aa qeqx Kv  etj| Gi v Pvi c Kv i nt Z ci  |

i bvi ev aveK: _wbKib I `pñim | Avgij x BZ^m Dw^mt` i Kv^tEi wb^tPi cte^p
Kw^mK gKj t^tK th kwqZ kvLv Rb^m Zt^tK aveK etj |

t^tvj b ev epu aveK : Giv GK w^tkl ai^tYi aveK | KPz Dw^mt` i tMov tL^tK
j^tv kvLv tei nq | G kvLvi i agv^t ce^cvj A^twbK g^tj i mnvt^t gwU ati ivL
ewK kvLuU epufte Ae^tvb Kti | Kt^tl m^t gKj t^tK ct^t bZb Dw^m Rb^m |



AdtmUt tUvcvcbv, KPzi cvbv bv^tgK Rj R Dw^mt` i ce^ca^t, vj tQvU | tgUv nI qvi
Rb^t Kv^tK Le^tRiZ t^tLvq | Gt^t i AdtmU etj |



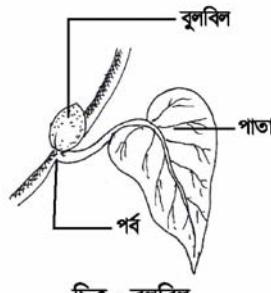
mvKvi ev Da^taveK t P^tg^t Kv, evk ct^tZ Dw^mt` i kwqZ Kw^mK gKj t^tK
Drcbentq kvLuUi AM^tM gwUi Dcti Ptj Av^tm Ges bZb Dw^m Drcbæ
Kti |



evqeqq i ev^tmi Z KvE: G mKj KvE gwUi Dcti ^rfweK Kv^tEi gZ Ae^tvb Kti wK^tle^tkl ai^tYi
KvR thgb Lv^t Zix, A½R cRbb, AvZ^t Pi, Avi^tnY BZ^m Kv^tRi Rb^t i ev^tmi Z ntq _vtK | Giv
Pvi cK^tii ntZ ct^ti |

dwB^tj vK^mW ev cY^tKvE : dwYgbmv RvZxq Dw^m wJB G ai^tYi Kv^tEi D^tvni Y | G ai^tbi KvE cvZvi gZ
PvPv | meR hvi dtj Giv Lv^t Zix Ki^tZ cv^ti | cvZv^tjv KvUvq ci^tYZ ntq Dw^mt` i AvZ^t Pi KvR
Kti |

_b^tev kvLv K^tUK : AtbK mgq Kw^mK gKj kvLv gKj Zwi bv Kti k^t | m^tpyj KvUvq i ev^t-vi Z nq |
tej , gqbv KvUv, tgtn` x BZ^m Dw^mt` KvUv gZ kvLv K^tUK t^tLv hq |



†÷g tUj wj ev kvLv AvK1® Sg‡KvJ Zv, nvo‡Rvov BZ`w` `y® Av‡ivnx Dv™‡ i c†K¶ t‡K m‡Zvi gZ
miy j x^v I cüPv‡bv th Ask, wj tei nq Zv‡K kvLvAvK1x©ej | AvK1x®Z cvZv Drccbønq bv |
ej wj : tKvb tKvb Av‡ivnx D™‡ i K‡v‡KgKj kvLvq ciwYZ bv n‡q c®i Lv`" mÂq K‡i tMvj vKvi gvsm
ic‡Ei AvKvi avi Y K‡i | GiwB ej wj |

cW-8 : ičvših Z cVZw

иѣткI KвR мгнав Kivi Rb" cvZvi iе cwi eиZз nq| G ai†Yi ievšи Z cvZv m¤úťK°Gevi Avgiv
Rube|

K) AvKl¹⁰: cvZvi kxI PwM A_ev c̄IK AtbK mgq c̄vPvtbv w̄c̄ Gi b̄vq ifc avib Kt̄i | G, t̄j v
AvKwl¹¹ Gi mwvñt̄h̄ MwQ t̄Kvb w̄KQzAvKt̄o ai t̄Z cv̄t̄i | Rsj x gUi MwQ G ai t̄bi AvKwl¹² Lv hvq |



চিত্র : আকর্ষণ



ଚିତ୍ର : ଶକ୍ତପତ୍ର



চিত্র : পতঙ্গ ফাঁদ



চিত্র : কন্টক পত্র

L) Lv`` mÂq : tçwR, i mb ev NZKqvix MqQi cvZv ciyl imqjv nq| Gme cvZvq Lv`` Rqv vK

M) cZ½ dñ : Kj mx Dñmç GK ai‡Yi j Zv‡bv MñQ | SñS bvgK Rj R Dñmç` i cvZv i evšñ Z n‡q
Kj wñ ev _‡j i bñq i e aviY K‡i | Gi g‡a” tcvKvgvKo X‡tj Kj wñmi XvKbwñU eÜ n‡q hvq c‡i MñQ
Zvi †`n † †K i m i †l †bq|

N) c|Rbb : t|Kvb t|Kvb Dw^M|` cvZvi w|Kbviv t_‡K Kjo MRvq | ax‡i ax‡i Gme Kjo t_‡K wb‡Pi w‡K
„Q qj | MRvq | t|Kvb GK mqq Giv qy^B n‡q -`yaxb Dw^M|` i RbYt` q, thqb-cv_i KjP |

0) KÈK cÎ : cVZv KLbI KvUvq i evšvni Z nq, h_v- tjev

P) kéc̄ : KLbI f-~~w~~bgē' Kv̄t̄ē i cvZv cvZj v Av̄k Gi b̄vq Av̄Kvi avi Y K̄ti | thgb- Av̄j y Av̄` v, nj̄y BZ̄w̄ | GiVB kéc̄ | i m̄t̄j v kéc̄ L̄v̄ `` m̄Aq K̄ti Ges Kv̄t̄K qK̄i K̄ti i ¶v K̄ti |

cW : 9 | 10

jmZ KvR :

- 1 | i evšwi Z A-’wbK g‡j i , i Zj †j Av‡j vPbv | Dc-’vcb |
2 | Avg† i e-enwi K Rx‡b i evšwZK Kv‡Ei , i Zj tcv÷vi tccv‡i Dc-’vcb |
3 | cvZvi i evšti i c‡qRbxqZv hy‡mnK‡i Dc-’vcb |

G Aāv̄q w̄K w̄Lj̄g

- Av̄v̄ I Av̄y i ev̄š̄i Z Kv̄E |
- Kv̄E I cv̄Zv̄ K̄UK ev̄Av̄K̄t̄Z i ev̄š̄i Z nt̄Z ct̄i |
- gj̄, Kv̄E I cv̄Zv̄ Lv̄ m̄Aq, ^RewbK Kv̄h̄m̄xúbaKiv, c̄Rbb BZ̄w̄` Kv̄t̄Y i ev̄š̄i Z nq |
- i ev̄š̄i Z gj̄, Kv̄E I cv̄Zv̄ ḡbe Rx̄tb ĀtbK̄, i Z̄c̄Ȳf̄wgKv̄ cv̄j b K̄t̄i |

Ab̄k̄x̄j bx̄

kb̄v̄'vb c̄t̄Y Ki

- 1| w̄ḡw̄o Av̄y GK̄U i ev̄š̄i Z ----- |
 2| Kv̄P̄ nj̄j̄ GK̄U i ev̄š̄i Z----- |
 3| d̄iY ḡbm̄ GK̄U i ev̄š̄i Z ----- |
 4| gj̄ t̄t̄K cv̄Zv̄ c̄w̄b tc̄š̄Q̄t̄bvi Kv̄R K̄t̄i ----- |
 5| cv̄Zv̄i c̄w̄b Kv̄R ----- Kīv̄ |

msw̄P̄B D̄Ei c̄k̄e

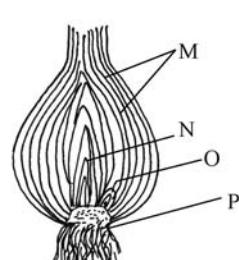
- 1| t̄M̄j Av̄y gj̄ bq̄ t̄Kb?
 2| d̄iYgbm̄wi t̄n̄U Kv̄E bv̄ c̄t̄, ēv̄L̄v̄ Kī |
 3| cv̄Zv̄ w̄K Kv̄t̄Y i ev̄š̄i Z nq ?
 4| Kv̄t̄Ei wēt̄kl̄ Kv̄R, gj̄ D̄t̄j̄ L̄Kī |
 5| gj̄ w̄K w̄K Kv̄t̄Y i ev̄š̄i Z nq?

ēw̄beP̄b c̄k̄e

1. t̄Kb Dw̄m̄t̄` i gj̄ w̄K̄Zi gj̄ _v̄K?
 K. w̄w̄j qv̄ L. Av̄v̄ Av̄v̄ M. w̄ḡw̄o Av̄y N. Kij v̄
 2. i v̄B̄t̄Rv̄ Kv̄t̄Ui ^euk̄ō nt̄j v̄-
 i. m̄ȳúO cēq̄ cēgā _v̄K ii. cēq̄ cēgā, t̄j̄ v̄ msK̄P̄Z iii. ḡw̄U i w̄b̄t̄P̄ mḡv̄š̄i v̄j fv̄t̄e _v̄K
 w̄b̄t̄Pi t̄Kb̄U m̄w̄K?
 K. i I ii L. i I iii M. ii I iii N. i, ii I iii

D̄t̄ xcK̄U j̄ P̄ Ki Ges 3 I 4 b̄x̄i c̄k̄e D̄Ei `v̄l :

3. M̄ P̄w̄yZ Ask̄Uji Kv̄R nt̄Q -
 i. Lv̄` Rgv̄ i v̄Lv̄ ii. Kv̄yK ḡKj̄t̄K i P̄v̄ Kīv̄ iii. c̄Rb̄t̄b m̄w̄v̄h̄ K̄t̄i
 w̄b̄t̄Pi t̄Kb̄U m̄w̄K?
 K. i I ii L. i I iii M. i I iii N. i, ii I iii



4. ଦିନ୍ଦିକି ତକବ ଅଶ୍ରୁ ତାଙ୍କ ବିଜ୍ଞାନୀ ନାହିଁ?

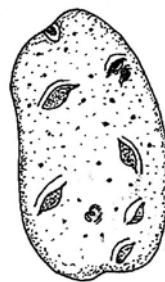
K. M I N L. N I O M. O I P N. M I P

ମରବାକୁ ଚକ୍ରୋ

1.



ଚିତ୍ର : X (ଆଦା)



ଚିତ୍ର : Y (ଗୋଲ ଆଲୁ)



ଚିତ୍ର : Z (ମିଠି ଆଲୁ)

K. ej ମେଜ କି?

L. କୁଣ୍ଡଳ କିମ୍ବା ଗ୍ରାମ୍ପିଙ୍ଗ କରିବିଲେ କରିବିଲୁ?

M. ପାତାଳି X Gi ଏଣ୍ଣିବିକାଳି କିମ୍ବା ଏଣ୍ଣିଲିକି |

N. Y I Z Gi ଏକଟାଟି ଜିବିଙ୍ଗିକି ଅଟିଜିପବି କି |

2.



M



R



N

K. ଆଦିମୁକୁ କି?

L. କିମ୍ବା ଦିନ୍ଦିକି କିମ୍ବା ଦିନ୍ଦିକି ଏବଂ ନାହିଁ ତକବ? ଏଣ୍ଣିଲିକି |

M. ଏକଟାଟି ମାତାଳି ଏକଟାଟି ରାତାଳି ଏକଟାଟି ନାରାଯଣ ପାତାଳି ଏଣ୍ଣିଲିକି |

N. ଦୁଇ ଏକଟାଟି R I N ଏକଟାଟି ନାରାଯଣ ପାତାଳି ଏକଟାଟି ନାରାଯଣ ପାତାଳି ଏଣ୍ଣିଲିକି |

ମାତାଳି କି

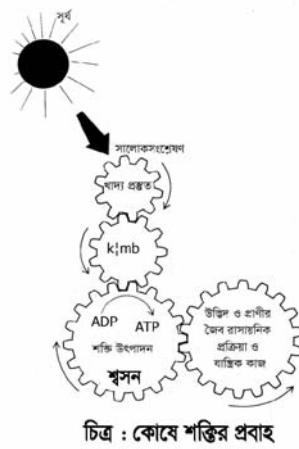
1 | g̃w̃i P M̃Q, Ñm, GK L̃E Ãv, GK L̃E K̃P̃v ñj̃ , Ãv g̃j̃ x k̃vK, K̃P̃i j̃wZ, d̃w̃gb̃mw, I t̃ej K̃ṽv
msM̃b̃ Ki | G̃t̃ i K̃ṽE t̃K̃ṽb̃ c̃K̃ṽz̃i Z̃ṽ L̃ṽz̃q̃ t̃b̃ṽU Ki | t̃Z̃ṽg̃ṽi K̃_ṽi ^c̃t̃P̃ h̃ṽ^3 `ṽ |

PZL ©Aa“wq
kmb

cÖZUJ DWMC I cÖXi Rxeb AwtQ| Rxet` tn cÖZibqZ newfbœai tbi ^RenbK cÖuqvi Rb" kw³ cÖqyRb|
Rxe tKutli mwBtUciRtg mwÄZ ÷P, KKPI, tcÖUb I d'utUi AYtZ kw³ mwÄZ _vK| mKj
Rxe tKutli ^Re mwqvi Rb" Aw tRb Acwñwh® cKZctP Aw tRb Øiv Lv` " ^vZK kw³ hv
mwjvKmskH cÖuqvi gva"tg tmSi kw³ t_K mwÄZ nq, ZvK MwZkw³ I Zic kw³tZ i evšiZ KiwB
kmtbi gl" Dfik | GB MwZkw³ I Zickw³i Øiv Rxe Lv` " MÖY,Pj b,tPb,eP, Rbb cfPZ kvxi eEjq
KvR mwúbaKti _vK| kmb GKcKvi `nb cÖuqvi hví Øiv Lv` " Aw tRb Øiv Rwi Z ntq kw³ mwMz nq|

G Aāq tk̄l Avgiv-

- Rx̄tei k̄w̄³ Drcv̄ b c̄l̄qvl̄ ēvL̄v Ki t̄Z cvi t̄ev̄
 - wP̄t̄i m̄nv̄t̄h̄ c̄l̄xi k̄mbZt̄šj̄ c̄l̄b Askmḡt̄ni KvR̄ eȲv̄ Ki t̄Z cvi t̄ev̄
 - k̄mbZt̄šj̄ t̄i v̄Mi Kv̄Y I t̄i v̄Mi j̄t̄Y eȲv̄ Ki t̄Z cvi t̄ev̄
 - m̄t̄j̄ v̄Kms̄t̄kH̄ Ges k̄mb c̄l̄qvl̄ Zj̄ bv̄ Ki t̄Z cvi t̄ev̄
 - c̄l̄xi k̄mbZt̄šj̄ c̄l̄b Ask mḡt̄ni wP̄t̄ AsKb Ki t̄Z cvi t̄ev̄



$cW-1 : kmb \subset \mathbb{W}Z$

Rxe^t tñ wœrfœkvi xi eExq KivR mœubœKivi Rb" cœlqyRbxq kœl³ DrcbœKivB kœmtbi GKgvÎ Dœlⁱ k| kœmtbi mgq Rxe^t tñ Aœl tRb eœeüZ nq tKvIw"Z Lv` "tK `nb Kivi Rb" | Gi dœj Drcbœnq kœl³ Ges KveØ WœB-A. vBW | myzis kœmb ej tZ Avgiv eSe — th %Re iwmqwbK cœlqyq Rxe^tKvI " Lv` "e" Aœl tRtbi Dœl⁻wZ ev Abçœl⁻tZ Rwi Z ntq Lv` " " " wZK kœl³ MœZkœl³ | Zvckœl³tZ iœrš- wi Z | gœl³ nq Ges KveØ WœB-A. vBW | cœmb Drcbœnq ZtK kœmb etœj |

kmb GKU wecvKxq wuqv| G cüuqv Pj vKv‡j cÖZU Rxo cwi tek t‡K AñK‡Rb MÖY K‡i Ges Kveß
WB-A. vBW ZÖM K‡i | wogek‡iYi wKOyDwmc | cÖYx Aw‡ Rb Qvor kmb wuqv m¤úbeK‡i | Zte mKj
t¶‡† Kveß WB-A. vBW Drccbænq| Dwmc | cÖYxi cÖZU mRxo tKv‡l w` b iwl me mgq kmb Kvh©
N‡U |

cW-2

RxeRM‡Z kmb : kmb GKU Aš- tKvI xq wecvK c̄lqvi Ges Dwmc | c̄Yx †-tni wefbœmRxe tKvI kmb c̄lqvi gj Z GKB| KŠf wefbœRxtei A‡Rb MōY | KveB WB-A. vBW vB‡M‡b cxiZU wfbi‡ | Dwmc †-tn kmb Kv‡j A‡Rb | KveB WB-A. vB‡Wi webgq A‡cPvKZ mij | Dwmc i tKv‡bv wbw S kmb A½ bvB | cxiZi c̄i Üs Kv‡Ui tju‡mj Ges Aš-‡KvI -'v‡bi gra‡g evqy †-n Afš-‡i c̄ek K‡i | cwb‡Z wbgi‡Z Dwmc ,tjv mgMō †-nZ‡j i mnv‡h A‡Rb tKvI Y K‡i | c̄Y‡-tnI kmb wefbœA‡½i gra‡g bvbfv‡e mxubenq | wbgetkvi c̄Y‡Z c̄wbZ ZK | U‡Kqvi gra‡g kmb nq | Dba‡ c̄Y‡i kmb Mvmxq webg‡qi Rb” we‡kl ai‡bi kmb A½ Av‡Q | thgb- giv | eivOwP dj Kvi mnv‡h Ges -'j R tgi” Üxi v dmd‡mi mnv‡h kmb mxubekti |

kmbKv‡j kw³ Drct‡bi c̄Y :

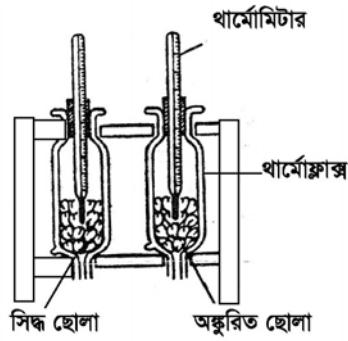
kmb th kw³ (Zvc) Drct‡bi c̄Y :

DcKiY : `ju _v‡g‡d‡ , `ju _v‡g‡gUvi , A½iZ tQvj v exR, cwb‡Z mm× tQvj v exR, wQ`hy³ i evi wQic | cix¶v : A½iZ tQvj v exR, wj ‡K GKU _v‡g‡d‡ i g‡a” ti‡L GKU wQ`hy³ wQic w‡q gl‡U eÜ Ki‡Z n‡e | Gici wQic wQ‡i ga” w‡q GKU _v‡g‡gUvi Ggb fv‡e c̄ek Ki‡Z n‡e hv‡Z _v‡g‡gU‡i i cvi` c̄Y‡S- wQ‡i A½iZ tQvj v exR, tjvi g‡a” tc‡_Z _v‡K | Abj‡fv‡e Aci _v‡g‡d‡ w‡Z mm× tQvj v exR, tjv i L‡Z n‡e Ges Aci _v‡g‡gUvi wQ‡i vcb Ki‡Z n‡e | cxiZU _v‡g‡gU‡i i cvi` ti Lvi Ae-’vb PiyZ K‡i i L‡Z n‡e |

ch‡¶v : wKo¶v ci †-Lv hv‡e Rxeš- A½iZ tQvj v exRh³ _v‡g‡d‡ i DòZvi e‡x NUq _v‡g‡gU‡i i cvi` ti Lvi cvi eZB N‡U‡Q | mm× exR hy³ _v‡g‡d‡ i DòZvi e‡x nqib A‡r _v‡g‡gU‡i i cvi` ti Lv Acvi ewZQ Av‡Q |

* Rxeš-tQvj v exRh³ _v‡g‡d‡ i _v‡g‡gU‡i i cvi` ti Lvi tKb cvi eZB NUj ?

* G‡Z Kx c̄YvZ n‡jv?



চিত্র : ছোলাবীজে শসনের পরীক্ষা

cW-3 : c̄Yxi kmb

Avgv bvK w‡q klm-c̄lqm MōY Kvi | klm-c̄lqm mi mgq Avgv Kx Mv'm MōY | ZvM Kvi? c̄Yx | Dwmc evqy ‡K A‡Rb MōY K‡i Ges KveB WB-A. vBW ZvM K‡i | Zv‡i G c̄lqvi Pj‡Z _v‡K mvivRxeb | Z‡e c̄Yx | Dwmc i tejvq Mv'm MōY | eRB Kvi c̄lqvi wfbœKv‡i | Dwmc A‡Rb MōY K‡i, cvZvq Aw-’Z GK c̄Kvi wQ`‡t_ hvi bvg n‡jv †-v‡gUv | wb‡§ | D”P tKvI c̄Yxi †-tn Mv‡mi Av`vb c̄v‡b

N^u **newfbæcKvi** A^{1/2}i gva²g | thgb- dj Kv, dmdm | th mKj A^{1/2},² j v kmbKvh²Pij v²bvi Kv²R Ask tbq Z²i GK²T kmbZ²etj | g²be kmbZ²ib²gij wLZ A^{1/2},² j v w²tq M²VZ |

- | | | |
|---|---|---|
| 1. b ² mvi Ü ² I b ² mvc_ | 2. b ² mvi Mj wej | 3. ^i h ² ši |
| 4. kmbuj x ev U ² Kqv | 5. tK ² g kvLv ev e ² Kvm | 6. Abt ² g kvLv ev e ² 1/4l j |
| 7. evq ² tj ev A ² v w ² fI j v ² m | | |

1. b²mvi Ü²I b²mvc_ : b²mKv gj Mn²i i Dc²i Aew²Z G²KwU w²tKvYvKvi Mn²i | Guv mg²b b²mKv wQ²
n²Z c²O²Z Mj wej ch²-ZZ | G²KwU cvZj v c²Pw² tq Guv `BfvtM wef³ n²q²Q | Gi m²Lf²M tj v g |
c²vr w²K w²S²j -²iv AveZ _²K | Avgiv bvK w² tq th evq²M²Y Kv² Z²K c²k²m etj | c²k²m evq²Z
aj²KYv, ti M²Rxe²Yv²K²tj Zv GB tj v g | w²S²j t²Z AvU²K h²q |

2. b²mvi Mj wej : b²mvi Mj wej n² j v b²mvc²_i t²k² Ask h²
Mj we²tj i m²t_ wgtkt²Q | Mj wej ct²_ kmbuj x²Z evZvm c²ek
K²i |

3. ^i h²ši : Mj wej | kmbuj xi ms²hM²-tj ^i h²ši Aew²Z |
^i h²ši ^i m²OKvix ^i i^{3/4}ev t²f²Kyj KW²-²K | ZvB G²K
^i h²ši etj | ^i w²t²1 gjL G²Kuv XvKbv _²K | Guv Lv²
M²Yi mgq ^i h²š²K tX²K i²L h²Z G²Z Lv² X²K²Z bv
ct²i | Avevi k²m M²Yi mgq L²j h²q |

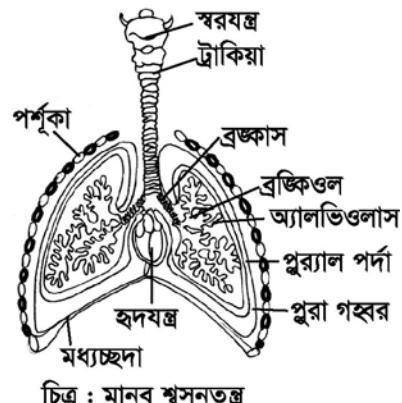


চিত্র : নাসারন্ত্র ও নাসাপথ

4. kmbuj x : Lv²bjxi m²stL Aew²Z ^i h²ši t²K ii "n²q
tK²g kvLv ch²-²ZZ bjx²K kmbuj x etj | kmbuj xi
gva²g evq²dmdt²m c²ek K²i |

5. tK²g kvLv ev e²Kvm: kmbuj x dmdt²mi Kv²Q G²m W²b | evg `BwU kvLvq wef³ n²q h²μt²g W²b |
evg dmdt²m c²ek K²i | G²i t²K W²b | evg tK²g kvLv ev e²1/4vB (GK eP²b e²1/4vm) etj | dmdt²m
c²ek Kivi ci GB kvLv²q AmsL² kvLv-c²kvLvq wef³ nq |
G²i t²K e²IK1j etj | e²1/4Btqi M²b kmbuj xi g²Zv |

6. dmdm : e²Mn²i i tfZi `BwU dmdm ür²c²Ei `B ct²k
Aew²Z | Guv út²Ai g²Zv big | tK²gj | W²b ct²k
dmdm²U evg ct²k dmdt²mi tP²q mg²b eo | dmdm `B
fvR w²nkó ct²b g²K G²KwU w²S²j -ev c²P²0iv AveZ | `B
f²Ri gta² GK c²Kvi w²wQj c²v²_-²K | d²j k²m-c²k²m
Kv²R, dmdm | e²Mn²i m²t_ tK²b N²Y j²M bv | e²1/4vm
c²Zct²k dmdt²m c²ek K²i AmsL² kvLvq c²kvLvq wef³ nq |
GB m² e²IK1j ,²j v evq²tj ev evq²K²I c²ek K²i |



চিত্র : মানব শ্বসনতন্ত্র

c̄Z K̄U evqy_tj cvZj v G_wct_ij qv j tKv l 0vi v M̄WZ | G tKv l tji v ^K̄KK R̄wj Kv 0vi v cwi teWZ | tKv l tji v Z evqy_tek Ki tj G, tji v tej_tbi ḡZv dtj D̄V | c̄ti Avcbv Avcb K̄A Z n̄q h̄q | evqy_tj I ^K̄KK R̄wj Kv Df̄qi c̄Pxi GZ cvZj v th, mntRB G, tji vi ga'' w̄ t̄q evqyAv` vb-c̄vb Ki t̄Z cvt i | 7. ga'' Q` v : th gysm̄tci k eP Mn̄Yi | D` i Mn̄Yi t̄K c̄_K K̄ti t̄i t̄L t̄Q Z̄t̄K ga'' Q` v etj | GUv t̄ L̄Z AtbKUv c̄hwi Z QvZv | ga'' Q` v msK̄PZ ntj w̄t̄Pi w̄ t̄K b̄t̄g | ZLb eP Mn̄Yi i AvqZb eto | Avevi GUv hLb c̄hwi Z nq ZLb Dc̄ti i w̄ t̄K D̄V Ges eP Mn̄Yi msK̄PZ nq | ga'' Q` v ms̄t̄KvPb | c̄hwi t̄Yi gva'' t̄g c̄kjm | w̄t̄kjm KvR w̄bqšj K̄ti |

w̄t̄Riv Ki : P̄U^` t̄L k̄mbZ̄t̄šj w̄P̄yZ w̄P̄ AsKb Ki Ges dmd̄mi KvR eYD̄i Ki |

bZb kā: k̄mbvij x, evqy_wj, ^i h̄ši eš̄Kl j, eš̄Kum, t̄K̄g KvLv, Abj̄K̄g KvLv |

cW 4-6 : k̄mb cxWZ

Avgiv bvK w̄ t̄q evZim tbB Avevi t̄Qto t̄B | ḠKB Avgiv m̄avi YZ k̄mb etj _w̄K | Avgit` i G avi Yfj | Avgit` i eK m̄ct i ḡZv Avei Z msK̄PZ | c̄hwi Z nq | ḠZ dmd̄mi AvqZb eto | K̄g | dmd̄m Avei Z msK̄PZ | c̄hwi Z n̄q Ā t̄Rb M̄Y | K̄eB W̄B-A· vBW cwi Z̄M K̄ti | Gf̄te Avei Z Ā t̄Rb tbI qv | K̄eB W̄B-A· vBW cwi Z̄M KvB k̄jm w̄q b̄t̄g cwi P̄Z | GUv k̄mtbi GK̄U avc | k̄mb c̄uqyt̄K `B f̄t̄M f̄M Kv nq | h̄vt- 1. eintk̄mb 2. Aš̄t̄k̄mb |

1. eintk̄mb : th c̄uqy dmd̄mi ḡta'' M̄vñq Av` vb-c̄vb N̄U Z̄t̄K eintk̄mb etj | G ch̄t̄q dmd̄m | i^3 R̄wj Kv ev ^K̄KK bwj i ḡta'' Ā t̄Rb | K̄eB W̄B A· vB̄t̄Wi w̄bqgq N̄U | eintk̄mb `B ch̄t̄q m̄ubonq | h̄vt-

(i) c̄kjm ev k̄jm M̄Y : cwi tek t̄t̄K Avgiv th Ā t̄Rb h̄B evqyM̄Y Kv ḠK k̄jm M̄Y ev c̄kjm etj | c̄kjm mi mgq ga'' Q` v | eP̄icÄi w̄' i ḡt̄Si t̄ci msK̄PZ nq |

(ii) w̄t̄kjm: c̄kjm ci ciB w̄t̄kjm ch̄t̄q i i''nq | G ch̄t̄q ga'' Q` v | w̄cÄi w̄' i t̄ci t̄j v k̄m_j | c̄hwi Z nq | dtj dmd̄m AvqZt̄b t̄QU | msK̄PZ nq | dtj evqy_tj i t̄fZt̄i i evqy K̄eB W̄B-A· vBW M̄vñ dmd̄m t̄t̄K eñvñ, UñKqvi gva'' t̄g cwi eñvñ Z̄M n̄q b̄vñi Üñw̄ t̄q evB̄t̄i w̄MñZ nq |

w̄t̄Riv Ki :

Z̄g t̄Zgvi mncñxi w̄t̄kjm Z̄M | c̄kjm tbI qv j̄l Ki | ga'' Q` v t̄P̄t̄c t̄i t̄L G KvRwU Kivi t̄P̄v Ki | Kx N̄U? t̄Kb N̄U? Zv eñL̄v Ki |

2. Aštakmb: dmd̄mi i‡³ th A‰ †Rb c̄ek K‡i Zv i‡³i gva‡g †`tni `†eZP^Kwkk bvjxtZ tc‡Q‡j Aštakmb i“nq |

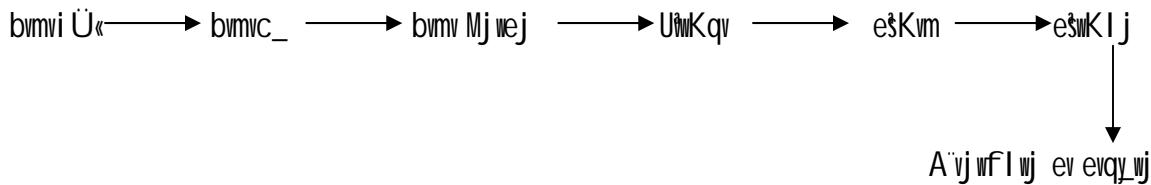
A‰ †Rb ^Kwkk bvjxi M̄† †f` K‡i †K‡l i d‡K d‡K th im (jwmKy) Av‡Q Z‡Z tc‡Q hq | A‰ †Rb enbKvi G im †K‡l i Af‐šti c̄ek Ki‡j A‰ †Rb L‡`i m‡_ iwmq‡oK wemq‡r K‡i I kw³ Drcbœ K‡i |

A‰ †Rb msenb: A‰ †Rb dmd̄mi evqy _‡j t‡K i³ Rwj Kvq c̄ek K‡i | i‡³i tjwmZ KwYKvq †tgvtM‡eb bigK th iÄK c`l©‡K, Gi m‡½ A‰ †Rb njv Kv f‡te Aves nq | Gf‡te †tgvtM‡eb iÄK A‰ †Rb c‡ien‡b Ask tbq |

KveB WB-A· vBW msenb: KveB WB-A· vBW c‡abZ i‡³i i³i‡m ev c‡Rgvq `ExFZ Ae‐’vq †KvI n‡Z dmd̄m hq |

bZb k‡: emtkmb, Aštakmb, c‡kjm, vbtkm

kmbZ‡š‡i c‡vn wP† vbtg‡t Lv‡bv n‡j v:



wRiv Ki:

tek K‡qKevi DViemv Ki A_ev †`Šovl | Zvici Nwo ati klm-c‡km MYbv Ki | †`Lte wekigiz Ae‐’vq klm-c‡km hZ wQj c‡ik‡gi d‡j Zv evx tc‡q‡Q | †Zvgvi ewoi tQu fvB-tevb‡i c‡Z‡Ki c‡Z wgb‡U vbtkm-c‡k‡mi nvi MYbv Ki |

cW-7

kmbYZ‡š‡i mvavi Y tiwM:

nwkG m‡ne h‡vq f‡M‡Qb | c‡ij -evej G‡Rgv ev nuc‡b | tQuE wki weK‡ki vbd‡gb‡qv n‡q‡Q | G tiwM‡j vi KvY Kv? Kx mweavbZv M‡Y Ki‡j Zv‡`i G tiwM‡j vi n‡Zv bv | G tiwM‡j vi c‡ZKvi Kv? G‡K G‡K G tiwM‡j vi KvY, j¶Y, c‡ZKvi | c‡Z‡i‡ai e‡e‐’v tR‡b vbtj ti‡Mi AvugY †‡K AtbK‡k c‡i †vY cvl qv m‡e |

h²v: h²v GKU AwZ cwi wPZ msþvngK t i M| G t i M mn‡R msþvngZ nq| hviv AwaK cwi kþ K‡i, `e®,
A-`y-''Ki cwi t eþk evm K‡i Ges AþþtZ t f v M ev h²v t i Mxi m v _ evm K‡i Zviv G t i v Mi wKvi
n‡q _v‡K|

Kvi Y: GK ai t̄bi ēvKwUwi qvi AvgutY GB ti M nq |

j Πγ:

- †`‡ni | Rb Kg‡Z _‡K | kixi `e‡n‡Z _‡K |
 - LmL‡m Kwk nq, KLbI KLbI Kwk i ³ co‡Z ci‡i |
 - weKv‡j i w‡K Aí Rj nq, i‡† kix‡i Ng nq |
 - e‡K ev‡tV e„_v nq, g‡S g‡S t‡U Am‡ † Lv † q |

cíZKvi :

- *tiMk cýóKi Lv̄i w̄ t̄Z n̄te |*
 - *W̄v̄t̄i i c̄v̄gk Ab̄hv̄q x̄Z P̄w̄Krm̄i ēē-v̄ Ki t̄Z n̄te | G P̄w̄Krm̄ x̄N̄t̄gq̄v̄ x̄m̄x̄úȲf̄v̄t̄j̄ v̄ b̄v̄ n̄l̄ q̄v̄ ch̄s̄ P̄w̄Krm̄ P̄w̄j t̄q th̄t̄Z n̄te | W̄v̄t̄i i c̄v̄gk Q̄iov̄ t̄K̄t̄b̄v̄ Aē-v̄t̄ZB P̄w̄Krm̄ ēÜ Ki v̄ h̄t̄e b̄v̄*

cöZtiva:

- h²v c²Z²laK wUKv n²jv we.m.m.R. | R²b² ci t²K GK e²Q²i i g²a² wK²i²K GB wUKv t² I qvi e²e²v
Ki²Z n²e | R²b² cic²B hZ²Z m²e wK²i²K G wUKv t² I qvi e²e²v Kiv D²Pr |
 - h²v t²M²K c²_K i²L²Z n²e | me²P²q f²t²jv e²e²v n²jv n²mciZt²j cW²bv | G²Z my²P²Krmv
w²b²Z nq |
 - t²i²Mx² Kd- y²g²w²U²Z c²Z t²d²jv ` i²Kvi | Kvi Y Gm²e AmsL² RxevYy_ v²K |
 - n²wP-K²wki mgq g² i²g²j v² t²q² tX²K w²b²Z n²e |
 - h²v t²i²Mx² Kv²Q wK²i² t²i²K tKv²bv g²Z th²Z t² I qv D²Pr bq |

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බඳු ග්‍රැන්ඩ් සිංහල ප්‍රතිචාර මෙයි ප්‍රතිචාර මෙයි ප්‍රතිචාර මෙයි ප්‍රතිචාර මෙයි

Kvi Y : GK ai tbi e"vKwUwi qvi AvugtY G ti w ng |

j ¶ Y : Kwk l klm Kó nq| klm tbI qvi mgq btki wQ`^eo nq| teuk Rj nq| Kwk i mgq ti wMx eK e^v Abfe Kti |

c̄ZKvi: AñZ`Z wPwKrm‡Ki c̄wgk‡bl qv DñPZ | wPwKrm‡Ki c̄wgk‡Abjñwqx tiñMxi Jla I c_” LvI qv
`i Kvi | teñk K‡i cwñb I Zij c`v_(mÿc, d‡j i im) cvb Ki‡Z n‡e | tiñM‡K cñóKi Lvëvi LvI q‡Z |
c̄Ztiva: wki †`i nvg ev eñKvBñUm n‡j AZ”š- mweavbZv Aeñ ñ^b Ki‡Z n‡e |

ešKvBwUm:

kjmbuj xi msugYtK ešKvBwUm ej | A-γ-''Ki cwi tek aj vewj wukZ Avenl qv, Wūv j wv Ges agcib t_‡K G †iM n‡Z c‡i |

Kvi Y : GK ai‡bi fvBim t_‡K G †iM nq |

j ¶Y: Kwk I klm Kó nq | Kwk i m‡_ Kd _‡K | Rj nq, tiMx µgvstq `e‡p n‡Z _‡K |

cñZKvi : agcib eÜ Kiv| W³v‡i i ciwgk©Abjhvqx PwKrmvi e-e-’v Ki‡Z n‡e |

nucwb ev GvRgv: nucwb tQiq‡P ev RxevYewmZ tiM bq |

Kvi Y: we‡kl tKib Lvevi, evZv‡m Dcv-’Z aj vewj A-ev dtj i tiYc‡k‡mi m‡_ dm‡m c‡ek Ki‡j nucwb n‡Z c‡i | wk‡‡i t¶‡† mvari Y m‡_‡K nucwb n‡Z c‡i |

eñZµg: eQ‡i i we‡kl FZ‡Z ev FZ‡c‡i eZ‡bi mgq G †iM te‡o hvq |

j ¶Y: nVr klmKó te‡o hvq | klmK‡ó `g eÜ nl qv g‡Zv nq | tiMx tRv‡i tRv‡i klm tbI qv tPÓv K‡i | dm‡m evqy‡j †Z wKgZ Aw †Rb miev nq bv ev evaMÖ’ nq | dtj tiMxi Kó nq | klm tbI qv mgq tiMxi c‡R‡i i gy‡Si Pvgor tfZ‡i i w‡K X‡K hvq | Kwk i m‡_ KL‡bv KL‡bv mv`v Kd tei nq | Rj _‡K bv | tiMx tKib k³ Lvevi tL‡Z c‡i bv | KL‡bv KL‡bv ewg nq | tiMx `e‡p n‡q c‡o | cñZKvi : Av‡v-evZvmcY©M‡n emevm Kiv| th mKj wR‡‡mi ms-ú‡k©Avmtj ev tL‡j nucwb ev‡o Zv t‡K we‡Z _vKv| thgb- ck‡g Kvco | W³v‡i i ciwgk©Abjhvqx Pj v| ta‡qv, aj vewj BZ`w` t‡K `‡i _vKv| agcib cwi nvi Kiv|

Jla tmetb klmK‡oi wK0jv jvNe nq etU, wKšytim cijvci fvj nq bv | ZvB klmKó jvNe Jla me mgq m‡_ ivLv AZ`š-Ri1x|

cW-8

tZvgiv lô tkiN‡Z m‡j vK ms‡kH m‡ú‡K©R‡b0 | tZvgiv ce‡v‡b Kv‡R j wM‡q wbtgi‡ KvRwU Ki |

KvR : `j MZ Kv‡Ri gva‡g m‡j vK ms‡kH | klm‡bi cv_R” w‡L GKwU tcvóvi Km‡R Dc-’vcb Ki |

G Aa‡vq t‡K Avgiv hv wkljvg :

kw³i Rb” cñZwU Rx‡ei kmb Acwi nh‡

c†i Ü«I i ¶‡KvI : c†i‡Üi i ¶‡KvI ,‡jv c†i Ü‡K tLvj ev eÜ ivL‡Z mnvh” K‡i | i ¶‡Kv‡i tK‡i wdj _‡K | ZvB w‡bi tejvq i ¶‡Kv‡i m‡j vKms‡kH N‡U Ges Gi dtjB c†i Ü«L‡j hvq | cñZwU Rx‡ei kmb Acwi nh‡

ewntkmb : dm‡m evqy‡j t‡K Aw †Rb ^KwkK bvj xi i‡³ c‡ek K‡i Ges Kve‡ wBA· vBW i³ t‡K evqy‡j †Z Aw‡m | dm‡m GB Mvmxq Av`vb-c‡vb‡K ewntkmb ej | c‡km I wbtkm GB `B cñqv ewntkmbi AŠMZ |

Ašt̄k̄mb : t̄Kv̄l i ḡB̄t̄Uv̄K̄l̄q̄vi t̄fZ̄t̄i K̄ZK̄, t̄j̄v GbRv̄B̄t̄gi m̄bq̄š̄ȳvax̄t̄b L̄t̄`i m̄t̄_ Āw̄ t̄R̄bi
m̄p̄q̄v N̄t̄U | Gf̄t̄e Ašt̄k̄mb m̄p̄q̄v N̄t̄U |

j̄m̄K̄v̄ : GK̄ i Kḡ ^~Q, C̄l̄r̄ ḡ, ȳP̄v̄i x̄q̄ c̄`v̄_ Ḡv̄ GK̄ aīt̄bī īc̄š̄ī Z̄ K̄j̄v̄īm̄ |

Ab̄k̄x̄j̄ bx̄

k̄b̄`v̄b̄ c̄t̄Ȳ Kī :

1. _____ Lv̄`^Z̄w̄i n̄q̄ m̄K̄š̄ȳ _____ Lv̄` R̄w̄i Z̄ n̄q̄ |
2. Rx̄t̄K̄v̄l i _____ b̄v̄ḡK̄ m̄B̄t̄Uv̄C̄R̄q̄ Ā½v̄b̄t̄K̄ t̄K̄v̄l ī k̄w̄³Nī ēt̄j̄ |
3. d̄m̄d̄m̄ AmsL̄ _____ Ø̄v̄i v̄M̄v̄Z̄ |
4. _____ GK̄v̄U t̄Q̄q̄t̄P̄ t̄īM̄ |
5. k̄mb̄ GK̄v̄U _____ c̄ñ̄p̄q̄v̄ |

m̄s̄v̄P̄B̄ D̄Ēi c̄k̄e

1. Ašt̄k̄mb̄ K̄t̄K̄ ēt̄j̄ ?
2. m̄D̄t̄ḡw̄b̄q̄v̄ t̄īv̄Mī K̄v̄i Ȳ I j̄P̄Ȳ K̄ī?
3. k̄mt̄bī c̄ñ̄p̄q̄R̄b̄q̄Z̄v̄ D̄t̄j̄ L̄Kī |
4. ev̄q̄w̄j̄ ī K̄v̄R̄ D̄t̄j̄ L̄Kī |
5. D̄w̄m̄c̄ | c̄ñ̄Ȳt̄`t̄n̄ k̄mb̄ c̄ñ̄p̄q̄v̄ ēv̄L̄v̄ Kī |

ēñ̄bēP̄b̄ c̄k̄e

1. t̄K̄v̄b̄U D̄w̄m̄c̄`ī ^~mb̄ Ā½ī bq̄?

K. Z̄K̄	L. t̄j̄ w̄Ēt̄m̄j̄
M. īP̄t̄K̄v̄l	N. c̄ñ̄īS̄ī
2. m̄b̄t̄k̄Ȳī c̄ñ̄x̄i v̄ k̄j̄m̄K̄v̄h̄P̄ȳj̄ v̄q̄-

i. dj̄ K̄v̄ I Z̄t̄K̄ī m̄v̄n̄t̄h̄	ii. Z̄K̄ I Ūñ̄K̄v̄ī ḡv̄āt̄ḡ	iii. d̄m̄d̄m̄ I dj̄ K̄v̄ī m̄v̄n̄t̄h̄
-----------------------------------	----------------------------------	---------------------------------------

m̄b̄t̄Pī t̄K̄v̄b̄U m̄v̄K̄?

- | | |
|------------|-------------|
| K. i | L. ii |
| M. ī I ii | N. ī I iii |

ԴԻ ԽԵԿՈՒՅ Պ՝ Կի Գես 3, 4 | 5 ԵՐԱԾԻ ԸՆԿԵ ՇԵՐ ՎԼ :

3. Վ ՊՐԵԶ ԱՏԿԱՋԻ ԵՎ ԿՔ?

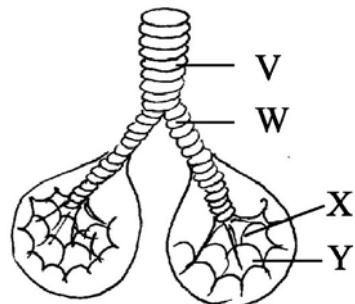
Կ. ԱՎՅՎՖԼՅՎՄ Լ. ԵՎՎԱՄ Մ. ԵՎՎԱԼՅ Ն. ՍԻԿՎ

4. ԴԻ ԽԵԿԻ ԻԿՎԲ ԱՏԿԱՋԵԶ Օ₂ | ԿՕ₂ ԳԻ ՎԵԼԲԳԳ ՆՒ?

Կ. Վ Լ. Վ Մ. Խ Ն. Յ

5. Վ ԳԻ ՄՏՄՎԳԳ ԻԿՎԲ ԻՎ ՆԳ?

Կ. ԳՎՐԳՎ Լ. ԵՏԿՎԲԱՄ Մ. ՎԵԴԵԳՎԱԲԳՎ Ն. ԻՎ



մԲեկյ ԸՆԿԵ

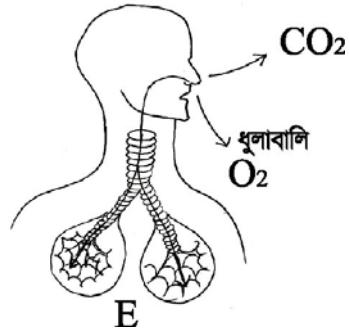
1|

Կ. ԸՆԿԵ ԿՔ?

Լ. ՎԵԴԵԳՎԱԲԳՎ ԳԿՈՒ ԳՎԻ ՎԶԿ ԻՎ ԵՎԼՎ ԿԻ |

Մ. ՎԵԴԵԳՎԱԲԳՎ ՎԵԼԲԳԳ ԵՎԼՎ ԿԻ |

Ն. Ե ՃԵՎԱՆ Ե ԱՏԿ ԸՆԿԵ ԴԵՅ ՄՈ ՄԳՄՎ ՎԵԼՎ ՃԵՎ ՎԵԼԲԳԳ ԿԻ |



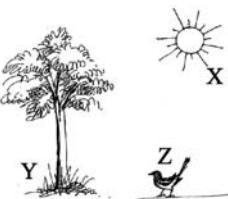
2|

Կ. ԿԻՆ ԿՔ?

Լ. ԸՆԿԵ ՈՒ ԽԵՎՎԵ ԿԻՆ ԵՎ ՄՎՆՎՀ ԿՔ? ԵՎԼՎ ԿԻ |

Մ. Յ Ի Զ ԳԻ ԳԺԱ ԻԿՎԲԱ Խ ԳԻ ՃԵՎ ՎԵԼՎ ՄԻՎՎԻ ԵԵՆՎԻ ԿՔ ԵՎԼՎ ԿԻ |

Ն. ՄՎՄՎ ՎԵԼԲԳԳ ՊԵԴ Յ Ի Զ ԽԵՎՎԵ ԳԵԿ ԱՖԲԻ ՃԵՎ ՎԵԼԲԳԳ ՀԵՅՄՆ ԵՎԼՎ |



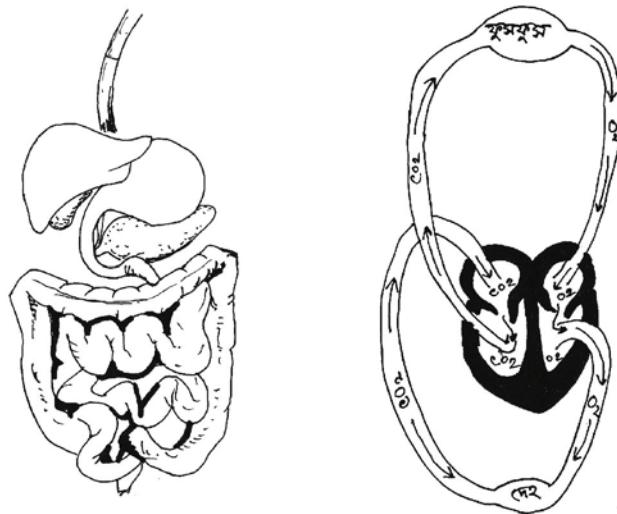
ՎԵՐԻՎ ԿԻ :

1. ԿԻՆՑՏԾԻ ՎՊԴ ԳԵԿ ՊՐԵԶ ԿԻ | ԿԻՆ ԵՎ ԸՆԿԵ ԱՎԵՎ ՎԵՐ ԿԻ |

cÄg Aaäq
cwi cWZŠi Ges i 3 msenbZŠi

Avgiv th Lv`" MōY Kwi Zv‡ i AwaKvskB RvUj Lv`" | GB RvUj Lv`" e‡K Avgv‡ i kixi tkvIY K‡i
mi vvwvi Kv‡R jvM‡Z cv‡i bv| kvixi e‡Xq c‡vqvq RvUj , A‡eYxq Lv`" e`" wov` GbRvB‡gi mnvqZvq
‡‡ni MōY Dc‡hvMx `eYxq mij I Zij Lv`" Dcv‡v‡b cwiYZ nq Zv‡K cwi cvK e‡j | th Zš‡ cwi cv‡K
Ask tbq Zv‡K tcšv‡K Zš‡ ev cwi cvK Zš‡ etj |

cÖx` tni hveZxq ^RewbK Kv‡Ri ¶y Zg GKK nj tKvI | teP _vKvi Rb cÖzU tKv‡i cÖqvRb
A‡ tRb I Lv` | wecv‡Ki dtj wKQy Ac‡qvRbxq | ¶wZKi e-` ^Zwi nq th,tjv AcmvIY AZ-
cÖqvRbxq | mÖzi vs t Lv hv‡O t- tni mKj A½-cÖ½ | Z‡ši gta thMvthM _vKv cÖqvRb | i³
msenbZšiGB thMvthv‡Mi KvRwU K‡i _v‡K |



GB Aa“q cW tk†l Avgi w

- c̄ēn wP̄t̄ i m̄n̄v̄h̄ c̄wi c̄K Z̄t̄š̄j̄ c̄nb̄ Aš̄kī Kv̄R ēv̄L̄v̄ Kīt̄Z̄ c̄viē |
 - Lv̄` c̄wi c̄t̄K Gb̄Rv̄Bt̄gī f̄w̄gKv̄ ēv̄L̄v̄ Kīt̄Z̄ c̄viē |
 - c̄wi c̄uKZ̄t̄š̄j̄ Kv̄R ēv̄L̄v̄ Kīt̄Z̄ c̄viē |
 - c̄wi c̄uKZ̄t̄š̄j̄ t̄īv̄Mī Kv̄ī Ȳ Ī t̄īv̄Mī j̄¶Ȳ ēȲv̄ Kīt̄Z̄ c̄viē |
 - c̄wi c̄uKZ̄t̄š̄j̄ t̄īv̄Mī c̄öZ̄t̄ivā Ī c̄öZ̄Kv̄īī t̄Kš̄j̄ ēv̄L̄v̄ Kīt̄Z̄ c̄viē |
 - c̄wi c̄uKZ̄t̄š̄j̄ t̄īv̄Mī w̄el̄ tq̄ w̄b̄t̄R m̄t̄PZ̄b̄ n̄t̄ē Ges c̄wi ēv̄īī m̄Kj̄ t̄K m̄t̄PZ̄b̄ n̄t̄Z̄ D̄x̄x̄ Kīt̄ē |

- cwi c\KZši c\wb Asški wP̄ AsKb Ki‡Z crie|
- i³ I i³ K\YKvi K\h\g e\l\ Ki‡Z crie|
- üructEi K\R e\l\ Ki‡Z crie|
- üructE my' i\l\vi Dciq e\l\ Ki‡Z crie|

cW : 1 Lv` cwi c\K

te\l\ P _vKvi Rb" Lv` c\q\RB| Avgiv Kx Kx Lv` LvB? Lv` tKb LvB? wbt\g\ c\k\et\i gva\g Avgiv Zv Rvbvi tP\ov Kwi |

K. Avgit i t\tn Lv\ i c\q\RBxqZv Kx?

L. c\wb wZb tk\y\i Lv` ,tj\ Kx Kx?

M. Krf\te wZb tk\y\i Lv` Avgit i t\tn P\w\ tgU\q?

N. w\U\gb I L\w\R je\y\i c\q\RBxqZv Kx?

O. nRg nq bv Ggb A\kh\y\3 L\ev\i i c\q\RBxqZv Kx? Kx ai\bi L\ev\i GU\ c\w\ qv h\q?

tZigiv G c\k\et\i D\i tR\QbQ I\o tk\y\i w\A\w\ eB\Qqi \t\q\ k Aa\w\q| G Aa\w\q Avgiv t\tn Lv` i Kx Ae\w\ N\U Zv Rvbvi| Avgiv g\l\ w\ t\q L\evi LvB| Lv` w\ t\j\ tdj\i ci Avgiv Lv` t\K Avi t\ L\z c\w\ b\| K\q\K N\evi gta\ GB Lv` cwi c\K n\q mij Dci\ v\w\ c\w\ YZ n\q| h\ t\n tk\y\ K\i tbq| nRg bv n\l\ qv Ac\q\RBxq e\w\ ,tj\ t\n t\K gj i\c tei K\i t\q| t\tn t\Zi Lv` i th c\w\ eZ\ NU\Z Q Zv| Dci Avgit i tKb w\q\Z\Y tbB| my' t\tn G K\RB\U Avc\w\ Avc\w\ N\U| g\l\ w\ t\q Lv` M\y\ Ges Lv` i Ac\q\RBxq Ask D\w\Q\O\ w\nt\te tei K\i t\l\ qv GU\KB Avgiv t\ Lv\| GB `B\U NU\vbvi g\SL\w\ Lv` i Kx c\w\ eZ\ NU\Z|

th mKj A\w\ Lv` i GB c\w\ eZ\ NU\Z Ask tbq Zv\ i t\K GK\i t\c\w\OK Z\Z\ ev cwi c\K Z\Z\ ej\ n\q| Avgiv th L\evi LvB Zv\ cwi c\K Avi \c\c\q\ g\l\M\y\i i t\Zi Lv` i Kx c\w\ eZ\ NU\ Zv| Avgiv w\bt\g\ cix\P\Y \w\ri w\bt\ri K\i t\ L\z cwi |

K\R: cix\P\Y\U Kivi Rb" \R\B Q\i\Q\i x` i Kvi| Zv\ i GKR\bi g\l\ t\U\w\ we\w\ <\U ev i\ K\bt\i w\U (tm\ Avj\ev f\Z) w\bt\q w\Pe\Z _vK| w\Pe\bt\vi ci L\evi UK\z\m\w\ vi bv w\ t\j\ w\K\Q\Y g\l\Li t\Zi t\i\ t\te| Aci Q\i\U Zv\ ch\fe\P\Y K\i\te| c\i w\Z\q Q\i\U w\bt\R G K\RB\U K\i\te| Gevi c\l\g Q\i\U w\Z\q Q\i\U K\h\g ch\fe\P\Y K\i\te| Gevi Zv\ \R\bt\ w\gt\j w\bt\pi c\k\et\i D\i w\te|

K. L\evi w\Pe\bt\vi mgq g\l\M\y\i i t\Kb t\Kb Ask b\to\Qj?

L. g\l\Li t\Zi i\ K\bt\i w\K\i\vi Kx t\Kb c\w\ eZ\ NU\Qj?

M. w\Pe\bt\vi ci Lv` \U\i \w\i t\Kb c\w\ eZ\ NU\Qj Kx?

N. i\U ev we\w\ <\U t\Kb ai\bi Lv` Dci\ v\w\ _v\K?

O. Lv` w\j\evi mgq tZigvi t\tni t\Kb Ask\U b\to\Qj?

P. Lv` w\j\evi ci Lv` t\Kv\ w\q h\q? Krf\te h\q, j\P\ Ki |

bZb kā: cwi c\K, Lv` Dci\ v\w\

cW-2 : jvjv | GbRvBg

Zig Lj mgó cQ` Ki | tZigvi mgtb GK yv i mMj Li nj | tZigvi gtLi fZi Kvb cwi eZØ
j¶ KiQ Kx? tZigvi gtLi fZi Kvb cwb gZ Zij c` v¶ Dcw'wZ Abfe KiQ Kx? tZigvi Wb
nwZu fuj Kti mveb wfq afq bv | cwi[®]<vi Av½j wfq RnV t‡K wKQjv Zij c` v¶bv | Gi eY¶
tKgb?

Dct*i* cix¶v t‡K hv Rvbjvg Zv mbtøsi eYØvi mft mgv fq tbB | Avgiv gtL wfq Lvevi LvB | Lvevi
ggtL mbtq Avgiv Zv `wZ wfq Pe‡Z wK | RnV Lvevi ,tjvK tbto‡Pto tq thb G,tjv fuj Kti
Pe‡bv hvq | gtLi gta[”] H Lvevi,tjv jvjv mft mgvkZ nq | jvjv GKcKvi eY¶xb Zij c` v¶ ggtLi
tcQtb Av½Z jvjv[¶] t‡K jvjv mbtmZ nq | Lv`[”] cwicvK jvjv wtkl figKv Av‡Q | jvjv
Lv`[”]e⁻ t‡K wcWQj Kti | Mj‡Z mwnvh Kti | jvjvq GK aitbi AbNUK ev GbRvBg ¶K | tZigv
nq‡Zv fvetQv GbRvBg Kx? GbRvBg ntjv :

- Ggb GKW e⁻ hv Lv`[”]e⁻ i mft mgtk i mwnqibK muqvq mwnvh Kti, wKšmbtR Ask tbq bv |
AcwieZ¶Z ¶K |
- mbv Ø Zicgv¶v ch¶— GbRvBg fuj KvR Kti |
- mbv Ø GbRvBg mbv Ø KvR Kti | thgb- Ucwb GbRvBg i agv¶i Dci muqv Kti |
jvjv GbRvBg tkZmvi‡K cwieZØ Kti kKPvq (gjtUvR) cwiYZ Kti | GKvi¶Y kKPv RvZq Lvevi
Pe‡bvi ci wKo¶Y ggtL i Ltj mgó jvtM | RnV Avg¶i Lv`[”]e⁻ Mj‡Z mwnvh Kti | ggtLi tkl
c¶— t‡K ¶B¶v bj Avg¶i ttni tfZtii wfq tbtg tM‡Q | GB btj i gZ AskW hv tfZi wfq
Lv`[”]e⁻ cwK¶v t‡Z tcSvq Z¶K Abtvj etj | GB bwj wfq Lv`[”] I ctvxq cwK¶v t‡Z tcSvq |
Lv`[”] Kxvte cwK¶v t‡Z tcSvq |

mbtRiv Ki :

GKW gte[¶] bv | tLqj i LtZ nte, btj i cwimai tPfq gte[¶]W thb eo nq | gte[¶]WtK btj i
tfZi cek Kvl | Gevi gte[¶] i tcQbwK UctZ ¶K | Lv`btj i tfZi wfq mgtb i wfq G,tzv
¶Kte | Gfte Lv`[”] Abtvj i tfZi wfq mgtb i wfq AMhi nq | Abtvj tZ Asvuji gZ tMj tck
i tq‡Q | GB tck,tjv mstKvPb | chvi Y KtZ cvi | Lv`[”]e⁻ i tcQtb Abtvj i tck msKwPZ nq
Ges mgtb Abtvj i tck chvi Z nq | Abtvj i Gi e mstKvPb | chvi Y¶K µgmsKvPb etj | Gfte
mstKvPb | chvi tYi dtj Lv`[”]e⁻ axi axi cwK¶v t‡Z tc‡Q |

bZb kā: tµv‡gmsKvPb, Abtvj, GbRvBg

cW 3 - 5 : cwi cvK Zši

Avgiv Av‡MB tR‡biQ Rxeb avi‡Yi Rb" PvB Lv" | Avgiv RvUj Lv" tL‡q _wK | Avgiv GI tR‡biQ RvUj Lv" t`n‡KvI miwmwi MōY K‡i cv‡i bv| tmRb" RvUj Lv" ‡K iwmq‡bK c‡q‡Z mij | cwb‡Z `‡x‡Z Kiv c‡qRb| G KvR‡K Lv" i nRg‡qy ev cwi cvK etj | nRg KvR m‡ub‡Kivi Rb" wewfb‡A½ wb‡q MvZ nq tcšóKbwj ev cwi cvKbwj Gi m‡_ i‡q‡Q KZ,‡j v Rvi K im | mwnh"Kvi x GbRvBg wb‡mi YKvi x Mōš' |

g‡wQ~, gLMnYi, Ab‡wvj, cvK~wj, ¶i ls‡i Ges en`ši wb‡q tcšóKbwj MvZ | GQvor tcšóKbwj i m‡_ i‡q‡Q wewfb‡GvBg ev Rvi K im wb‡mi YKvi x wZbvU Mōš' h_v: jvj Mōš', AM‡kq Ges hKZ | GQvor cvK~wj | ¶i ls‡i cP‡ti | Av‡Q Avi | GbRvBg | Rvi K im wb‡mi YKvi x ¶i ~¶i ~Mōš' |

Avg‡` i cwi cvK bwj ev tcšóKbwj g‡MnYi t‡K ii"t‡K gj 0vi ch‡- we ZZ | wb‡‡§ G Z‡š‡i wewfb‡A½,‡j vi eYv t` I qv ntj v:

1. g‡wQ~: g‡wQ~t‡KB cwi cvK bwj ii" g‡wQ‡i Dcti i‡q‡Q Dcti i tVU Ges wb‡P i‡q‡Q wb‡Pi tVU | tVU0q tLvj v I eÜ t‡K Lv" MōY wbqSY K‡i | G wQ~c‡B Lv" cwi cvKbwj ‡Z c‡ek K‡i |

2. g‡MnYi : g‡wQ‡i c‡i B g‡MnY‡i i Ae~vb | mg‡b `wZmn `BvU tPvqyj 0vi v g‡MnYi tevÓZ | Gi Dcti i‡q‡Q ZvjyGes wb‡Pi w‡K i‡q‡Q gusm‡j v wRnYv | GQvor `B c‡k i‡q‡Q wZb tRvor jvj Mōš' |

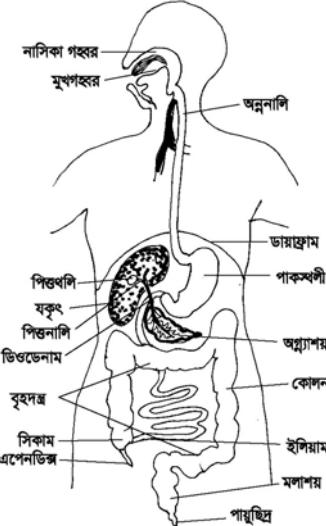
~wZ Lv" e~ tK‡U tQuU tQuU K‡i tcl‡Y mwnh" K‡i | Gmgq wRnYv Lv" e~ i ~v MōY K‡i Ges Lv" e~ tK evi evi `‡Zi wb‡P cwi‡q wPe‡Z mwnh" K‡i | jvj Mōš' t‡K wb‡mZ jvj Lv" tK wcvQj K‡i Ges Lv" e~ tK Mj‡Z mwnh" K‡i | jvj i‡m GKai‡bi Dr‡mPK ev GbRvBg Av‡Q | hv tk‡Zmv‡tK Av‡KK t‡t½ kK‡Pq cwi YZ K‡i | g‡b‡l i ~vq `‡Zi msL" 32wU c‡Z tPvq‡j 16wU K‡i | Gme `wZ Pvi c‡Kvi | h_v- KZ~ `wZ Lvevi tQuU tQuU K‡i K‡U |

tQ~b `wZ w‡q gusm | Ab~vb" k³ wRvbm tQ‡o | K‡U |

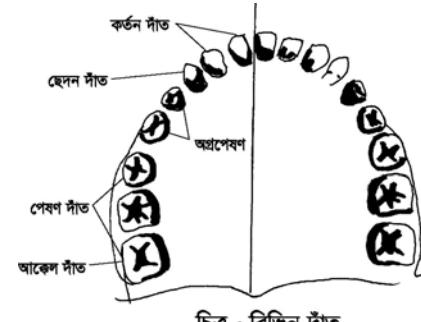
AM‡cIY `wZ w‡q Lv" e~ Pe‡ | tclY Kiv hvq |

tclY `wZ ,‡j v Lv" e~ wPe‡Z | wcl‡Z mwnh" K‡i |

GQvor Ab~vb" `‡Zi A‡bK c‡i MRvq Av‡°j `wZ |



চিত্র : পৌরিকতত্ত্ব



চিত্র : বিভিন্ন দাঁত

3. Mj wej : gL MnÝt i cti B Gi Ae- 'vb |

Gi gva- tgb Lv` "e- " gL MnÝi t_ tK Abloj ev Mambwji tZ hq | Mj wej tKb GbRvBg wbtmZ nq bv | Zb GLvfb tKb Lv` "e- " ci cik nq bv |

4. Abloj : Mj wej Ges ciK- 'wj i gvSigmS RvqMq Gi Ae- 'vb | Lv` "e- " Gi tfZi w_ t q Mj wej t_ tK ciK- 'wj tZ hq |

5. ciK- 'wj : Abloj I ¶i #sj ga- eZP- 'vb Gi Ae- 'vb | Mj wej I Abloj i tpgms tKvPbi dtj mWQj Lv` "e- " GLvfb Gtm Rgv nq | ciK- 'wj i AvKwZ _tj i gZv | Gi cPx tek cj" I tcukeuj | ciK- 'wj i c_ g I tkI Ask tckeuj q itqfQ | ciK- 'wj i cPx i Mw- KMÖs bvg cÖi MÖs' _vk | GLvfb Lv` " mvgwqK Rgv _vk | Mw- KMÖs i cvPKim ci cik mnvh Kti |

6. ¶i #sj : ¶i #sj n t j v ciK- 'wj i cieZP Ask Guv ci ciK bwj i metPf q xN Ask | ¶i #sj wZbuU fvM wEf3 | h_v - (K) wWbvg (L) tRRbvg I (M) Bwj qvg |

(K) wWbvg : Guv ¶i #sj c_ g Ask | ciK- 'wj i cti i Ask, tLtz U AvKwZi | wE- 'wj t_ tK wEim Ges AMökq t_ tK AMökq im bwj gvdZ GLvfb Avtm Lv` "i mvf_ mgf k | Gim, t j v ci ciK Ask tbq | GLvfb Awgl, kKv I ton c_ v_ P ci ciK NtU |

(L) tRRbvg : Guv wWbvg Ges Bwj qvgi gvtSi Ask |

(M) Bwj qvg : Buv ¶i #sj tkI Ask | Bwj qvgi tfZt i cPx i tkvY hsj_ vk | evcb cxwZtZ tkvY Kvhmgvavi Rb" cPx i Mw- Avzj i gZ c¶wZ Ask _vk | Gt i wfjvB (wfj v) etj | nRtgi ci Lv` "i mvsk wfj vMw- Øiv tkwZ nq |

7. en` sj : ¶i #sj cti B en` sj i i" Guv Bwj qvgi ci t_ tK cvqpc_ chS- w- ZZ | ¶i #sj I en` sj ms t hM- 'tj GKvU fvj k ev KcwUKv _vk | j_ vq Guv ¶i #sj t_ tK tQvU | wKsjtFZt i e_ v m ¶i #sj tfZt i e_ v m t_ tK eo _vk | en` sj wZbuU Ask wEf3 | h_v - (K) wMkv (L) tKj b Ges (M) gj vq | gj vq en` sj tkI c_ s t Ltz KZKv _tj i gZv | Lv` "i AcvP ev AnRgKZ Ask GLvfb gj i c Rgv nq |

8. gj vvi : cvqyci ciKbwj i tkI c_ s GB c_ s- c_ t_B ci ciKbwj evBt i mvf_ Dxf3 | ci ciKwMÖs' I ci ciKwMÖs' i KvR : ci ciKbwj i ewnti thme MÖs' i wbtmZ im Lv` " ci ciK Ask MÖY Kti Zv` i ci ciKwMÖs' etj | tZigiv AvtMB tRtbtQv jyj wMÖs', hKZ Ges AMökq ci ciK MÖs' i AŠ- fP | jyj wMÖs' t_ tK jyj ¶i Y nq | jyj vq GbRvBg I cwb _vk | cwb Lv` "tK big Kti | jyj vq GbRvBg n_ t j v vqj b |

hKZ : t_ tni metPf q eo MÖs' n_ t j v hKZ | hKZ t_ tK wEim ^Zix nq | wEim wE_ 'wj tZ Rgv _vk | nRtgi mgq wEbvj w_ t q wEim wWbvg bvg Gtm Lv` "i mt½ mgf k | wEim tm RvZxq Lv` " nRtgi mnvh Kti |

AMökq : c_ vBZ wZbuU GbRvBg AMökq ^Zv i nq | h_v- A_ vBtj R, wUcimb, KvBtgmUcimb Ges jvBtcr wWbvg Gtm Lv` "i mt½ mgf k | wUcimb I KvBtgmUcimb Awgl Lv` " , jvBtcr tm Lv` " Ges A_ vBtj R kKv RvZxq Lv` " nRtgi mnvh Kti |

Mw÷KMš: Mw÷KMš' cK-’wj i tFZtii cPxi _vk | GB Mš' wbtmZ i tm i bvg Mw÷Kim ev cPK im |

AwšKMš: ¶i ſi cPxi wfj vtm cPzi Awšz KMš' _vk | GB Mš' wbtmZ i tm i bvg AwšKim |

en` ſi: en` ſi Lv` nRg nq bv | GLvib tKib Rvi K im ev GbRvBg ^Zvi nq bv | en` ſi gj Z Lv` i Rjxq Ask t_tK cwb tkvY Kti | G KvRvU AZ-’i Kix | GtZ kixi t_tK cwb teik cwi gyiY tei nI qv tiva Kti |

en` ſi mePKl Ask A_P gj vq Lv` i AcvP Ask gj vnmte m̄AZ nq | c̄qyRbgZ cti cvqyw tq Zv kixii evBti evRZ nq |

bZb kā: cK-’wj , AMškq, hKZ, w̄tmb, ĀgvBtj , jvBtcR

cW-6 : mvavi Y tiM | c̄ZKvi

1. Mv÷BvUm : mvavi YZ teik gmjv I tZj hy^3 Lvevi tLtj | LvI qvq Awbqg Kitj eK Ryj v Avi Ax^j nq | GtZ tcU evovZ GmW ^Zvi nq Avi Zv t_tK tcU ev ejKi gvSLvib GKUv A-’w’ ev Ryj vi fve nq | Mjv, tcU Ryj v Kti I tcU e_v_mn w̄fbvDcmM^q` Lv` q | mgqgZ G tiMv Mi w̄Krmv Kiv bv ntj cK-’wj I Aššz i ſi mvó nq | Zlb GtK Mw÷K Avj mvi ej | w̄bqgZ fute Kg gmjv I tZj hy^3 Lvevi LvI qv mgqgZ Lv` M̄tYi AfvM Kitj G tiM c̄Ztiva Kiv hvq |

2. Avgvq : Avgvq Avgv^i t_tK GKvU AwZ cwiPZ tiM | `B ai tbi Avgvq t Lv hvq | h_v- (K) ĀgvieK Avgvqt c̄vbZ Gvgev bvq Gk cKvi GKtKvix c̄Mx gvbti i Aššz c̄ek Kitj G ai tbi tiM t Lv` q | G tiMv Mi DcmM^q` t Lv` q, gbj i mv_ i^3 ev tkH tei nI qv | w̄DeI tqj ev dJvfbv cwb cvb, cwb I kvKmevR hvZ w̄Z bv nq tmw tK tLqj ivLv, ḡQ, Avi tkyj v t_tK Lv` e^- tK i ſi gva tg G tiM c̄Ztiva Kiv m̄e | Zte G tiMv Avvš-tiMv w̄Krm̄ki c̄vgtk^q I ja tmeb Kiv c̄qvRb |

(L) e_v_mj mvi Avgvq : w̄Mjv bvqgi GK ai tbi e_vKtUv qv AšštK Avgvq Kitj G ai tbi Avgvq nq | RxeYen` ſi w̄Sj tK Avgvq Kti | dtj evi evi cvqLvbv nq Ges cvqLvbv mv_ tK tLqj tei nq | ĀbK mgq Gi mv_ i^3 I hvq | GRb^ G tiM tK i^3 Avgvq ej | G tiM tK Aetnjv Kiv w̄K bq | w̄v^i i c̄vgtk^q w̄Krmv Kiv c̄qvRb | mvavi Y ^v- w̄ea tg t Pj t j G tiM c̄Ztiva Kiv m̄e |

3. tKvôKwvb : tKvôKwvb c̄KZctP tKib tiM bq | w̄fbvKv tY tKvôKwvb n̄Z cvti | thgb-tc̄vóKbwj i ga^w tq Lv` e^- i Pj b axi nI qv, KvPv dj gj I kvKmevR bv LvI qv, cvqLvbv teM tctj ms̄M ms̄M cvqLvbvq bv emv BZ^w | w̄bqgZ gj Zv tMv Mi AfvM M̄o tZjv, w̄bqgZ kvKmevR LvI qv, dj gj I Aukhy^3 Lvevi tLtj G Amjeav ^ t Kiv hvq |

KvR: w̄kPv_ Rv LvZvq cwi cvKZ ſi w̄fbetivtMi bvg wj Lte ^tj w̄f^3 n̄q w̄kPv_ P Kx Kvi tY G tiM, tji nq Zv LvZvq w̄ce x Kitj c̄ZvU ^tj i GKRb Kti Zv tKvôtZ Dc^-vcb Kitj Ab^i v w̄elq, tji w̄gvj tq w̄bte
--

c_{ii} c_vK Z_fš_j hZ_e

1 | `vZ: c_{ii}Zevi LvI qvi ci `vZ e_{ik} Kiv I c_{ii}[®]<vi Kiv D_vPZ | `vZi d_fK Lve*t*i i KYv AvU_fK _vK_fj Zv c_fP g_fL `M_v nq | `vZi ¶q nq | L_e te_k mg_v tL_fZ tbB | mg_v `vZ ¶q_f Rb_v `vq_v |

2 | Lv`"e` : Lv`"e` c_{ii}[®]<vi I m_vm_v nI qv D_vPZ | ew_k c_vV Lvei LvI qv D_vPZ bq | Av½_fj i bL tQvU iLvI LvI qvi Av_fM _vj vewU | nvZ Aek_vB c_{ii}[®]<vi K_fi wb_fZ nte |

3 | LvI qv: wbqmgZ mg_fq LvI qv D_vPZ | GKm_f_ te_k Lvei Lv_fe bv | me mgq mg_fg Lvei Lv_fe | LvI qvi vKQ_fY ci c_fP_f c_vb Lv_fe | me mgq c_vb d_fU_fq Vv_v K_fi Lv_fe | Lvei ax_fi ax_fi f_vj K_fi wP_fetq Lv_fe | Av_fK gmj v tZj h_v³ Lvei LvI qv D_vPZ bq |

bZb kā: tKvō^oKw_vb^o, e_vwmj_v , A_vwg_veK Avgv_vq

c_v 7-8 : i³ msenb Z_fš_i

th c_vuq_vq c_vY_f- tni i³ c_vien_fbi KvR m_vub_venq Z_fK msenb c_vuq_v etj | i³, ürv_vÜ, agbx, vki_v Ges j_vmKv I j_vmKvevnx bwj_v i mg_v^tq gr_vbe t_v tni msenbZ_fš_i M_vZ | th Z_fš_i gr_v^tq t_v tni i³ m_vAwj Z nq Z_fK i³ msenb Z_fš_ietj | ürv_vÜ, i³ | i³enx bwj_v i mg_v^tq i³ msenbZ_fš_i M_vZ |

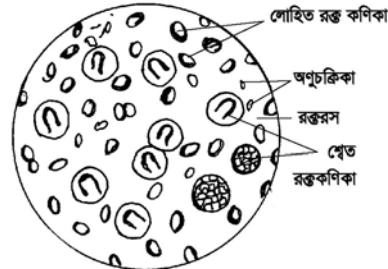
i³ | i³i Dcv`vb :

tZvgi_v gj_vM, Mi^oA_vev Q_vMj RevB Ki_fZ t_v tL _vK_fe | RevB Kivi mgq ¶Z_vvb t_v t_fK wb_fK w_f t_v i³ tei nq | GB i³i i0 tKgb? i³ Kx ai_fbi c_vl_v? i³ Nb j_vj i_voi GKvU Zij c_vl_v GU GK ai_fbi Zij thvRK Kj_vev vU_vjy | i³i ^v_v ¶v_vag_v i³i Dcv`vb `BvU, h_v-

1| i³im

2| i³KvYKv

1| i³im: i³im i³i Zij Ask | mvaviYZ i³i kZKiv 55 f_vM i³im | G_fZ Awgl , jeY I Aš_f t_fK tkw_vZ Lv`" Dcv`vb _v_fK | i³i_fm i³KvYKv f_vmg_vb Ae_v^vq _v_fK | G_fZ dvBw_ftb_fRb bv_fg GKvU Dcv`vb _v_fK hv i³ RgvU evatZ m_vnvh_v K_fi |



চির: রক্তের উপাদান

KvR :

1| i³im t_v tni we_vfb_vAs_fk Av_v tRb, Lv`"mv_v , ni_vg_vb BZ_v enb K_fi |

2| t_v tni we_vfb_vAs_fk t_fK ¶v_vZKi c_vl_v^tgb- (Kv_vB W_vB-A· vB_v, BD_vi qv, BD_vi K G_vmW BZ_v) enb K_fi we_vfb_vi Pb As_fMi gr_v^tq t_v n t_fK tei K_fi t_v q |

2| i³KwYKv : i†³ wZb ai†bi KwYKv i†q†0 | h_y-

K. tjwnZ i³KwYKw

L. tkZ i³KwYKw

M. AbPwKv

K. tj wñZ i³KwYKv : tj wñZ i³ KwYKvi Rb" i‡³i i0 jvj †`Lvj| Gi g‡a" wñtgvtMñeb bvgK GKwJ
iÄK c`v_©_v‡K| wñtgvtMñebi mv‡_Aw‡ †Rb h‡p n‡q † n‡Kv‡I tc‡Qvq| tj wñZ i³KwYKv DfAeZj
(Dfq c‡ô Lv` Av‡Q)| PvKwZi g‡Zv †Mvj vKvi †KvI | tj wñZ i³KwYKvq wDwKqv m_v‡K bv tj wñZ
i³KwYKv hKZ | Aw" g³/4vq ^Zwi nq|

L. tkZ i³KwYKv: tkZ i³KwYKv tj mnZ i³KwYKv tPfq AvKvfi wKOJv eo | AwbqngZ AvKvfi i nq | Gt` i wbDwKewm Av#Q| cma | Aw⁻g^{3/4}vq Gt` i RbV| t`tn tKvb t iM-RxevY cÖek Ki tj tkZ i³KwYKv tm, tj vtK aÝsm Kti | tkZ i³KwYKv t`tni cÖixi gtZr KvR Kti | Gt` i ^mwbtki mvt_ Zj bv Kiv nq |

M. AbPwukv : AbPwukv †` L‡Z tMyjvKvi ev e‡Ei g‡Zv| Gi v tj wnvZ i ³KwYKvi tP‡q AwKv‡i tQvU nq I
wDwKqv _‡K bv| Gi v , "QvKv‡i _‡K| G‡` i Drc‡E tj wnvZ Aw' g³/4vq| †` †ni †Kv‡ Ask †K‡U
i ³c‡Z NU‡j AbPwukv i ³ RgvU ev‡Z mnvh‡ Kti | G‡` i tc‡H‡j UI etj |

i‡³i KvR : i³ Avgt` i †` tni GKU Auz c‡q Rbxq Dcv` vb | i³ †` tn bv bv i Kg KvR K‡i | h_v-

1. Lv` cwi enb : Avgiv th Lvvi LvB cwi ciftKi ci G, tji mij Dci vtb cwi YZ nq Ges i t³i mvf_ mgfk hvq| i³ tmb Lv` i mvivskfK t` tni me⁸ enb Kti wbftq hvq| Gfvte Rxe tKVI tji vi cijó mvab nq|

2. Aw †Rb cwi enb : Avg†` i †` †n mKj K†Ri Rb" Aw †Rb ` i Kvi | Aw †Rb bv ntj RxetKvi
euP‡Z c†i bv| K†RB Lvetii i mv‡_ mv‡_ G†` i †` †Z nq Aw †Rb| i†‡i tjwnZ i³KwYKvq
Aew" Z wntq†Mweb dmdm t‡K Aw †Rb MÖY K‡i | Aw wntq†Mweb i‡c cÖZU tK†l enb K‡i |

3. Kveð WBA- vBW ZWM : † tni weifba†½i tKvI , tji‡Z DrcbaKveð Wb-A- vBW i³im enb Kti dndt mbotq hvg |

4. eR[®]c`v_©b[®]<\kb : t`tn mÓ bvBtUfRb Øvi v MwZ `wZ c`v_©i³im t`n t_‡K tei K‡i t`lqvi
K†R mnvqZv K‡i |

5. tıM cÖZtiva : t`tn tKb tıM RxevYycëek Ki‡j i‡3i tkZ i³KwYkv tm,tjv‡K tg‡i td‡j tıM
cÖZtiva K‡i |

6. ni t̪gvb cwi enb : t̪ t̪ni bwj nxb M̪s' t̪Z ni t̪gvb Drcb̪enq | i t̪³i gva t̪g ni t̪gvb t̪ t̪ni newfbœ
Aṣṭk cwi ewnZ nq |

7. Zvçgvî v mbqş; Y : i³ t̄ tni wifboAşki Zvç cwi enb Kti | GtZ t̄ tni me⁶ Zvçgvî wK _t̄K |

8. i³ RgyU evav : t¹ tni tKvb Ask tKtU tM¹j i³c¹Z nq | AbP¹uKv i³ RgyU evatZ mnvh¹ Kti | d¹j i³c¹Z eÜ nq |

bZb kā : tʃwŋZ i³KwYKv, tkZ i³KwYKv, AbPwukv, i³i m, ni tqib, bwj nxb Mš'

cW-9-10 : i³bwj

t^zvgvi n^zZi Dci w^zK j^zKitj t^zL^zZ cvi te bxj i^z0i GK ai^zbi bwj t^zL^zv h^zq | G^ztzv nj ^zki^z | ^zki^z GK ai^zbi i³bwj | i³bwj Kr? th bwj i ga^z w^ztzq i³ c^zewnZ nq Z^zK i³bwj e^zj | Avg^zi t^ztn w^zb ai^zbi i³bwj Av^zQ | h^zv-

1. agbx 2. ^zki^z | 3. ^K^zKKbwj |



1. agbx : th mKj i³evnx bwj ürwct^z t^zK Drcb^zntq t^ztni newfb^zA^z½ i³ enb K^zi Z^zK agbx e^zj | Gi v t^ztni tfZi w^zK Ae^zZ | agbx i c^zPxi cj "Mn^zi tQvU | Gi Mn^zi KcwUKv _v^zK bv | agbx A^z t^zRb mgx i³ cwi enb K^zi |
2. ^zki^z : th mKj i³bwj Øviv t^ztni newfb^zAsk t^zK i³ ürwct^z md^zi Av^zm Z^zK ^zki^z e^zj | ^zki^z c^zPxi A^zc^zPKZ c^zZjv | G^zi Mn^zi eo | Mn^zi c^zPxi M^zf^z KcwUKv _v^zK | t^ztni ^K^zKK R^zwj Kv t^zK ^zki^z Drc^zE N^zU | w^zKOye^zZ^zg Qov^z ^zki^z mvaviYZ K^zeØ WB-A^z v^zBW mgx i³ enb K^zi |
3. ^K^zKKbwj : agbx µgi^ztzq kvLv c^zkvL^zq nef^z ntq tkI ch^z- A^zZm^z bwj ^Z^zi K^zi | GB mKj m^zbwj t^zK ^K^zKKbwj ev ^K^zKK R^zwj Kv e^zj | ^K^zKKbwj t^zK ^zki^z Drc^zE | GK ^-i^zekó c^zZjv Gwct^zwj qv^z t^zKv w^ztzq ^K^zKKbwj c^zPxi M^zWZ | ^K^zKKbwj t^zn^zK^zi i Pvi c^ztk Ae^zv^zb K^zi |

wb ^z Riv Ki : t ^z vgiv wb ^z Pi QKvU c ^z Y K ^z i agbx ^z ki ^z ci ^z R ^z wbYq Ki		
Drc ^z E	agbx	^z ki ^z
KcwUKv		
Mn ^z i		
c ^z Pxi		
A ^z t ^z R ^z bi c ^z g ^z Y		
K ^z eØ WB-A ^z v ^z B ^z wi c ^z g ^z Y		

ürnūcÜ :

ürnūcÜ e¶ Mññtii i evg w` tK `B dmdtmi gvSLvtb Aew'Z GKvU tgwPvKvZi A½ | GUv tcvi KvnWqng
bvtg `B -i wekó GKvU cvZjv c` Pñiv AveZ | ürnūcÜ ürtcik Øiv MñWZ | ürtcik GK ai tbi -vaxb
A%bWQK tcik hv Kvñi wbgšY Qovv wbtR wbtRB msKvPb I cñvi tY m¶g | cñZ wgbtU Kgtekx 72
evi ürnūcÜ msKvPZ I cñvi Z nq | Zug tZvgvi ejKi gvSLvtb nvZ ivL | GKvU aKaKvib ev tKvb
-ù` b tUi crQ Kx? tKb Ggb NtU? ürnūctÜi msKvPb I cñvi tYi dtj GBic NtU | GUv ü` -ù` b |

wbtRiv Ki : Zug Nno t` tL tZvgvi eÜi ü` -ù` b MYbv Ki |

ürnūcÜ wZb -ti MñWZ | h_v- K. evBtii -i ev tcvi KvnWqng L. gvtSi -i ev gvtqvKvnWqng Ges M.
tfZtii -i ev GtÜvKvnWqng | Gt` i gta" gvtqvKvnWqng metPtq cij" Ges Gi msKvPtb Kvi tY ürnūcÜ
cvñú Kt i³ mÄvjb Kt |

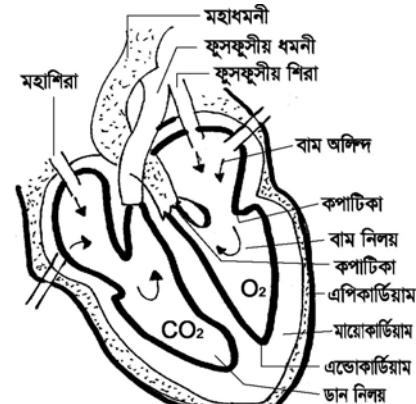
ürnūcÜ GKvU Pvi cñKvô wekó dñci A½ | ürnūctÜi Dctii cñKvô `BvU bvg Wb Awj` I evg Awj`
Ges wbtPi cñKvô `BvU h_vµtg Wb I evg wbjq |

Awj` cñPxi cvZjv I wbjtqi cñPxi cij" vK |

Awj` I wbjq `BvU Awj` v cñPxi Øiv cñK vK |

AvgZtb Awj` ,tj v wbjtqi tPtq AvKvti tQvU nq |

Wb Awj` I Wb wbjtqi gvtS Wb Awj` -wbjq wQ` vK | H
wQ` cñKv vKv vK | i³ G KcvUKv gva"tg Awj` tK
wbtq cñek KtZ cñti | Abjcfvte evg Awj` I wbjtqi
gvtS KcvUKv vK | Gt¶tI I evg Awj` tK i³ tKej gvI
wbtq cñek KtZ cñti | GQovv gnvagbx I evg wbjtqi
msvhM` tj I dmdmñq agbx Ges Wb wbjtqi msvhM` tj
AaP` vKvZi KcvUKv i tqtQ | G KcvUKv vK i t³i MñZc_
GKv vK wbgšY Kt |



চিত্র : হৃৎপিণ্ডের গঠন।

wbtRiv Ki : GKv b mñtii even Amj` nñq ctñQtj b | mñtii eo fvB GKRb Wñvi | fvBqv eveni
nvZi KevRi Dci nvZ tñtL nvZ Nno t` LñQtj b | mñMi wñlqñU j¶ Kij | iñZ NgvñZ hvñ qvi Avñ
fvBqvi KvñQ RvbtQ PvBj eveni KevRi Dci nvZ tñtL wZb Kx cix¶v KivñQtj b | nvZi Dctii w` tK
th i³bwj ,wj t` Lv hvq I ,tj vK Kx etj? fvBqv Zvi cñké Reite ejtj b, wZb eveni bvxi -ù` b
t` LñQtj b | bvxi -ù` b Kx? ürnūctÜi msKvPb I cñvi tYi dtj agbx gta" th -ù` b mñó nq ZvñK
bvxi -ù` b etj | agbx vK tñni tfZtj Avi wKv vK tñni Dcñi fvte |

Gevi Zug tZvgvi eÜi bvxi -ù` b cix¶v Kij | Zvi nvZi wKv vK tñni chñe¶Y Kij | tZvgvi eÜtZvgvi
bvxi -ù` b cix¶v Kite | Gevi Zug -tj i gvtV cñP wgbtU t` řo Avm | Zug tZvgvi eÜtK tZvgvi
bvxi -ù` b cix¶v KtZ ej | tKvb cñi eZB j¶ KtQ Kx? cñi kñg ürnūctÜi msKvPb-cñvi Y teñ
hvq dtj bvxi -ù` bI ejx cñq |

ürnctÜi gva"tg i³ mÂvj b :

ürnctÜ ü` tckx bvgK GK wétkl ai tbi A%bWQK tckx Øiv MwZ | hLb ürnctÜi msKvPb nq ZLb
ürnctÜ t_‡K i³ agbx ct_ weFbøA§k mÂwj Z nq | Averi ürnctÜ h_b cñvi Y NtU ZLb t`tni weFbø
A½ t_‡K i³ wki v ct_ ürnctÜ wdti AvtM | Gfvte ürnctÜi msKvPb I cñvi Y Øiv i³ GKei
ürnctÜ ctek Kti Averi ürnctÜ t_‡K t`tni weFbøA½ i³ mÂwj Z nq |

bZb kā: KcwUKv, agbx, wki v, ^KwKKbwj , Awj > , wbj q

cW 11-12 : ü` †i M

Avgib mwne GKRb e"svK KgPvix | wZib GKRb gvSwi Mo tbi tgivUtmUv gybl | wZib gvQ-gvsm |
tZj hy³ Lvevi tL‡Z Lp cQ` K‡ib | wZib GKRb agcvqx | mKv j t_‡K ivZ chS-GKUv bv ci k‡i b |
ci k‡gi mw_ gv† wZwi³ agcvb K‡ib | mvi w b nUvPj v, e"vqvg nqbr ej t‡j B P‡j | nVr GKw b Awdm
t_‡K wdti ejKi ew_ tK e"v Abfe Kitj b | wKo†Yi gta"v Zxe"nj | wZib teuk ntq co‡j b |
Zvi -z ZrP Yv Zv‡K nmci Zv‡j wb‡q tM‡j b | Wv³vi Zv‡K ci xPv Kti ej t‡j b th, Avgib mwne
ü` tivM fM‡Qb | Gevi ej tZv ü` tivMi Kvi Y, t‡j v Kx Kx?

ü` tivMi Kvi Y :

Dcti i Abt"Q` t_‡K Avgiv ürtivMi GB Kvi Y, t‡j v Rvb‡Z cvijvg | Zv ntjv:

- Awak tZj | Pvhy³ Lvevi |
- my g Lv[~] MÖY bv Kiv |
- agcvb Kiv |
- AwZwi³ ci k‡g Kiv |
- tLj v, nUvPj v, e"vqvg ev tKv b i Kg kvi xwi K ci k‡g bv Kiv |

ü` tivMi AvgugY t_‡K i¶v cvl qvi Dcvq :

- 1| Awak kKv | Pvhy³ Lvevi bv Lvl qv |
- 2| wbqwgZ kvi xwi K ci k‡g Kiv | h_v- tLj vaj v, nUvPj v, e"vqvg Kivi Afvm Mto tZv j v |
- 3| wbqwgZ my g Lv[~] MÖY Kiv |
- 4| agcvb ZWM Kiv | agcvb d‡j agbvM k³ ntq i³ cñtni e"vNvZ NUvq |
- 5| AwZwi³ ci k‡g, AwZwi³ gvbwmK PvC | `yÖšig³ _vKvi tPov Kiv |
- 6| ZvRv dj gj , kvKmweR Lvl qvi Afvm Mto tZv j v |
- 7| t`tni tRb evotZ bv t`lqv | t`tni tRb teot tM‡j ürnctÜi Dci i³ mÂvj tbi PvC c‡o | d‡j
ürnctÜ ¶wZMÖ' nq |

wb‡Riv Ki : tZv j v ürnctÜi wPvZ wPvT AsKb Ki | ürnctÜ i‡3i MwZc_ wPvZ Ki | Kxfvte
ü` tivM tivta m‡PZbZv mwó Kiv hvq Ggb GKw PvU[©] Zwi Ki |

G Aa^vq tktl Avgiv hv Rvbjvg-

agbx : agbx ürvcÜ t_k K Drcbentq t_k ni mKj A½ mavi YZ Aw tRb mgx i³ cwi enb Kti | KŠf dmdmjq agbx Gi e^vZug | dmdmjq agbx KveB WB-A· vBW mgx i³ dmdt^v b^vtq hvq |
 kiv: kiv t_k ni wifbæA½ t_k K DrcvE n tq mavi YZ KveB WB-A· vBW mgx i³ ürvcÜi v_k K cwi enb Kti | KŠf dmdmjq kiv Gi e^vZug | dmdmjq kiv ct_ Aw tRb mgx i³ evg Avg t^v b^vtq Aw^vm |
 tj mnZ KvYKv : tj mnKv KvYKv q mngvMeb bvgK iÄK c`v_©_v^vK | mngvMeb Aw tRtbi mv^v h^v
 ntq Aw mngvMeb ^Zvi Kti |
 AbPmukv : AbPmukv i³ RgvU evatZ mnvh Kti |

Abkj bx

kb^vb cij Y Ki :

1. GbRvBg ÑÑÑÑÑÑÑÑÑÑÑÑÑÑ mnvh Ki |
2. ÑÑÑÑÑÑÑÑÑÑÑ RvZq Lv cwi cvK ntq AvgvBtv GmtW cwi YZ nq |
3. tj mnZ KvYKv q ÑÑÑÑÑÑÑÑÑ bvgK GK c^vKi c`v_©_v^vK |
4. ÑÑÑÑÑÑÑÑÑ i³ RgvU evatZ mnvh Kti |
5. ÑÑÑÑÑÑÑÑÑ KvYKv t_k tn c^vxi g^vZv KvR Kti |

msvP|B D^vi c^vce

1. cwi cvK nI qv Lv tKv^vq, Kxfvte, tkw^vZ nq?
2. `vZ cwi^v vi vLvi c^vqvRbxqZv e^vLv Ki |
3. g^v v^v t^v q cvK^v t^v Z Kxfvte Lv^v hvq eYBv Ki |
4. tZvgvi t_k tn i³ KvYKvi c^vqvRbxqZv e^vLv Ki |
5. i³bwj Avgv^v I t_k tn Kx KvR Kti |

e^vmb^vP^vob c^vce

1. t_k ni metP^vq eo M^vs' tKvbU?

K. Am^vkq

L. AwšKm^vs'

M. M^vo^vóKm^vs'

N. hKZ

2. j vj vq _v^vK tKvbU?

K. Uvqwj b I cwb

M. j vBt^vcR I cwb

L. vBt^vmb I cwb

N. AvgvBtj R I cwb

DÍ xcKwU j¶ Ki Ges 3, 4 | 5 b¤^i c¶k¶ DÉi `vl :

3. wDwKewm Abçw-Z _¶K-

- i. M, N
- ii. N, O
- iii. O, M

wb¶Pi tKvbuU mwVK?

- K. i
- L. ii
- M. i | ii
- N. i | iii

4. P wPwýZ AskwU KiR n¶Q-

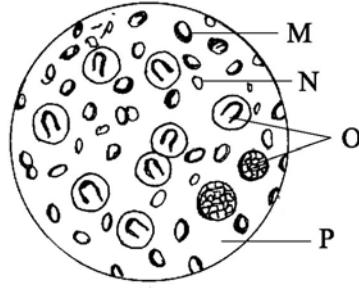
- i. Lv` "mvi enb Kiw
- ii. c¶ix mntmte KiR Kiw
- iii. eR" QbM@t b mnwqZv Kiw

wb¶Pi tKvbuU mwVK?

- K. i | ii
- L. i | iii
- M. ii | iii
- N. i, ii | iii

5. tKvbuU i³ RgyU ewatZ mnvh Kti?

- K. M
- L. N
- M. O
- N. P



mRbkj c¶k¶

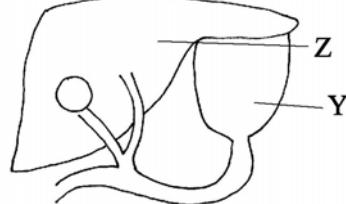
1 |

K. wfj vB Kx?

L. LvI qvi ci `wZ eik Kiw DwPr tKb? e¤Lv Ki |

M. Y wPwýZ AskwU KvhRwi Zv e¤Lv Ki |

N. Z AskwU ywZMØ' ntj gwbet` tn Kx ai tbi mgm¤v t` Lv` te? e¤Lv Ki |



2 |

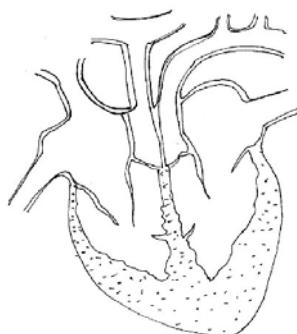
K. twi KvwWqg Kx?

L. jvBtcr ej tZ Kx eSvq? e¤Lv Ki |

M. DÍ xc¶K Zxi wPwýZ ct_ Kxfvte i³ mÄwj Z nq e¤Lv Ki |

N. DÍ xc¶Ki A½U my' ivLi Rb" Argit` i tKb mZRZv Aej s^b Kiw

DwPZ, Zv h³mn tj L |



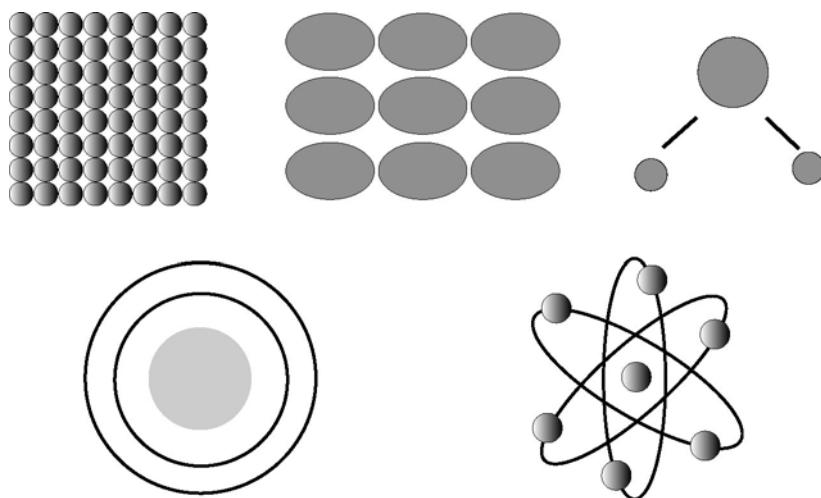
wb¶Riv Ki :

1. Zng tZvgvi eÜi bwox ~ù`b Kxfvte ci x¶v Ki te? e¤vqg Kvi ci tZvgvi eÜi bwoxi ~ù`b ci x¶v Ki | tKb cwi eZØ j¶ Ki tQv Kx? cwi eZØbi Kvi Y e¤Lv Ki |

2. tZvgvi `j MZfvté gwbe cwi cikZtšl GKwU PwU©Zvi Ki Ges cÖZwU A½I c¶k Gi KiR wj wce x Ki |

Iô Aa"vq C` v‡_P MVb

Avgut` i cÖZ"mK Rxetbi wewfbaet¶†i evZm, cwb, tjvn, Lv```e, eBcyÍK, PK BZ"m` bvbv i Kg
mRbm ev c`v_eenvi Kvi ev Zv‡`i ms®ú‡k©Awm| G‡`i g‡a" tKvbU Av‡Q tgšij K c`v_,©tKvbU
thšMK Alevi tKvbU Av‡Q wewfbaec`v‡_i©gkY| cÖZmU c`v_©mZ"Kvi At_©K w`‡q ^Zvi ev G‡`i MVb
tKgb I wKfvte %Zvi nq tmw wK tZigiv Rvb?



GB Aa"vq tk‡l Avgiv

- c`v‡_P MVb e"vL"v Ki‡Z cvie|
- AYyI cigvYj g‡a" cv_R" Ki‡Z cvie|
- tgšij K, thšMK I wgk‡c`v‡_P g‡a" cv_R" Ki‡Z cvie|
- cÖZxK I mstKZ e"envi K‡i wbePZ tgšij K I thšMK c`v_©PiyZ Ki‡Z cvie|
- ch‡q mvi Yxi cÖwgK avi Yv eYv Ki‡Z cvie|
- mveRbxv `leK wntm‡e cwbv e"envi cÖk‡ Ki‡Z cvie|
- cix¶vi mnvut‡h" tgšij K c`v_©‡Z thšMK c`v_©‡' Z Ki‡Z cvie|

CW 1-2 : c` v‡_P MVb

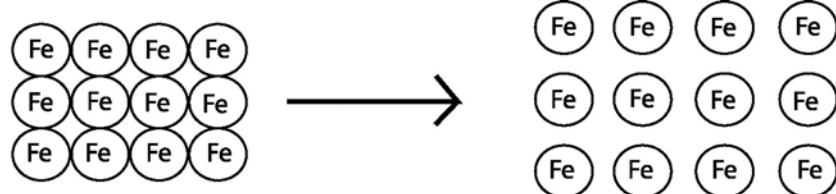
Avgut i Pvi cvt k memgqB tKvb bv tKvb c`v_@`LtZ cvB hv Avgiv mevfbetKvtR e`envi Kvi | mKvj tej v Ng t_tK DftVB Avgiv nvZgj taqvi KvR cwb e`envi Kvi | GB cwb GKvU c`v_@`GKB fvt PK, wPb, jey, tjvn, Zgv BZw meB c`v_@`Giv mevB c`v_@`ntj | mevB wKsGKB Dcv`vb w`tq MwZ bq |

C`v‡_® wfbaZvi Kvi Y wK?

c`v‡_P Kvi Y ntj v G‡_i MVb | GK GKJU c`v‡_P MVb G‡KK i Kg ejj B Zvi v † L‡Z wfbaei Kg nq Avi wfbaevi Zv‡_i ag‡ wfbaei Kg nq | tm Kvi †YB ag‡Abjhvqx Zvi v wfbaevfbaekv‡R e„eüZ nq |

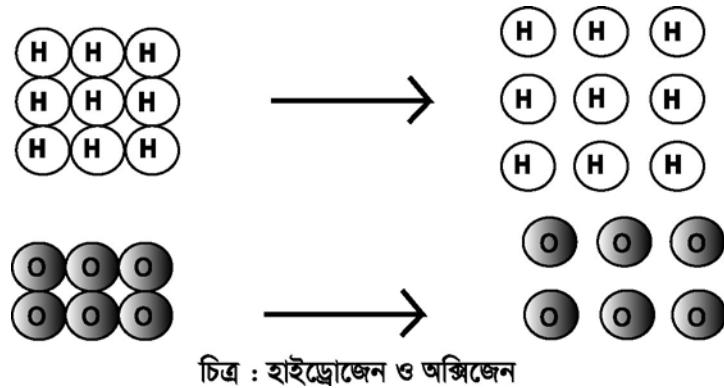
Gevi Avgv*t* i eūj eēeūZ K‡qKwU c` vt_P MVb t` Lv hvK | cōtq tjvnv | Zvgvi K_vB awi | tjvnvi MVb
wk n‡Z ct*i*? Avgv th tjvnv newfbœkv‡R eenvi Kwí Zv gjZ tqvU tqvU tjvnvi KYv w‡q MwZ |
GKBfvte Zvgvi t¶††I ZvB | GwU tqvU tqvU Zvgvi KYv w‡q MwZ | tjvnvtK fv½‡j i ay tjvnvi B ¶i‡
¶i‡ KYv cvl qv hvte A_P tjvnvtZ GKwU gv† Dcv`vb we`gvb | GKBfvte Zvgv‡K fv½‡j i ay Zvgvi B
¶i‡ ¶i‡ KYv cvl qv hvte Ges G‡ZI GKwU gv† Dcv`vb we`gvb |

tjvnw I Zvgvi g‡Zv th mKj c`v_©GKwJ gv† Dcv`vb w †q ^Zwi Zv† i‡K Avgiv ewj tgšwj K c`v_©

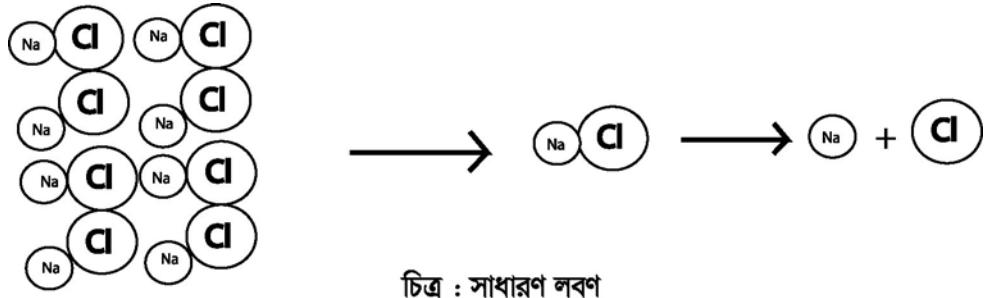


চিত্র : লোহা ও কপার

tj vñl | Zvgvi g‡Zv Avgv‡` i euj cwi wPZ nvB‡W‡Rb | Aw ‡RbI GKwU K‡i Dcv`vb w ‡q ^Zwi Ges
Givl tgšwj K c`v_¶



Ab`w †K Avgit` i ^~bw` b Rxetbi `yU AZ`ek`Kxq c`v_©ntjv jeY | wPib| jeY ntjv tmwWqvg | tKwvBW brtgi `B i Kg Dcv`vb w`tq %Zwi GKUJ c`v_©hvi ivmvqwbK bvg tmwWqvg tKwvBW| Avi wPib ntjv KveB, nB‡WtRb | A‡Rb brtgi wZbuJ wfbaDcv`vb w`tq %Zwi hvi ivmvqwbK bvg mtµvR | jeY | wPib g‡Zv th me c`v_©G‡Ki Awak wfbaDcv`vb w`tq ^Zwi Zv‡i t‡K Avgiv ej thšMK c`v_© Avgiv hw jeY‡K A_¶ tmwWqvg tKwvBW‡K fv½‡Z _wK Z‡e c‡tg je‡Yi eo `vby t‡K tQvU `vby, c‡B tQvU `vby, wj t‡K Av‡iv tQvU `vby Ges GK ch‡q G‡Ke‡i tQvUZg `vbyq cwi YZ n‡e hLb Gw‡K Lwj tP‡L Avi t` Lv h‡ebv | hw | GuJ je‡Yi GKUJ AwZ ¶i Zg Aby thLvtb GKUJ gw† tmwWqvg tKwvBW Av‡Q GB Abytft½ `B fv‡M wef³ ntq tmwWqvg | tKwib ntq hvq | A_¶ `yU wfbaDcv`vb cvl qv hvq | Ab‡fv‡e Avgiv ej‡Z cwi jeY `yU wfbaDcv`vb ^Zwi ej‡B wKŠyAvgiv G‡K AmsL`evi fv½‡j GK ch‡q H `yU Dcv`vb cvl qv hv‡Q |



চিত্র : সাধারণ লবণ

GKBf‡te th‡nZi wPib KveB, nB‡WtRb | A‡Rb w`tq ^Zwi, ZvB G‡K AmsL` evi fv½‡j tkl ch‡S-H wZbuJ Dcv`vbB cvl qv h‡te |

tZigiv Kajv | P‡Ki g‡a‡ tKvbuJ tgšij K | tKvbuJ thšMK Zv wK ej‡Z cvi‡te?

Kajv ntjv gjZ KveB w`tq %Zwi GKUJ tgšij K c`v_©Avi PK ntjv K‡y wmqvg, KveB | A‡Rb GB wZbuJ Dcv`vb w`tq %Zwi K‡y wmqvg Kve‡bU brtgi GKUJ thšMK c`v_©

Geni tZigiv ej je‡Yi g‡Zv PK‡K hw Avgiv fv½‡Z _wK, Zvntj wK wK Dcv`vb cvl qv h‡te? th‡nZi PK K‡y wmqvg, KveB | A‡Rb brtgi wZbuJ wfbaDcv`vb ev tgšij K c`v_©w`tq ^Zwi, ZvB G‡K µgwMZ fv½‡j GK ch‡q H wZbuJ Dcv`vb ev tgšij K c`v_B cvl qv h‡te |

tj wnvq gwi Pv aivi K_v Avgiv tK bv Rwb| ami Kvj †P i‡½i tj wni ^Zwi iW (hv GKUJ tgšij K c`v_© wKQj`b evBti t‡tL w`tj Gi Dci nv‡i nj‡` jyj i‡½i GKUJ Ar‡i b c‡o hv‡i bvg gwi Pv| GLv‡b Av‡tj GKUJ tgšij K c`v_©(tj wni) Rj xq ev‡ui Dcv`vb‡Z Aci GKUJ tgšij K c`v_©A‡R‡bi m‡_wewµqvi gva‡g gwi Pv‡i m‡ó K‡i hv Avgib A· vBW brtgi GKUJ thšMK c`v_© Zvntj GK_v wbtm‡` tn ejv hvq th, `B ev Z‡Zwak tgšij K c`v_©gtj GKUJ thšMK c`v_©Zwi nq |

mgk‡c`v_© GKUJ M‡m cvb wb‡q Zv‡Z mgv‡b GKUj jeY th‡M K‡i brov`vI | jeY | cvb GB mgkY thLvtb G‡Ki Awak c`v_©we`"gvb tmwU ntjv mgk‡c`v_© GKBf‡te, evZvml GK ai‡bi mgk‡c`v_©

thLvtb bvBtRb, Aව tRb, Rj xqer®um Ab"vb" c`v_©_¶K | GLvtb j¶l"bxq th, evqyGgb GKU wkgö c`v_©thLvtb tgšij K | thšMK Dfq ai‡bi c`v_©_‡q‡Q | c¶všíti jeb cwbib wkg‡b Dcw"Z jeY | cwbib `vUB thšMK c`v_¶

cW 3 - 6 : ¶i Zg KYvi gZer`

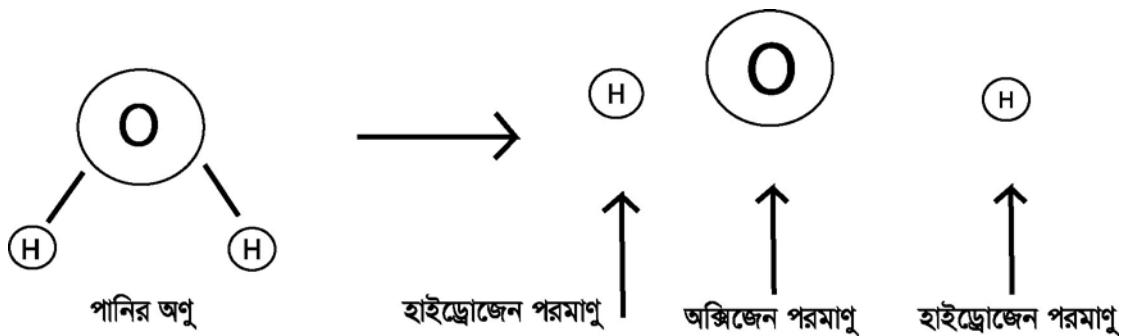
AvtMi ctv Avgiv t‡LwQ tgšij K, ev thšMK c`v_¶K µgMZ fvw½‡Z fvw½‡Z GK ch¶q GwU ¶i Zg KYvq cwiYZ nq | GB ¶i Zg KYvi wltq newfbœmg‡q meÁvbix | `vk¶KMY bvbv iKg gZer` e"³ K‡i‡Qb | MÖK `vk¶K tWgµUlm (Democritus) LÖce®400 Atä me®lq c`v_¶P ¶i Zg KYvi wltq gZer` tcvY K‡i b | Zvi g‡Z mKj c`v_B ¶i_¶AwefvR" (hv Avi fvw½v hvq bv) KYvi wltq ^Zvi | wZib GB ¶i Zg KYvi bvg t`b c igYyev GUg | GUg K_wU wZib wltqQ‡j b MÖK kā GUgm (Atomos) t‡K hvi A_©ntjv AwefvR" (Indivisible) ev hv fvw½v hvq bv | Zvi mg mgwqK mg‡qi Avtiv `Rb `vk¶K tc‡H (Plato) Ges Awi óUj (Aristotle) Zvi gZer` i mv‡_w0gZ tcvY K‡i b | Awi óUlj i g‡Z c`v_¶gna Awe‡Q" (Continuous) Ges fvw‡bi tKvb mxgv tbB A_¶P hZB fvw½v tnwK bv tKb c`v_¶P KYv,tj v ¶i_¶n‡Z ¶i Zi n‡Z _vKte |

1803 mv‡j Rb Wéb (John Dalton) bv‡gi Bstir meÁvbix cix¶ij ä Z‡_i Dci wfwE K‡i c`v_¶P ¶i Zg KYvi m¤úK®Zvi gZer` t`b | Zvi GB gZer` Wé‡bi c igYyev` bv‡gB cwiPZ | Avi GRb" Z‡K AvajbK c igYyev` i RbKI ejv nq | Wé‡bi g‡Z-

- 1 | tgšij K c`v_¶gna c igYybvrgK ¶i_¶i KYvi wltq MwZ |
- 2 | GKU tgšij i ev tgšij K c`v_¶P mKj c igYyGKB iKg | c igYyng‡ni AvKvi, fi | i vnvqibK ag® GKB iKg |
- 3 | GKU tgšij i c igYyngna Aci tgšij i c igYyngna n‡Z wfbaeKg | A_¶r wfbaefbaetg‡j i c igYy AvKvi, fi | ag®wfbaefbae
- 4 | thšMK c`v_¶gna G‡Ki AwiK tgšij K c`v_¶tq MwZ | newfbœtg‡j i c igYyngna mij AYc‡Z hy³ n‡q thšMK c`v_©ev thšM ^Zvi K‡i |
- 5 | GKU i vnvqibK newfbae c igYyng‡ni mij ev aYsm nq bv | i aymshy³ c pwe®v ev Avj v nq |

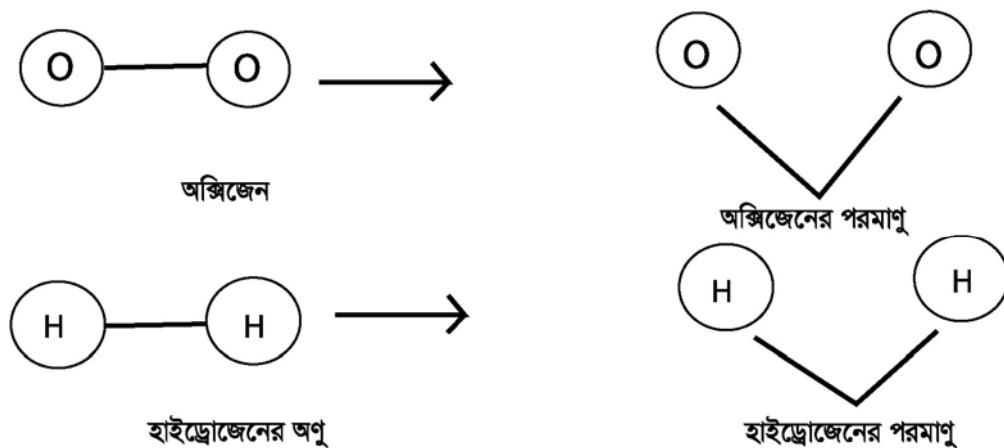
myZis Avgiv ¶i Zg KYvi m¤úK® newfbœgZer` t‡K Rvbjvg th, c igYyntjv tgšij K c`v_¶P ¶i Zg KYvi |

tZig‡` i g‡b wK G cikRm‡Q th, thšMK c`v_¶P ¶i Zg KYvi wK n‡Z c‡i bv? hv` nq Z‡` i‡K wK ej e? Avgiv cwbib K_v awi | GKU ct‡T wKQycwbib wltq Avgiv hv` G‡K ¶i_¶i As‡k fM Ki‡Z _wK Zte GK ch¶q Avgiv cwbib eo tduv Zvi ci tQuU tQuU tduv cve | Gf‡te tQuU tQuU cwbib tduv‡K hv` AmsL" evi fM Kvi Zntj Ggb GKU Ae"vq tc‡Qve hLb cwbib ¶i Zg KYvi cve hv‡K Avi fM Ki‡j cwbib Avi cwbib _vKte bv GwU tf‡½ nvB‡W‡Rb | Aව tRtb cwiYZ n‡e | cwbib H ¶i Zg KYvi thLvtb cwbib mKj ^ewkó" eRvq _v‡K Z‡KB cwbib AYyetj |



Zntj GK_v ejv hvq th, tgšij K c`v‡_‡ i ¶i Zg KY‡K ejv nq cigvYy Avi thšMK c`v‡_‡ ¶i Zg KY‡K ejv nq AYj

Zte G K_vi A_©GB bq th, tgšij K c`v‡_‡ t¶‡† AYye‡j wKQytBB! Aek‡B Av‡Q | weIqwU cwi®<vi fv‡e teiSri Rb Avg‡` i AwZ c‡qvRbxq Aw ‡Rb M‡mi K_v awi | Avgiv th Aw ‡Rb M‡m eenvi Kwi Zv `ju Aw ‡Rb cigvYy‡q MwZ | cwb i gZ h‡ Aw ‡Rb M‡m‡KI tQwU tQwU As‡k fM Ki‡Z _wK Zte GK ch‡q Avgiv Ggb Ae^vq tc‡Qve hLb GKwU fv‡M GKwU Aw ‡Rb M‡mi KYv _‡K | Gw‡K h‡ Awvi fM Kiv nq Zte Aw ‡Rb M‡mi KYwU tf‡½ `ju Aw ‡Rb cigvYycvI qv hv‡e | GB cigvYy cvI qv Av‡Mi Ae^v‡UB wKš' Aw ‡R‡bi AYj thL‡b `ju Aw ‡R‡bi cigvYy GK mw‡_‡‡K |



Zntj GK_v ejv hvq th, `B ev Z‡ZwAK cigvYyh‡ n‡q AYy^Zwi K‡i | tgšij K c`v‡_‡ t¶‡† GKB ai‡bi cigvYyh‡ n‡q AYy^Zwi K‡i Avi thšMK c`v‡_‡ t¶‡† wfbaecigvYyh‡ n‡q AYy^Zwi K‡i | thgb cwb, PK, wPb, jeY BZ^w |

cigvYy I c‡ZxK: Av‡Mi cv‡V tZvgiv tR‡bQ th, wfbaefbaetg‡j i cigvYy wfbaefbaenq | GLb c‡ken‡j v me‡gvU KZ_wj tgšij K c`v‡_‡ A‡Q A_ev KZ i K‡gi cigvYy Av‡Q? G ch‡-118wU tgšij K c`v‡_‡ Aw‡e®<Z n‡q‡Q hwi g‡a^ 98wU c‡Z‡Z cvI qv hvq Avi evKx 20wU Kw‡gf‡e ^Zwi tgšij K c`v‡_‡ Avg‡` i thgb c‡Z‡K i bvg Av‡Q, c‡ZwU tgšij K c`v‡_‡‡B GKwU bvg Av‡Q | Avi G‡` i‡K ms‡¶B | myeaRbKfv‡e c‡Z‡ki Rb‡B Avgiv c‡ZwU Rb‡ Avgiv v c‡ZxK eenvi Kwi | c‡ZxK mvavi YZ tg‡j i

j̄ w̄ub ev Bṣti Rx b̄tgi GK̄U ev `ȳ Av `pi `ȳi c̄k̄k Kiv nq| GK̄U Āpi w̄ t̄q c̄k̄kZ c̄x̄ki t̄p̄t̄ mēvB eo n̄t̄zi Āpi Avi `ȳ Āpi w̄ t̄q c̄k̄kZ c̄x̄ki t̄p̄t̄ c̄ḡU eo n̄t̄zi Āpi Ges c̄ti īw̄ t̄q̄U n̄t̄zi Āpi nq| w̄t̄P K̄qK̄U c̄ḡȳi c̄x̄K I j̄ w̄ub b̄v̄ t̄q̄ n̄t̄j̄v̄|

c̄ḡȳ	c̄x̄K	j̄ w̄ub b̄v̄
n̄B̄t̄W̄t̄Rb	H	Hydrogenium
w̄ȳ q̄ḡ	He	Helium
w̄j̄ w̄ q̄ḡ	Li	Lithium
t̄ēw̄ w̄ q̄ḡ	Be	Beryllium
tevi b	B	Borum
K̄ēθ̄	C	Carboneum
b̄B̄t̄Ūt̄Rb	N	Nitrogenium
Āw̄ t̄Rb	O	Oxygenium
t̄d̄w̄i b	F	Fluorum
t̄j̄ v̄n̄v̄	Fe	Ferrum

AYy I m̄t̄KZ: GB Aāt̄qi c̄V̄-3 G Argiv w̄t̄L̄Q th, `p̄ ev Z̄t̄Z̄w̄aK c̄ḡȳGK̄t̄ h̄p̄ n̄t̄q AYy `Z̄w̄ K̄t̄ | GK̄U AȲt̄Z w̄K c̄ḡȳĀt̄Q Ges c̄ḡȳȳnḡt̄ni Av̄t̄c̄t̄K AȲc̄z̄ KZ, tm̄U Rb̄ hv̄q m̄t̄KZ t̄_t̄K | thgb Āt̄M Argiv et̄j̄w̄Q th, `ȳ n̄B̄t̄W̄t̄Rb I GK̄U Āw̄ t̄Rb w̄t̄j̄ `Z̄w̄ nq c̄w̄bi AȲj̄ Argiv GI R̄w̄b th n̄B̄t̄W̄t̄Rb I Āw̄ t̄R̄bi c̄x̄K n̄t̄j̄ H I O | Z̄n̄t̄j̄ `ȳ n̄B̄t̄W̄t̄Rb c̄ḡȳȳI GK̄U Āw̄ t̄Rb w̄t̄q̄ `Z̄w̄ c̄w̄bi m̄t̄KZ n̄t̄e H₂O | GKBf̄t̄e `ȳ n̄B̄t̄W̄t̄Rb c̄ḡȳȳw̄t̄q̄ %Z̄w̄ Āw̄ t̄R̄bi m̄t̄KZ O₂ | Argut̄i c̄Z̄w̄n̄K Rx̄t̄bi m̄t̄_ I Z̄t̄c̄Z̄f̄t̄e R̄w̄Z K̄qK̄U īm̄q̄b̄K c̄v̄t̄ P m̄t̄KZ w̄t̄P t̄q̄ n̄t̄j̄v̄|

c̄v̄ ^o	m̄t̄KZ	c̄v̄ ^o	m̄t̄KZ
L̄v̄l̄ q̄v̄i j̄ eY	NaCl tm̄w̄W̄q̄ḡ t̄K̄w̄ v̄BW	Pb	CaO K̄v̄j̄ w̄m̄q̄ḡ Ā. v̄BW
PK	CaCO ₃ K̄v̄j̄ w̄m̄q̄ḡ K̄ēb̄U	w̄t̄_b M̄v̄m̄	CH ₄
b̄B̄t̄Ūt̄Rb	N ₂	K̄ēb̄W̄BĀ. v̄BW	CO ₂

c̄ḡȳj̄ KȲ: c̄ḡȳĀv̄K̄t̄i L̄p̄B̄ t̄Q̄U| GZB̄ t̄Q̄U th, L̄w̄j̄ t̄p̄t̄L̄ Ḡt̄` ī t̄` Lv̄ hv̄q b̄| Ggb̄K̄ m̄v̄avi Ȳ ḡB̄t̄μ̄m̄t̄K̄c̄ h̄t̄š̄i m̄v̄n̄t̄h̄` l̄ b̄| Z̄t̄e B̄t̄j̄ K̄U b̄ ḡB̄t̄μ̄m̄t̄K̄t̄ci m̄v̄n̄t̄h̄ c̄ḡȳt̄` Lv̄ hv̄q| GL̄t̄b̄ D̄t̄j̄ Ē th B̄t̄j̄ K̄U b̄ ḡB̄t̄μ̄m̄t̄K̄t̄ci ḡv̄t̄ḡ t̄K̄b̄ w̄R̄b̄m̄t̄K̄ Z̄v̄i Āv̄K̄t̄i ī Z̄j̄ b̄v̄q̄ K̄t̄q̄K̄ w̄ḡj̄ q̄b̄ , Ȳ eo t̄` Lv̄ hv̄q|

GL̄b̄ c̄k̄n̄t̄j̄v̄ GZ̄ t̄Q̄U c̄ḡȳt̄K̄ t̄f̄t̄½ w̄K̄ Av̄i I t̄k̄i Z̄i t̄K̄b̄ KȲ c̄v̄l̄ q̄v̄ hv̄q?

W̄ēt̄bi c̄ḡȳp̄` AȲhv̄q̄, c̄ḡȳĀw̄et̄v̄R̄ Ā_q̄r Ḡt̄K̄ Av̄i f̄v̄½ v̄ hv̄q b̄| W̄ēt̄bi GB ḡZ̄U Āt̄b̄K̄` b̄ ch̄s̄- mēvB mḡ_θ̄ K̄i t̄j̄ I GL̄b̄ ḠU c̄ḡw̄b̄Z̄ m̄Z̄ th, c̄ḡȳt̄K̄ t̄f̄t̄½ Av̄i I t̄k̄i KȲq̄ c̄v̄i YZ̄ Kiv̄ hv̄q| c̄ḡȳt̄f̄t̄½ th w̄Z̄b̄U KȲ c̄v̄l̄ q̄v̄ hv̄q Z̄v̄ n̄t̄j̄ B̄t̄j̄ K̄U b̄, t̄c̄U b̄ I w̄D̄U b̄| Āv̄j̄b̄K̄ M̄t̄ēl̄ Ȳv̄q̄ ḠU c̄ḡw̄YZ̄ th, c̄ḡȳt̄K̄ t̄f̄t̄½ w̄D̄U b̄ I t̄c̄U b̄ Av̄i t̄K̄t̄` ī P̄v̄i w̄t̄K̄ ēĒv̄K̄i c̄t̄_ B̄t̄j̄ K̄U b̄ N̄j̄ t̄Z̄ _v̄t̄K̄| m̄v̄avi YZ̄ GKB̄ āt̄Ȳi GK̄U c̄ḡȳt̄Z̄ mḡv̄b̄ ms̄L̄K̄ B̄t̄j̄ K̄U b̄ I t̄c̄U b̄ _v̄t̄K̄|

GLv'b Dtj øL" th GKgv' nBtWtRb cigYj tKt`^a tKvb wbDUb _vtK bv A_vP nBtWtRb cigYj
fv½tj Gi tKt`^a GKvU tcÜb | evBt i GKvU Btj KUb cvl qv hvq | Abw tK vñij qvg cigYj tKt`^a
_vtK 2vU tcÜb | yU wbDUb Avi evBt i _vtK 2vU Btj KUb | Avevi Aw tRb cigYj tKt`^a _vtK 8vU
tcÜb | 8vU wbDUb Avi evBt i _vtK 8vU Btj KUb |



চিত্র : পরমাণুর গঠন

cW 7-8 : ch^q mvi Yx

Avgiv tRtbiQ th, G chS-Aw®<Z tgšj i msLv 118 wJ| G‡ i cÖZUJ AZ”Š-, i ZcY©Ges tKib bv tKib Kv‡R e“euZ nq| ZvB Zv‡` i ag©ev %enkó Rvbv AZ”Š-cÖqyRb| Avi GiUJ wK th, Ajv` vfvte cÖZU tgšj i ag©Rvbv | gtb ivLv GKUJ Kómia” e“vcvi Ges Am‡el etU| ZvB G‡ i †K h‡ wvfbœ M‡c fW Kiv hq Ges h‡ GKB i Kg ag©cÖk‡ Kiv tgšj mgn‡K GK GK M‡c ti †L GKUJ tUej evbv‡bv nq, Zvntj wK tKib myear nte? Aek“B nte, KviY ZLb th tKib M‡ci GKUJ tgšj i ag©m‡útK© Rvb‡j B Avgiv H M‡ci Ab” tgšj , wj m‡útK© avi Yv Ki‡Z cvie| ch‡q mvi Yx (Periodic table) ntjv Gi K‡gi GKUJ mvi Yx ev tUej thLv‡b tgšj mgn‡K Zv‡` i %enkó” AYhvqx mvRv‡bv ntq‡Q|

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1 H Hydrogen Atomic # Symbol Periodic table Group 1 Period 1 Element 1 Electron configuration: 1s ¹	2 He Helium Atomic # Symbol Periodic table Group 18 Period 1 Element 2 Electron configuration: 1s ²	3 Li Lithium Atomic # Symbol Periodic table Group 1 Period 2 Element 3 Electron configuration: 2s ¹	4 Be Boron Atomic # Symbol Periodic table Group 2 Period 2 Element 4 Electron configuration: 2s ²	5 B Boron Atomic # Symbol Periodic table Group 13 Period 2 Element 5 Electron configuration: 2s ² 2p ¹	6 C Carbon Atomic # Symbol Periodic table Group 14 Period 2 Element 6 Electron configuration: 2s ² 2p ²	7 N Nitrogen Atomic # Symbol Periodic table Group 15 Period 2 Element 7 Electron configuration: 2s ² 2p ³	8 O Oxygen Atomic # Symbol Periodic table Group 16 Period 2 Element 8 Electron configuration: 2s ² 2p ⁴	9 F Fluorine Atomic # Symbol Periodic table Group 17 Period 2 Element 9 Electron configuration: 2s ² 2p ⁵	10 Ne Neon Atomic # Symbol Periodic table Group 18 Period 2 Element 10 Electron configuration: 2s ² 2p ⁶	11 Na Sodium Atomic # Symbol Periodic table Group 1 Period 3 Element 11 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ¹	12 Mg Magnesium Atomic # Symbol Periodic table Group 2 Period 3 Element 12 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ²	13 Al Aluminum Atomic # Symbol Periodic table Group 13 Period 3 Element 13 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ¹	14 Si Silicon Atomic # Symbol Periodic table Group 14 Period 3 Element 14 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ²	15 P Phosphorus Atomic # Symbol Periodic table Group 15 Period 3 Element 15 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ³	16 S Sulfur Atomic # Symbol Periodic table Group 16 Period 3 Element 16 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁴	17 Cl Chlorine Atomic # Symbol Periodic table Group 17 Period 3 Element 17 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁵	18 Ar Argon Atomic # Symbol Periodic table Group 18 Period 3 Element 18 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶	
19 K Potassium Atomic # Symbol Periodic table Group 1 Period 4 Element 19 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 4s ¹	20 Ca Calcium Atomic # Symbol Periodic table Group 2 Period 4 Element 20 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 4s ²	21 Sc Scandium Atomic # Symbol Periodic table Group 3 Period 4 Element 21 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹ 4s ²	22 Ti Titanium Atomic # Symbol Periodic table Group 4 Period 4 Element 22 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ² 4s ²	23 V Vanadium Atomic # Symbol Periodic table Group 5 Period 4 Element 23 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ³ 4s ²	24 Cr Chromium Atomic # Symbol Periodic table Group 6 Period 4 Element 24 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ⁵ 4s ¹	25 Mn Manganese Atomic # Symbol Periodic table Group 7 Period 4 Element 25 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ⁵ 4s ²	26 Fe Iron Atomic # Symbol Periodic table Group 8 Period 4 Element 26 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ⁶ 4s ²	27 Co Cobalt Atomic # Symbol Periodic table Group 9 Period 4 Element 27 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ⁷ 4s ²	28 Ni Nickel Atomic # Symbol Periodic table Group 10 Period 4 Element 28 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ⁸ 4s ²	29 Cu Copper Atomic # Symbol Periodic table Group 11 Period 4 Element 29 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ¹	30 Zn Zinc Atomic # Symbol Periodic table Group 12 Period 4 Element 30 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ²	31 Ga Gallium Atomic # Symbol Periodic table Group 13 Period 4 Element 31 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ¹	32 Ge Germanium Atomic # Symbol Periodic table Group 14 Period 4 Element 32 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ²	33 As Arsenic Atomic # Symbol Periodic table Group 15 Period 4 Element 33 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ³	34 Se Selenium Atomic # Symbol Periodic table Group 16 Period 4 Element 34 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁴	35 Br Bromine Atomic # Symbol Periodic table Group 17 Period 4 Element 35 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁵	36 Kr Krypton Atomic # Symbol Periodic table Group 18 Period 4 Element 36 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶	
37 Cs Cesium Atomic # Symbol Periodic table Group 1 Period 5 Element 37 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ¹	38 Ba Barium Atomic # Symbol Periodic table Group 2 Period 5 Element 38 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ²	57-71		72 Hf Hafnium Atomic # Symbol Periodic table Group 4 Period 5 Element 72 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ²	73 Ta Tantalum Atomic # Symbol Periodic table Group 5 Period 5 Element 73 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ²	74 W Tungsten Atomic # Symbol Periodic table Group 6 Period 5 Element 74 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ²	75 Re Rhenium Atomic # Symbol Periodic table Group 7 Period 5 Element 75 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ²	76 Os Osmium Atomic # Symbol Periodic table Group 8 Period 5 Element 76 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ²	77 Ru Ruthenium Atomic # Symbol Periodic table Group 9 Period 5 Element 77 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ²	78 Pt Platinum Atomic # Symbol Periodic table Group 10 Period 5 Element 78 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ²	79 Au Gold Atomic # Symbol Periodic table Group 11 Period 5 Element 79 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ¹	80 Hg Mercury Atomic # Symbol Periodic table Group 12 Period 5 Element 80 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ²	81 Tl Thallium Atomic # Symbol Periodic table Group 13 Period 5 Element 81 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ¹	82 Pb Lead Atomic # Symbol Periodic table Group 14 Period 5 Element 82 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ²	83 Bi Bismuth Atomic # Symbol Periodic table Group 15 Period 5 Element 83 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ³	84 Po Polonium Atomic # Symbol Periodic table Group 16 Period 5 Element 84 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁴	85 At Astatine Atomic # Symbol Periodic table Group 17 Period 5 Element 85 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁵	86 Rn Radium Atomic # Symbol Periodic table Group 18 Period 5 Element 86 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶
87 Fr Francium Atomic # Symbol Periodic table Group 1 Period 6 Element 87 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ¹	88 Ra Radium Atomic # Symbol Periodic table Group 2 Period 6 Element 88 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	69-103		89 La Lanthanum Atomic # Symbol Periodic table Group 3 Period 6 Element 89 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	90 Ce Cerium Atomic # Symbol Periodic table Group 4 Period 6 Element 90 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	91 Pr Praseodymium Atomic # Symbol Periodic table Group 5 Period 6 Element 91 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	92 Nd Neodymium Atomic # Symbol Periodic table Group 6 Period 6 Element 92 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	93 Pm Promethium Atomic # Symbol Periodic table Group 7 Period 6 Element 93 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	94 Sm Samarium Atomic # Symbol Periodic table Group 8 Period 6 Element 94 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	95 Eu Europium Atomic # Symbol Periodic table Group 9 Period 6 Element 95 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	96 Gd Gadolinium Atomic # Symbol Periodic table Group 10 Period 6 Element 96 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	97 Dy Dysprosium Atomic # Symbol Periodic table Group 11 Period 6 Element 97 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	98 Tb Terbium Atomic # Symbol Periodic table Group 12 Period 6 Element 98 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	99 Ho Holmium Atomic # Symbol Periodic table Group 13 Period 6 Element 99 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	100 Er Erbium Atomic # Symbol Periodic table Group 14 Period 6 Element 100 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	101 Tm Thulium Atomic # Symbol Periodic table Group 15 Period 6 Element 101 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	102 Yb Ytterbium Atomic # Symbol Periodic table Group 16 Period 6 Element 102 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²	103 Lr Lutetium Atomic # Symbol Periodic table Group 17 Period 6 Element 103 Electron configuration: 1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ¹⁰ 4s ² 4p ⁶ 5s ² 5p ⁶ 6s ²

চিত্র : পর্যায় সারণি

1869 mwj i wkqyb weÁvbx wgÍ x tgtÚwj d (Dmitri Mendeleef) GB chq mvi Yx c Z  Ktib | chq mvi Yx Z 8wJ Dj  ^ Kj vg Ges 7wJ AYfwgK mwi i tgtQ | Dj  ^ Kj vg K M  etj Avi AYfwgK mwi i K

ch^q etj | GKU Möci mKj tg^šj i ag^oGKB iKg| ZvB th tKib GKU tg^šj i ag^oRib^tj Ab^ti ag^o
m^oútK^oavi Yv Kiv hvq| thgb- M^c-1 Gi K_vq aiv hvK| GB Möci 1wJ tg^šj wj w_vqvg (Li), ZvB Avgiv
avi Yv Ki tZ cwi th, GB Möci Ab^vb^t tg^šj i ag^owj w_vqvgi gZB nte| Averi M^c 18 Gi me tg^šj GB
Möci c^og tg^šj w_vqvgi (He) g^tZv GKB iKg ag^oc^ok^oK^ti |

Avti KU w_vl q j^tb^oq th, gj ch^q mvi Yxi bx^tP Avj v v w_vl mwi i t^tq^tQ| G^ti c^og mwi i t^ti^tZ
j^tb^oqvg (La) | tk^tI wj D^tU_vmqvg (Lu) AvtQ Avi w_vZxq mwi i t^ti^tZ A^tVK^tUvg (Ac) Avi tk^tI
j^tb^oqvg (Lr) AvtQ| tZvg^ti g^tb c^okeAvmtZ c^ti th, G^ti t^tK gj ch^q mvi Yxi evB^ti tbqi Kvi Y
w^tK? Kvi YwU ntj v c^og mwi i meKU tg^šj i iwmqibK ag^oc^oB GKB iKg| A_vP G^ti GKB Möci
GKB -'t^tb _Kvi K_v| w^tK^ts' ev^tweKf^te GuU m^oé bq e^tj B G^ti t^tK gj ch^q mvi Yxi evB^ti
GuU mwi tZ i vLv ntq^tQ| w_vZxq mwi i t^tq^t B e^tvcv_vU GKB|

mveRbx^t `teK w_vt^tte c^ombi e^tenvi :

lô tk^tW^tZ tZvgiv tRtbQ th, c^omb GKU mveRbx^t `teK| Kvi Y, GuU ^Re | A%Re AtbK `etK `erfZ
K^ti hv Ab^t `te^tKi c^tq m^oé bq| Gevi Zntj t^tLv hvK c^omb m^oZ^tKvi At_vB mveRbx^t `teK w^tK-bv|

KvR: mveRbx^t `teK w_vt^tte c^ombi e^tenvi c^ok^o|

c^oqvgRbxq DcKiY: c^omb, tU^tUD^te, bv^tb iKg c^tv^t(thgb-LvI qvi j eY, LvI qvi tmWw, tUw^ts më,
w^tU j eY, w^tUKwi, w^tPb, w^ttbMvi, w^túwi U, w^tUwgb w^tUvetjU, M^tKvR BZ^tw^t)

c^twZ: tUw^tUD^te 5 w^tg^twj w^tU^ti i g^tZv c^omb bvl | w^tKQzLvI qvi j eY thM K^ti fvtjrvf^te S^tKvI | j eY w^tK
c^ombtZ `erfZ ntq tMj? w^tv, w^tK ZvB| GKBf^te G^tK G^tK Dc^ti D^tj w^tZ c^tZwU `e w^tb^tq t^tL Giv
c^ombtZ `erfZ nq w^tKbv| c^tZwU `e ev c^tv^tB c^ombtZ `erfZ nt^tQ| D^tj w^tZ c^tv^tP gta^t LvI qvi j eY,
LvI qvi tmWw, tUw^ts më, w^tU j eY, w^tUKwi ntj v A%Re c^tv^tw^tK^ts^tPb, w^ttbMvi, w^túwi U, w^tUwgb w^tU
UvetjU, M^tKvR ntj v ^Re c^tv^tZntj GuU c^twYZ ntj v th, c^omb ^Re | A%Re AtbK c^tv^tw^tK `erfZ
Ki tZ c^ti A_vP c^omb GKU mveRbx^t `teK|

Gevi tZvgiv c^ombi e^t tj Ab^t GKU `teK thgb-w^tU w^tb^tq Dc^ti D^tj w^tZ c^tZwU `e w^tb^tq t^tL G_vtj v
w^túwi tU `erfZ nq w^tKbv| me, t^tj v `e Kx w^túwi tU `erfZ nt^tQ? bv, nt^tQ bv| c^omb Qov tekxi fM `teKB
w^túwi tUi g^tZv Kg msL^tK `etK `erfZ K^ti | ZvB tm, t^tj v mveRbx^t `teK bq|

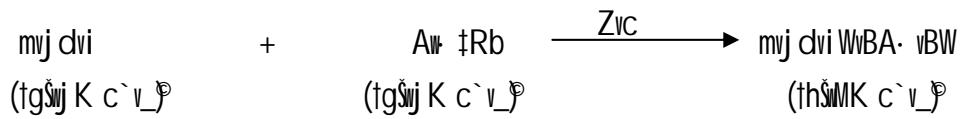
c^tw 9- 12 : tg^šwj K c^tv^th^tZ th^šWK c^tv^tZwi i mnR c^tx^tw

KvR : w_vl tg^šwj K c^tv^th^twj dvi (S) | A_v tRb (O₂) ntZ GKU th^šWK c^tv^th^twj dvi w^tBA· vBW
^Zwi i c^tx^twY|

c^oqvgRbxq DcKiY : GKU j^tw^tZj h^tb^t nb PvgP, w^tKQymj dvi, w^túwi U j^tw^tú ev evY^t |

c^twZ : tZvgiv `nb Pvg^tP w^tKQ^tU^twj dvi bvl | w^túwi U j^tw^tú ev evY^t w^ttq PvgPw^tZ Zvc w^ttZ _vK |
j^tw^tZj h^tb^t nb PvgP tbI qvi Kvi Y tZvgiv e^tS^tZ c^ti Q Kx? Pvg^tP Zvc w^ttZ _vKtj GuU at^ti at^ti
Mig ntZ _vKt^te Avi w^tZj tQwU ntj tZvg^ti w^tZ c^to h^tt^te | tZvgiv Kx t^tLtZ c^trQ?

c₀tg myj dvi M₂j tMj Zvici tZvgiv bxj Av, tbi wklv t` L₂Z crQ | tZvgiv wK tKvb M_Ü crQ? Av, tYi wklv hLb wbt f tMj ZLb Pgtp wK Avi tKvb myj dvi Aewkó AvQ? hLb Av, tbi bxj wklv t` Lv hwQ, ZLb GKU SiSvtj v M_Ü tcqQ tZvgiv | Kvi Y ntj v Zvc t` lqvi dtj myj dvi evZvtmi Aw tRbi mwntf h cjo myj dvi WBA· vBW (SO₂) M_vm ^Zwi Kt i tQ hvi Rb tZvgiv SiSvtj v M_Ü tcqQ | Avi myj dvi evZvtm tciov Kvi tYB tZvgiv bxj wklv t` tLQ, wK thgbwU Avgiv t` wL Pj vq cOKwZK M_vm tciov bvi mgq | thtnZz myj dvi Aw tRbi wftj m_wY_wbZb c` v_ ^Zwi Kt i tQ, ZvB Av, tbi wklv wbt f hvi qvi ct i Pgtp Avi tKvb myj dvi Aewkó bvb | A_P



KvR: `ju tg^v K c` v_ ^Avgib(Fe) | myj dvi (S) n_tZ th^v MK c` v_ ^Avgib myj dvBW ^Zwi | c₀qyRbxq DcKiY: tUÓUDe, gU_w tU_w tUDe tnvi vi, w_wvi U j_wvi ev evY_w, w_w³, t_wvi Iov, myj dvi, w_w³ | c_xW: tUÓUDeU fvj Kt i atq i wKtq bvl | 7 Mg myj dvi (mgvbjcwZK n_ti wfbecwi giYI tbqv hvq) w_w³ w_w t_w tg_w gU_w i bvl | L_w fvj fvte wct i bvl | Zvici i Kbv tUÓUDte tXtj bvl | Gevi w_wvi U j_wvi ev evY_w w_w t_w tUÓUDtei Zjvq Zvc w_w tZ _vK | Zvc t` qvi mgq tLqyj i vL thb Av, tbi wklv tQvU nq | Zvc w_w tZ w_w t_w tUÓUDtei wgbwU hLb i w_w³gvfvi gZ n_te ZLb Zvc t` qv eÜ Ki | tUÓUDeU gU_w i Dcti ati i vL thb GvU t_w t_w tM₂j | tUÓUDtei wFZ_w i e⁻ b_w bv n_tq hvq | AZ:ci tUÓUDeU wUv Ktiv | t_w t_w wFZ_w i e⁻ w_wK Avj v Ki |

tUÓUDe t_wK th e⁻ wJ tctj Zv t` L₂Z tKgb? M_p ami e_wY_w GKU c` v_ P tZvgiv G_wZ wK n_t K_w n_t j_w is Gi myj dvi t` L₂Z crQ? bv t` L₂Z crQ bv, Kvi Y tUÓUDte Zvc t` qvi dtj t_wvi ,ov | myj dvi wgtj GKU bZb c` v_ ^Avgib myj dvBW ^Zwi n_tqQ | ZvB I L_wthb Avi tKvb myj dvi Aewkó bvb | G_wZ tKvb Avgib AvQ wKbv ZvI cix_w Kt i t` L₂Z crq | GKU P_w^K wbtq c_wB Ktj v e⁻ wJi Dci at_w B e_w h_w tKvb Avgib Aewkó AvQ wK bv? h_w _vK, Zte Zv P_w^K tK i 0viv AvKw_w Z n_te | Zte Ggb n_tZ cr_w th, c_wqwu m_wWKFvte m_wubr_w KtZ cr_w wKQyAcwi ewZ_w Avgib | myj dvi i t_w th_w Z cr_w | A_P



KvR: `ju tg^v K c` v_ ^M_wbwmhv (Mg) | Aw tRb (O₂) n_tZ GKU th^v MK c` v_ ^M_wbwmhv (MgO) %Zwi | c₀qyRbxq DcKiY: g_wM_wbwmhv w_web, wPgUv AvsUv, (j vBUv) w_wvi U j_wvi evb_w | c_xW: g_wM_wbwmhv w_web tbi GKU tQvU UKivi (8 tmwUngUv) GKgv_w wPgUv w_w t_w ai | tPvL wbi vcE_w Pkgv c_w bvl | w_web tbi Ab_w g_wwU eb t_wmb evb_w i wklvi Dci ai | j vBUv w_w t_wl GvU Kiv hvq | L_w

f^vj f^vt e j p^t Ki w^K NU^tQ? g^wM^tb^wm^qg wⁱe Y^tU Av^{,t}bi w^KLvi Dci ai^v w^K t^tL^tj? wⁱe t^b Av^{,b}a^ti t^tM^j Ges L^pe AZ^{-s}-c⁸%w^jZ w^KLmn Rj t^tZ j M^j | Gi Kvi Y nt^j v g^wM^tb^wm^qg evZv^tmi A^w t^Rt^bc^tZ _v^tK Avi Avg i v c⁸%w^jZ w^KLv t^tL^tZ cvB| Gf^vt e hLb mg⁻- g^wM^tb^wm^qg c^to tkI nt^t hvq, ZLb Avcbv Avcbw w^KLv w^bt f hvq| tkI t^tZvg i v QvB Gi g^tZv w^KOy^t t^tL^tZ cr^tQ w^K? GiU Avmt^j g^wM^tb^wm^qg | A^w t^Rb c^to %Zwi nI qv g^wM^tb^wm^qg A· vBW |

GB Aa v̄tq Avg i v h̄v h̄v w̄kLj vg

- wfbcwfbc` v‡_¶ Mvb wfbarfbnq Avi ZvB G‡` i ag© wfbarfbnq |
 - tgšij K c` v_¶gn GKB ai‡bi Dcv` vb w` ‡q ^Zwi nq |
 - thšMK c` v_¶gn G‡Ki AwaK tgšij K c` v_¶ ‡q ^Zwi nq |
 - tgšij K c` v_¶gn ci gyYbigK ¶i ‡¶i ‡KYv w` ‡q MwZ |
 - wfbarfbtgsj i ci gyYj AvKvi , fi I ag©wfbarfb‡
 - wfbarfbtgsj i ci gyYngn mij AYyc‡Z h‡p n‡q thšMK c` v_©v thšM ^Zwi K‡i |
 - thšMK c` v‡_¶ ¶i Zg KY‡K AYyejv nq |
 - ci gyYyfv‡‡j Btj KuB, tcÜb I wbDUb cvl qv hvq |
 - ch‡q mvi bxtZ 8wU Dj x^Kj vg Ges 7wU AYfngK mwi i ‡q‡Q| GKwU M‡ci mKj tg§j i ag© GKB i Kg |
 - Zic w` ‡q I Zior netkH Yi mnvñth thšMK c` v_©‡K tgšij K c` v_©Zwi Kiv hvq |

Ab~~k~~^j bx

kb'''vb c!Y Ki :

msw\P\B c\koe:

1. tg̥šij K I thšMK c`v_@ej tZ Kx ejj?
 2. AYyI cigvYj gta" cv_K" D`vn i Ymn e"vL"v Ki |
 3. Wëtbi cigvYej` I gj e"vK wK?
 4. cigvYtf½ wK wK KYv cvl qv hvq? Giv cigvYj tKv_vq Ae"v b Kti?

eūnbePib cikæ

1. tKvbU tgšj K AY?

K. Na L. Ne M. N₂ N. NO2. mnyj qvg, mbqb I Aℳℳ GKB M̄ci Ašf³ Ab[”] tK Kvj mvg I gℳℳtbumqvg Ab[”] GKU M̄ci Ašf³ GB tgšj ,y i tP̄t̄t̄ c̄h̄R̄ K_mU nt̄Q |i. mbqb mbi[®]Eq nt̄j AℳℳI mbi[®]Eqii. Kvj mvg I mnyj qvtgi ag[©]m[¤]úY[©]f^bæiii. Kvj mvg I gℳℳtbumqvtgi tc̄ub msL[”] mgvb

mbPi tKvbU mVK?

K. i

L. iii

M. i I ii

N. i, ii I iii

mbPi D̄t̄x̄t̄Ki Ait̄j v̄K 3 I 4 b¤^i c̄k̄i D̄Ei `v̄l :

C` V ₂ [®]	c̄k̄K	mstKZ
1		Cl ₂
2	Al	
3		O ₃
4	F	
5		NH ₃
6		Na OH
7	Cu	

3. Dcti i 0tK c̄k̄K I mstKtZi gva[”]g c̄k̄kZ GKB atg[®] tgšj tKvb ,t̄j v?

K. 2, 4

L. 1, 3

M. 1, 4

N. 2, 6

4. tKvb c` V₂[®]t̄j vi c̄ḡV̄j msL[”] mgvb?

K. 2, 3

L. 3, 4

M. 4, 5

N. 3, 6

mRbkxj c̄kœ

1. wbtPi Q‡K wZbwU c`v_°Ges Zv‡` i MVbKvi x ci givYmsL v D‡j L-Kiv n‡j v |

c`v_©	ci givYj msL v
1	Na - 2wU C - 1wU O - 3wU
2	F - 2wU
3	C - 1wU Cl - 4wU

K. wnj q‡gi c̄ZxK Kx?

L. Kaj v tKb tg‡j K c`v_? eYbv Ki |

M. 1 b¤^i c`v_@i ms‡KZmn i wmiqbK bvg tj L Ges MVb c̄uqr e„vL v Ki |

N. Q‡Ki GKwU th‡Mi ms‡KZ wgt‡bi ms‡K‡Zi Abj e Z_wic th‡M `ju wfbaehy³mn we‡kH Ki |

2. A (tg‡j), B (th‡M), C (avZ), D (th‡M) Pvi wU c`v_@ A l B K‡l Zvcgv‡vq cwbtZ `bxZ nq | C A`eYq wKšyevZv‡m `n‡bi ci Dò cwbtZ `bxZ nq | D cwbtZ `eYq bq wKšy‡Z‡j `eYq | A Gi `eY t‡K A tK mn‡R c_uK Kiv hq wKšyB Gi `eY t‡K B tK mn‡R c_uK Kiv hq bv |

K. tKb tg‡j i tc‡ub msL v 8 |

L. NH₃ tKb th‡MK c`v_? e„vL v Ki |

M. A l B Gi `e‡Yi g‡a tKb wU th‡M Avi tKb wU wgt‡Y e„vL v Ki |

N. cwbt GKwU mweRbxb `teK- Dc‡ii i `k‡K‡i i Av‡j v‡K we‡kH Ki |

mBg Aa"vq kw³ i e"envi

~ bW` b Rxetb Avgiv newfbœKvRi m‡_ RwoZ | KvRi m‡_ m¤úK©i †q‡Q kw³ | ¶gZvi | GQvor
i †q‡Q kw³ i newfbœi e Ges G‡ i GK i‡K Ab"i‡c ierši c‡uqv | cvkicwk i †q‡Q bevqb‡hM" |
Abevqb‡hM" kw³ i e"vci | tZgbfite kw³ i msKU wbim‡b Avgit` i kw³ i msi ¶‡Yi cvkicwk weKí
kw³ i mÜb Ki‡Z n‡"0 | eZgb Aa"vq tk‡l Avgiv :

- kw³ | KvR e"vL"v Ki‡Z cvie |
- kw³ i newfbœi e"vL"v Ki‡Z cvie |
- kw³ i erši‡ii cvi"umi K m¤úK we‡kH Ki‡Z cvie |
- bevqb‡hM" kw³ i myeav | mxgve×Zv e"vL"v Ki‡Z cvie |
- Abevqb‡hM" kw³ i mxgve×Zv e"vL"v Ki‡Z cvie |
- bevqb‡hM" kw³ i Drm e"vL"v Ki‡Z cvie |
- kw³ msi ¶Ykj Zv e"vL"v Ki‡Z cvie |
- kw³ msKU wbim‡bi Dcvq e"vL"v Ki‡Z cvie |
- Avgit` i Rxetb kw³ i c‡q|RbxqZv eYv Ki‡Z cvie |
- kw³ e"envi wb‡R m‡PZb n‡e-Ges Ab‡` i m‡PZb Ki‡ev |

cW-1 : KvR, PgZv | kw³

Avgiv cōtg mbtpi wP̄, t̄j vi w̄ t̄K bRi t̄B |



একজন শিক্ষার্থী পড়ছে



একজন ফুটবল খেলছে



একজন মাথায় একটি বোঝা
নিয়ে দাঢ়িয়ে আছে

Dctii wP̄, t̄j vi t̄L Kx gtb nt̄Q? cōg QmetZ th w̄kP̄w̄_PcoQ, Avmtj tm w̄K t̄Kvb KvR Ki t̄Q? w̄Zxq QmetZ th d̄jej t̄Lj t̄Q, tm w̄K t̄Kvb KvR Ki t̄Q? Avi ZZxq QmetZ th gv̄vq tevsv w̄t̄q `w̄o t̄q tm w̄K t̄Kvb KvR Ki t̄Q? Zv̄t̄ i gtā t̄K tevk ev t̄K Avmtj Kg KvR Ki t̄Q| Kv̄t̄Ri Avmtj gvt̄b Kx? mvavi Y Aft̄ Avgivt̄ i Kv̄t̄Q Dctii cōZ̄Kw̄ D̄vniYt̄KB KvR Kv̄ gtb nt̄Q| w̄Ks̄ weAv̄t̄bi fv̄l vq Kv̄t̄Ri GKw̄ mybw̄ G gvt̄b Av̄t̄Q| mnR K_vq KvR ZLbb nte hLb t̄Kvb ē' i Dci ej cōqt̄M Zvi Aē'v̄bi cwi eZ̄B nte| Zvntj Dctii D̄vniY t̄_t̄K t̄Lv hvq, th w̄kP̄w̄_PcoQ Zvi t̄Kvb Aē'v̄b cwi eZ̄B nt̄Q bv̄ ev th gv̄vq tevsv w̄t̄q `w̄o t̄q Av̄t̄Q Zvi I t̄Kvb Aē'v̄bi cwi eZ̄B nt̄Q bv̄| dt̄j weAv̄t̄bi fv̄l vq GB `B t̄P̄t̄i t̄Kvb KvR msNw̄uz nt̄Q bv̄| GLvt̄b th d̄jej t̄Lj t̄Q Zvi Aē'v̄b cwi eZ̄B nt̄Q dt̄j tm KvR Ki t̄Q| mv̄zis weAv̄t̄bi fv̄l vq Avgiv ej t̄Z cwi t̄Kvb Aē' i Dci ej cōqt̄M Kti ē' w̄t̄K et̄j i w̄ t̄K GK `v̄b t̄_t̄K Ab̄ `v̄t̄b mv̄t̄bvi gvāt̄g KvR m̄ub̄enq| Kv̄t̄Ri mv̄t̄ `yJ weIq m̄acKw̄p̄, GKw̄ nj ej Ges AcimU nj Aē'v̄bi cwi eZ̄B| mvavi Yfvt̄e KvR nj ej I em̄yKZR Aw̄z̄juš̄-t̄t̄zi .Ydj |

Avgiv D̄vniY w̄m̄te Avi I t̄L̄Z cwi th, GKRb wi· w̄P̄j Kt̄K wi· v Pw̄j t̄q GK `v̄b t̄_t̄K Ab̄ `v̄t̄b th̄Z KvR Ki t̄Z nq| Avevi GI t̄Lv hvq th, GKB `iZj th̄Z GKRt̄bi 10 w̄glbU t̄j t̄M̄t̄Q, Avevi Ab̄Rt̄bi t̄j t̄M̄t̄Q 15 w̄glbU | GLvt̄b `B R̄t̄bi gtā KvR Kivi nvi tevk Kvi? ZvovZwo KvR Kivi mv̄t̄ 0PgZw̄ ēvciw̄ RwoZ| t̄Kvb KvR t̄K KZ ZvovZwo Ki t̄Z ci t̄i Zv nj Zvi PgZv| th wi· w̄P̄j t̄Kt̄Ki PgZv tevk tm Kg mḡt̄q t̄Kvb KvR Ki t̄Z ci t̄e| A_P̄ Avgiv PgZv ciB tgw̄U KvRt̄K tgw̄U mgq w̄ t̄q f̄M Kti |

Kv̄t̄Ri mv̄t̄ msuk̄ Av̄t̄i Kv̄t̄ ēvci t̄K D̄vniY w̄nt̄m̄te w̄t̄q Avmv hvq| `B Rb w̄kP̄w̄_Pm̄xv̄š̄ w̄b th Zviv `t̄j i t̄Lj vi gW̄U t̄K tgw̄U 5 evi cōw̄Y Ki t̄e| i i Kivi w̄KQw̄Y ci t̄Lv t̄Mj GKRb `j̄evi cōw̄Y Kti et̄m coj, Av̄t̄KRB 5 eviB cōw̄Y Kij| GLvt̄b Avgiv KvR Kivi mv̄g_¶K wētePbv

Kie| G‡ i g‡a th `yevi cōw¶Y Kivi ci e‡m coj tm KvR Kivi mvg_©nwi tq †djj | Aevi †h 5 evi B cōw¶Y Kij Zvi KvR Kivi mvg_©tewk| weÁv‡bi fvlvq KvR Kivi GB mvg_B nj kw³ | GLv‡b †`Lv hvtQ th Kv‡Ri mvt_ kw³ miwmwi m¤úKwP | kw³ | KvR gjZ wfbœKQz bq| KvR Kivi Rb[”]B cōqRb nq kw³i | hvi hZ tewk kw³ tm ZZ tewk KvR Ki‡Z c‡i | GB KvR w` tqB kw³‡K cwi gyc Kiv nq| Kv‡Ri GKKB nj kw³i GKK| kw³i GKK nj Rj |

cW-2 | 3 : kw³i Drm

Avg‡ i KvR Kivi mvg‡_Q Rb[”] th kw³i cōqRb nq Zv Avgiv tKv_v t_‡K c‡B| GUv Avgiv mK‡j B nq‡Zv Rwb th c‡_extZ mKj kw³i DrmB nj mh‡ ZvQov Avg‡ i Pvi c‡k i †q‡Q kw³i wewfbaeDrm| thgb †Zvgiv w‡b‡q M[”]m w` tq i vbeKi‡Z †‡LQ| Aevi †`‡LQ w‡Kf‡te tZj‡K Rj w‡b wnt‡m‡e e^{en}vi Ki‡Q| gjZ Dfq †¶‡†B Avgiv M[”]m ev tZj‡K Rj w‡b wnt‡m‡e e^{en}vi K‡i kw³i tRwMw w` tq‡Q| GLb Avgiv wewfbaeKvi kw³i Drm w‡tq K_v eje|

hwšK kw³

g‡b Ki Zv‡ †`ŠovQ ev GKwU M[”]o Pj‡Q| GB †¶‡†B MwZ Avb‡Z KvR Ki‡Z n‡Q| Aevi Zv‡ GKwU BU w‡P t_‡K Dc‡i Dw‡q tQ‡o w`‡j A_ev „j wZ w` tq GKwU Avg c‡vi vi tPov KiQ| GLv‡b Zv‡ BUw‡K Dc‡i DV‡bvi ci G‡Z th kw³ m‡AZ ntq‡Q Zvi Øiv BUwU Avgc‡v Avgc‡b w‡P c‡o tMj| Aevi „j wZ‡K c‡tg w‡Qtb Uv‡vi ci th kw³ m‡AZ ntq‡Q Zv w` tqB „j wZ‡K c‡i w‡Z w‡q Avgw‡K AvNwZ K‡i| GB th †`Šov‡bv, M[”]o Pj, BU DV‡bvi ev „j wZ w` tq Avg c‡vi Gi c‡Z‡KwU m‡_B GK ai‡bi kw³i m¤úK© i †q‡Q| GB w‡k‡l ai‡bi kw³B nj hwš‡K kw³| h‡l G‡Z w`‡Z kw³ | MwZ kw³ e^{en}vi w‡U Avgv` w‡v‡te Rv‡Z| GLv‡b thgb MwZi Rb[”] KvR Kivi mvg_©nj MwZ kw³ | thgb †`Šov‡bv ev M[”]o Pj v‡bv| Aevi tKv‡b e⁻ i w‡k‡l Ae⁻vi c‡i eZ‡bi Rb[”] m‡AZ kw³ nj w`‡Z kw³ | thgb BU Dc‡i DV‡bvi ev „j wZ w` tq Avg c‡vov|

i vmiq‡bK kw³

Lv‡ ev Rj w‡tZ th kw³ Rgv_‡K Z‡tK i vmiq‡bK kw³ etj| Avg‡ i †`n Lv‡ t_‡KB GB kw³ c‡q| tc‡U‡j, M[”]m, Kw, Kajv me‡KQ‡iB i †q‡Q i vmiq‡bK kw³ | Avgiv th UP‡ewZ ev ti w‡I‡Z e^{en}vi K‡i Zvi g‡a‡l i †q‡Q i vmiq‡bK kw³ |

ZvC kw³

i vbeKi‡Z, tg‡Ui M[”]o ev ti j M[”]oi Br‡Ab Pj v‡Z th kw³ e^{en}vi Kiv nq Zv‡K etj ZvC kw³ | Kajv, M[”]m, Kv, tc‡U‡j ev w‡tRj c‡o‡q GB kw³ c‡l qv h‡q| Aevi mh‡‡_‡K‡i miwmwi ZvC Av‡m| GB ZvC kw³ c‡_extK D‡i i v‡L| ZvC kw³ Qovv tKv‡b c‡y‡x ev Dw‡m‡c t‡P _‡K‡Z c‡i †Zv bv|

P‡^K kw³

kw³ Av‡iK i‡ n‡Q P‡^K kw³ | GB kw³ w` tqB tKv‡b P‡^K †`‡K GKwU tjv‡vi e⁻ †K AvK‡i‡ K‡i |

Avtj vK k³

Zvc k³i m[‡]_ mh[©]t_ tK mi vvi Avi th k³U Avtm Zv n["]Q Avtj vK k³ | Avtj vK k³ Qov Avgiv
mKQB t_ L[‡]Z cvi Zvg bv|

kā k³

Avgiv hLb K_v ejj , Mvb Kvi ev evuk evRvq ZLb GK aitbi k³ DrcbaKvi | Gi bvg kā k³ | kā
k³ mvn[†]h[‡]B Avgiv G[‡]K Actii K_v i b[‡]Z cvB | tUjj tdb, ti vvi , tUjj wfk[‡]b kā k³ eenvi Kiv
nq| c` v[‡] K[‡]ub t_ tKI k[‡]ai Drc[‡]E nq|

me`yr k³

k³i GKU A[‡]Z cvi PZ Ges c[‡]qyRbxq i e n["]Q me`yr k³ | me`yr k³ w[‡]q Avgiv evZ RjvB, cvL
PjvB, Kj -Kvi Lv[‡] me`yr k³ w[‡]q P[‡]j | AtbK t_ t[‡]k tij M[‡]oI me`yr w[‡]q PjvB nq| me`yr k³ GK
RvqMv t_ tK Avtj K RvqMvq Zutii mvn[†]h[‡] w[‡]q hv[‡] qv hvq|

tmši k³

mh[©]t_ tK Zvc ev Avtj vK i t[‡]c th k³ cvl qv hvq ZutKB tmši k³ ejj | c[‡]KZct[‡]Q, mh[©]Avg[‡] i k³i
GKU c[‡]vb Drm| KvcO i Kv[‡]bv, avbcvU i Kv[‡]bv Kv[‡]R Avgiv c[‡]Zw[‡] bB tmši k³ eenvi KivQ|

evqyk³

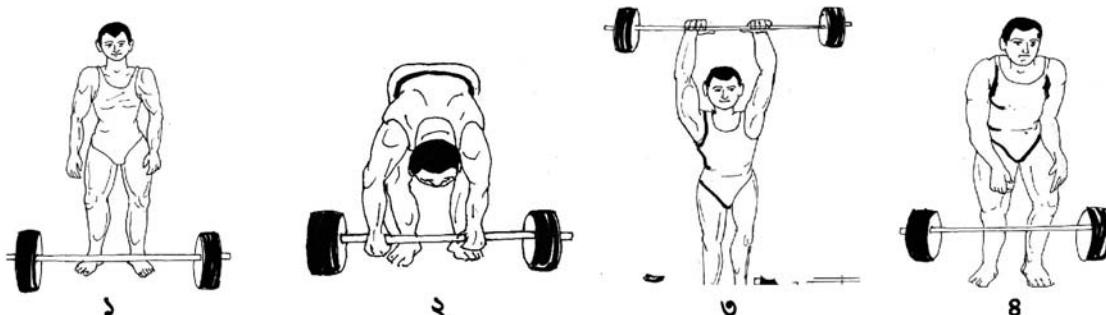
evqyk³ d[‡]j th k³ Drcbaq ZutK evqyk³ ejj | cvj tZvj v tb[‡]Kv evqyk³ w[‡]q P[‡]j | evqyk³ i
eenvi Kti evqyKj evb[‡]bv hvq hv w[‡]q me`yr DrcbaKiv hvq|

cvigvmeK k³

Avgiv Rvb th, c` v[‡]cigYv[‡]q M[‡]Z | cigYj tK[‡][‡]KvKmgm AZS-k³kuj x ej Ovi GK[‡]T Ae[‡]vb
Kti | k³ c[‡]q[‡]M Kv[‡]Kmgm[‡]K me[‡]Qba[‡]Kti cvl qv hvq cvigvmeK k³ | GB cigYj Af[‡]S[‡]i AZS-
k³kuj x ej w[‡]q GK[‡]T evav i t[‡]q[‡]Q | GB k³ tK me`yr k³ tZ i cvši Z Kti Avg[‡] i Kv[‡]R j M[‡]tbv hvq|

cW-4 | 5 : k³i i cvši

Avgiv AvtMB tR[‡]buQ gnmetk[‡] k³ we[‡]fb[‡]i tC we[‡]vR Kti Ges GB we[‡]fb[‡]i c[‡]úi m[‡]úK[‡] | Avgiv
m[‡]Pi P[‡]U tLqyj Kvi |



Dctii wP̄ibomti GKRb fvi D̄Ej K wewfbaLveri M̄tYi dtj Zvi Lveri ,tjv c̄tg iwmqibK kw³tZ
cwi YZ nq| cieZnZ wZnb hLb fvi wUtk DVtZ tPov Ki tqb ZLb m̄AZ iwmqibK kw³ M̄Z kw³tZ
cwi emZ n̄tZ _tK | Gici wZnb hLb ugk fvi wUtk ḡvq Zj tqb Zvi M̄Zkw³ ugk: w'wZ kw³tZ
cwi YZ n̄tZ _tK | Avevi hLb wZnb fvi wUtk wbtP td̄ti w'tQb ZLb w'wZ kw³ M̄Z, kā I Zvc kw³tZ
i evšiZ n̄tqo| Kvi Y fvi gwUtz covi mw_ kā Drccbeng Ges fvi wUtz nvZ w'tq tuk^oKitj t'Lv
hvte tmwU Mig jM̄tq| A_F Avgit` i kixieExq Kvhp̄tg bwmea kw³i i evši NUtq|

GfiteB kw³i wewfbae ci úi m̄xúKw³ _tK | Avmtj c̄KwZi mKj NUbtk kw³i i evši wnm̄te aiw
thtZ c̄ti | wbtgokw³i i evši i KtqKwU D`vnY t`l qv nj:

hwšK kw³i i evši

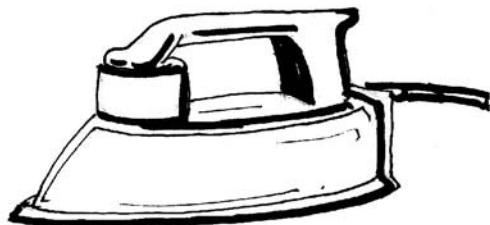
nvZ w'tq kixti i Ab^o tKb Ask NI tj Mig AbfZ nq| GtZ hwšK
kw³ Zvc kw³tZ i evšiZ nq| ewk evRitj hwšK kw³ kā kw³tZ
i evšiZ nq| GK L̄U ci_tii Dci GKwU avZe `U Øiv tRitj
AvNvZ Kitj AvMœùij ½ tei n̄tZ t'Lv hvq Ges GK ai tbi ktaiI
mwó nq| avZe `U I ci_i L̄UwU LwbKwU D̄Eß nq| GtP̄t hwšK
kw³ Zvc kā I AtjvK kw³tZ i evšiZ nq| GKwU tXik w'tq avb
fvbvi mgq GtZ hwšK kw³ kā I Zvc kw³tZ i evšiZ nq|

Zvc kw³i i evši

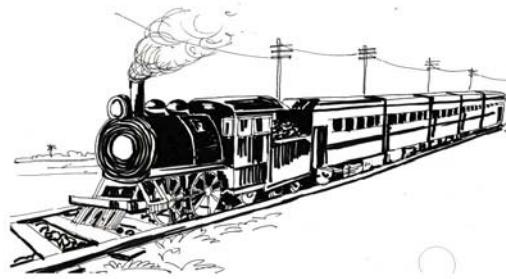
Mig Bw^oz w'tq Rvgv Kico Bw^oz Kiv hvq| GtP̄t hwšK kw³tZ i evšiZ nq| er^oúq
BwA^ob Ztci mwntb DrcbaKw³ eenvi Kti tij MwobZw^o Pvj vtbv nq| GLvtbI Zvc kw³ hwšK
kw³tZ i evšiZ nq|



চিত্র : মেলনা



চিত্র : ইঞ্জি



চিত্র : ইঞ্জিনসহ রেলগাড়ি

AvtjvK kw³i i evši

n̄wi tKtbi wPgilbz nvZ w'tj Mig AbfZ nq| Avmtj AvtjvK kw³ Zvc kw³tZ i evšiZ nq|
d̄tumidK Km̄tRi Dci Avtjvi wmuqvi dtj AvtjvKkw³ iwmqibK kw³tZ i evšiZ nq|



ଚିତ୍ର : ଜ୍ଵଳନ୍ତ ହାରିକେନ



ଚିତ୍ର : ଡିଜିଟାଲ କ୍ୟାମେରା

କା କୁଳୀ ଇଏଶି

Jl t̄ai Kvi Lvbq kt̄āvEi Zi t̄½ i m̄nvñt̄h RxeVyaYsm Kiv nq |
GQvor kt̄āvEi Zi ½ 0iv Rvgv Kictoi gqjvI cwi®<vi Kiv
nq | Gme t̄¶‡† kା କୁଳୀ hws̄K kୁଳୀ‡Z i eis̄iZ nq | Abjv‡ i
mgq kା କୁଳୀ hws̄K kୁଳୀ‡Z i eis̄iZ nq | Averi t̄Uij t̄dib
ti wli i tc̄K h̄s̄j kା କୁଳୀ‡K we`jr kୁଳୀ‡Z cwi YZ K‡i |

t̄P̄s̄^K କୁଳୀ ଇଏଶି

t̄j m̄nvñt̄K `Z I evi evi P̄s̄^K Ges weP̄s̄^KYKt̄j Zvc Drccbñq | G‡Z t̄P̄s̄^K kୁଳୀ Zic kୁଳୀ‡Z i eis̄iZ
nq | ZvQvor Zvor P̄s̄^t̄Ki m̄nvñt̄h fvi x wRwbmc† DVit̄bv hvq | G‡Z t̄P̄s̄^K kୁଳୀ hws̄K kୁଳୀ‡Z i eis̄iZ
nq |



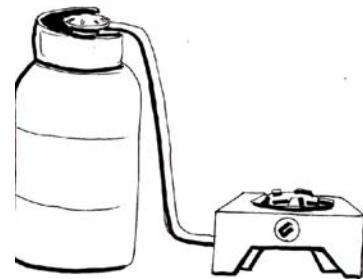
ଚିତ୍ର : ଏକଜଳ ଟୋଲିଫୋନ କରାଛେ ଅନ୍ୟଜଳ ଶୁଣାଇ

we`jr kୁଳୀ ଇଏଶି

%e`jrZK Bw-‡Z we`jr Pvj bv Kit̄j Zvc Drccbñq | G‡¶‡† we`jr kୁଳୀ Zic kୁଳୀ‡Z i eis̄iZ nq |
^e`jrZK cvLvi ga`w`‡q we`jr c̄ewnZ Kit̄j cvLv Nj‡Z _‡K | G‡¶‡† we`jr kୁଳୀ hws̄K kୁଳୀ‡Z i eis̄iZ
nq |

i v̄m̄qñbK kୁଳୀ ଇଏଶି

Kajv tc̄ovt̄j Zvc Drccbñq | i v̄m̄qñbK wēmuqvi d‡j I Zv
N‡U | G‡¶‡† i v̄m̄qñbK kୁଳୀ Zic kୁଳୀ‡Z i eis̄iZ nq | m̄avi YZ
we`jr t̄K‡I i v̄m̄qñbK `‡e`i wēmuqvi d‡j we`jr Drccbñq |
G‡¶‡† i v̄m̄qñbK kୁଳୀ we`jr kୁଳୀ‡Z i eis̄iZ nq | GQvor Kajv,
tc̄Uij, t̄K‡i wmb, M̄m c̄o‡q i v̄m̄qñbK kୁଳୀ‡K Av‡jvK kୁଳୀ‡Z
i eis̄iZ Kiv nq |



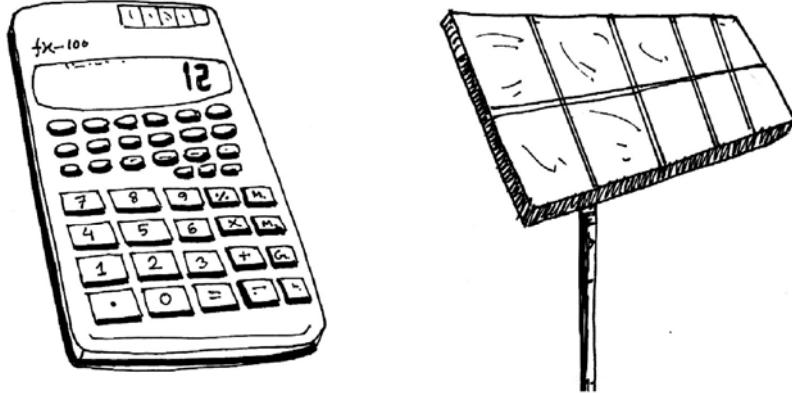
ଚିତ୍ର : ଗ୍ୟାସ ଚୁଣ୍ଡି

cvigYweK kୁଳୀ ଇଏଶି

cvigYweK we`jr t̄K‡`cvigYweK kୁଳୀ‡K we`jr kୁଳୀ‡Z i eis̄iZ Kiv nq |

tm̄si kw³i i eiſi

tm̄si Puj i gvāt̄g tm̄si kw³t̄K Zvc kw³t̄Z i eiſi Z Kti iv̄b̄e Kiv h̄q | GQvor weſfb̄eB̄t̄j KUlb̄K h̄ſc̄wZ thgb ct̄KU K̄yj Kt̄jUi , ti wi B̄t̄j KUlb̄K NmoZ tm̄si kw³t̄K Zior kw³t̄Z i eiſi Z Kti eenvi Kiv nq |



চিত্র : ক্যালকুলেটর, সৌলার প্যানেল

cW-6 : kw³i msi ¶Ykjxj Zv

ḡtb Ki Z̄ig < t̄j i ḡt̄V `moq GKUJ t̄Ubm ej t̄K Dct̄i i w̄ t̄K Qto ḡt̄j | w̄K t̄LQ t̄Ubm ej w̄U GKUJ w̄w̄ D'PZvq DVvi ci GiU Av̄vi w̄b̄t̄P b̄ḡt̄Z _v̄t̄K | GLv̄b t̄Ubm ej w̄U Dct̄i DVt̄Z _v̄Kvi mgq Gi M̄Z kw³ Kgt̄Z _v̄t̄K Ges w̄'w̄Z kw³ ev̄t̄Z _v̄t̄K | hLb Gi M̄Zkw³ kb̄ n̄q h̄q ZLb GiU c̄piq Gi ḡtā w̄'w̄Zkw³ i Kvi t̄Y w̄b̄t̄P b̄ḡt̄Z _v̄t̄K | t̄Lv h̄te, ē' hZB w̄b̄t̄Pi w̄ t̄K b̄ḡt̄Z _v̄t̄K ZZB Gi w̄'w̄Z kw³ K̄g M̄Z kw³ ev̄t̄Z _v̄t̄K Ges w̄'w̄Zkw³ M̄Zkw³t̄Z c̄wi YZ nq | t̄Ubm ej w̄U hLb ḡw̄U ^uk^o Kti Ges w̄'i nq ZLb Zvi mḡ' M̄Zkw³ I w̄'w̄Zkw³ kā, Zvc, Av̄t̄j v̄K BZw̄ kw³t̄Z c̄wi YZ nq | Av̄gi v̄ Zvc ev̄ Av̄t̄j v̄Kt̄i t̄Zgb c̄giY eſt̄Z bv̄ c̄vi t̄j I ej w̄U ḡw̄U t̄Z ^uk^oKvi th kā Dr̄cb̄eq Zv i b̄t̄Z c̄B | Z̄te t̄Kvb t̄Kvb t̄¶t̄† t̄Ubm et̄j i c̄wi et̄Z GKVU c̄v̄i Dct̄i Qto ḡt̄j GiU h̄w̄ t̄Kvb ḡt̄V c̄t̄o Z̄te t̄Kvb bv̄ t̄Kvb t̄¶t̄† c̄v̄i w̄U Mi ḡAbjZ n̄Z c̄v̄i |

GZ¶Y t̄Zgiv t̄Rt̄bQ th kw³ w̄Kf̄te GK i e t̄t̄K Ab̄ i t̄c c̄wi e w̄Z Z nq | t̄Zgiv i ḡtb GKUv c̄ke Rm̄t̄ZB c̄v̄i th, kw³i GB i eiſi t̄i mgq w̄K t̄Kvb kw³i AcPq nq bv̄? wēsqKvi n̄t̄j | GUv mZ̄ th kw³i i eiſi t̄i c̄te ēv̄ c̄ti tḡU kw³i c̄wi ḡiY mḡib _v̄t̄K | c̄KZct̄¶ Av̄gi t̄Kvb bZb kw³ m̄o Ki t̄Z c̄wi bv̄, Ggbw̄K kw³ āsm Ki t̄ZI c̄wi bv̄ | A_¶ wēt̄kji mḡiM̄K kw³i t̄Kvb Zvi Zḡ N̄t̄U bv̄ | GB wēk̄i m̄o i c̄g ḡn̄t̄Z t̄h c̄wi ḡiY kw³ w̄q Av̄RI t̄mB c̄wi ḡiY kw³ eZḡib | GUvB n̄t̄j v̄ kw³i w̄Z Zv ev̄ msi ¶Ykjxj Zv |

CW-7, 8 | 9 : bewerbthwm kwm³

bevqbþhW” bvg t_‡K tZvgi v mn‡RB e§‡Z cvi te Gi A_‰IK e§vq| hv wKQz bevqb Kiv hvq| G‡¶‡†
tKib wRbm e“envi K‡i k‡i³ Drcv` b K‡i cþvq H wRbmU Øiv Avevi k‡i³ Drcv` b Kiv hvq| A_¶ th
k‡i³ i Drm‡K evi evi e“envi Kiv hvq ZvB nj bevqbþhW” k‡i³| G_‡j vi g‡a“ Ab“Zg nj mh¶¶k‡,
er‡qM“vm, cwib, evZvm, cwibi tRvgvi fvUv, f-Pvc BZ“w` |

WōtgoAvgiv evfqMm, tm̄si kw̄³, cwb̄i tRvqi - fūv Ges evqyntZ beqbthM̄ kw̄³ i Dcv`vb̄, t̄j v eYv
Ki t̄ev |

ev†qwM'vm (Dw™R | cÖYxR)

Mi", QMj, tNvor I gwtli i neov Ryj vb mnrite eū cPxbKv t_kb e_euz ntq AvmtQ| cMyxi Gme
neov kwi^3 i GK cKvi Drm| cMyxi neifbet` tk i Ktbv tMvei kKtq cyotq Zvckw^3 DrcbeKiv nq|
evfqM^vfm th mKj Dc`vb ev eR^c`v_eenvi Kiv nq Zvi gta" Ab"Zg nj Mi", i Ki Ges gjMx ntZ
cMyxR mvi, km" I cwiZ^3 Dw^m R BZ^w | GtP^t^t Kejgv^t cMyxR mvi ev tKejgv^t Dw^m R DcKiY
A_ev Dfq cKvti i wgtkYI e_eenvi KitZ cvi | i Ki ev gjMx ivLvi RvqMv t_kb gj wgtkZ th KvPv Lo
cvLqv hvq tm,tjv etqM^v^m ^Zwi i Dchj^3 cMyxR mvi I Dw^m R DcKi^tYi fuj wgtkY| Zte G,tjv
e_eenvti i mgq tqU tqU UKiv wbZ nte| GtP^t^t gtb ivLtz nte cOtq Avi xKivi mgq e_eenvti i
AvfM i Ktbv Dw^m R DcKiY, tjv Lp tqU tqU Kti tKtU A_ev (wctm tLmv evi Kti) wbZ nq| Avi UwUKv
Dw^m R, tjv A SZ: `kw` b evBti cPtz w`tZ nte|

evgy

Aw` g gvbj fq tcZ evqjK | mf Zvi weKvk I weÁvbi ug weKvki dtj GB evqjK gvbj Zvi weirfbœ
KvR eenvi KiQ | Aw` g gvbj Pvi -cuPUv cvLvi mnvfh Pµ ewbq evZvimi mnvfh Pµ NjvZ | Pµi
NI Þ KvR j wMq gvbj Kqv t_k cwb tZjv, KvI tM, he A_ev Mg fñvzvfv, AvL gvoB, avbKvUv, Lo
KvUv BZw` KvR KiZ | cti gvbj evZmK KvR j wMq Kw tPivBtqi gZ KvM/b KvRI mñúbeKtiQ |
cñexi eü AAtj i AvtM gvbj G aitbi KvR eo eo Pvukvi GK aitbi hšz eenvi KiZ | h
eZgvtb nvl qv ev evqjKj ev DBÜvgj bvqg cwiPZ | KšyeZgvtb Gi eenvi Ktg tMQ | KšyAvevi Gi
eenvi gybtli wPšvq Gtm ctotQ | cwi tek `tY | cñKvZK kw3i AcBZvi K_v wPšvKti gvbj Avevi |
GB DBÜ wqj i cñqRtbi K_v fveQ |

cmbi †Rvqvi fwUv

b`x ev mgf`i cwbj tRqvi - fUvi kW³‡K Kv‡R jWM‡q newfbœhŠi Pvj bvi e¤vci wU AtbK w`b Av‡MB D™w Z ntq‡Q | wKšy‡Rqvi - fUvi kW³‡K ZwoR kW³‡Z i evšti i e¤vci wU L  teuk w`‡bi bq| eZg¤t b cw_exi newfbœ‡k tRqvi - fUvi kW³‡K Kv‡R jWM‡q ZwoR Drcv`‡bi tPov Pj †Q |

tm̄ši kw³

m̄h³_‡K th kw³ c̄l qv h̄q Zv‡K ej v nq tm̄ši kw³ | Avgiv R̄w̄b m̄h³m̄Kj kw³i Drm| c̄l ex‡Z hZkw³
Av‡Q Zvi meB tKvb bv tKvb f̄te m̄h³_‡K Av̄v ev m̄h³Ki Y ēeūZ n‡q‡Q | thgb AvajbK
m̄f³Zvi avi K Rxekj Rij w̄b Avmtj ēw̄ tbi m̄w̄A Z tm̄ši kw³ |

KvR: tm̄ši kw³ DrcbaKiv

c̄lqvRbxq DcKi Y: AvZkx K̄P/avZe PvKwZ

c̄w̄Z: c̄l‡g GKwU AvZkx K̄P bvl | AvZkx K̄P i m̄vavi YZ
GKwU D̄ej tj Y _v‡K | tj tYi m̄vavth̄ m̄h³wk‡K tdvKm Ki |
t`L̄e h̄vh tdvKm Ki‡j Av̄Y R‡j DV̄te | Abj t̄f̄te,
GKwU avZe PKP‡K PvKwZ w̄‡q m̄h³Ki Y‡K c̄lZdij Z Ki |
Gi dtj tm̄ši Pj v ^Zvi nq (W̄P̄ - - -) | GB tm̄ši Pj w̄‡q m̄vavth̄ Avgiv mn‡RB i v̄beKi‡Z cwi |



GQov tm̄ši kw³‡K k̄‡Zi t`‡k Niewo Mig ivLvi Kv‡R ēenvi Kiv nq| km̄, ḡQ, meR, i Kv‡bvi
Kv‡R tm̄ši kw³ ēeūZ nq| ḡQ i w̄K‡q i w̄K ^Zvi K‡i Zv ēw̄b ms̄i P̄Y Kiv h̄q| tm̄ši kw³ 0iv
eqj v̄i ev̄u ^Zvi K‡i I Zvi 0iv Zvor Drcv` tbi Rb̄ UveBb Nj v̄b nq| AvajbK tKškj ēenvi K‡i
^Zvi n‡q‡Q tm̄ši ‡KvI | tm̄ši ‡KvI i ^ew̄kó nj Gi Dci m̄h³ Av̄j v co‡j Zv t‡K m̄vavni Zvor c̄l qv
h̄q| GQov tm̄ši ‡KvI i i‡q‡Q bvb i K‡gi ēenvi |

bevqb‡hM̄ kw³ i myeav evsj v̄‡ k tclv̄cU

bevqb‡hM̄ kw³ i A‡bK i Kg myeav c̄l qv h̄q| we‡kji RbmsL̄v ēw̄xi m̄‡_ m̄‡_ kw³ i Pw̄n` v‡eto
h̄v lq̄q GB kw³ GLb Acw̄i nh³n‡q ct‡Q| Gi ḡta" ev̄qM̄m cwi "QbœRj w̄b w̄m‡te ēeūZ nq| Gw̄U
DboZg‡bi ^Re mwi tc‡Z m̄vavh̄ K‡i | ^Yg³ cwi te‡ki m̄vavh̄ K‡i | ^Y" Ki I cwi "Qbœcwi te‡k
eRvq ivL‡Z m̄vavh̄ K‡i | Kw̄g DcM̄n Zworkw³ m̄eiv̄ni Rb̄ tm̄ši ‡KvI ēeūZ nq| w̄fbœ
B‡j KUw̄b. h̄š³cwZ thgb: ctKU K̄v j K‡jUi , ctKU ti w̄WI , B‡j KUw̄bK Nw̄o tm̄ši kw³ i m̄vavth̄ Pj v̄b
h̄q| gj Z: bevqb‡hM̄ kw³ c̄l v̄b myeav nj Gw̄U bevqb‡hM̄, Gw̄U KL‡bv tkl n‡q h̄te bv| w̄‡P Gi
myeavmgn D‡j øL Kiv nj |

- evqy I tm̄ši kw³ GKwU Adi Š-kw³ i Drm| Kvi Y evqy I m̄h³me³vB wē"gib|
- c̄w̄bi t`‡Z‡K ēenvi K‡i te‡k cwi ḡv‡Y kw³ i Drcv` b Kiv m̄‡e| G‡y‡† tm̄ši ‡K evav w̄ evi
Rb̄ %Zvi weR ev ēv‡i R moK thM‡hM‡K DboZ K‡i |
- P̄i th‡nZz c̄w̄bi tRvqvi - f̄wU‡K c̄f̄weZ K‡i Ges Gw̄U me³vB wē"gib ZvB c̄w̄bi tRvqvi -
f̄wU‡K t‡K c̄lB kw³ me³vB ēenvi m̄‡e|
- bevqb‡hM̄ kw³ m̄vav YZ cwi te‡k ev̄ue, Kvi Y Gi v̄j Z evZv‡m KveB-WwB-A· vBW Qorq bv|

bevqb‡hM̄ kw³ c̄lqvRbxq Zv thgb Avgv‡ i t`‡k Ab³kh³Zgwb Gi c̄lBZv A‡bKUv mnR| ej v h̄q
bevqb‡hM̄ kw³ weKv‡k Avgv‡ i t`‡k GKwU ḡvBj dj K n‡Z c̄‡i | Gi Rb̄ c̄lqvRbxq D‡` w̄M Avgv‡ i

GLbB wbtZnþe| AþbK AÂtj AvþQ thLvtb GLbI we`yr tcþQnb| tmLvtb Avgiv mnþRB tmþi kw3i mnvþh we`yr tcþZ cwi| ZvQov evþqMm Drcv`þb iþqþQ Avgit`i wecj mþebv| hw` I Avgit`i t`k tgUvgU cþKwZK Mvþm mgx Z_wic Avgit`i GB weKí kw3i mÜvb Aek`B KitZ nte| cþKwZK MvþmþK Avgit`i GK ~`vb t`þK Ab~`vþb mievn KitZ cþPi LiP nq| tm tþtþ Avgiv hw` evþqMm cþvU Mþo ZjþZ cwi tmþtþ Avgiv ~`Z myeav cve| cþqþRbxq kw3i Pvn`v tgUvtbvi cþkvicnk Avgiv Rngi Pþt i Rb` cþqþRbxq mvþi Pvn`v tgUvtZ mþlg ne| GQov Kwlwbfþ GB t`þK wþmþ`þn evþqMvþmi Drcv`vb LyB mnRj f`| myZi vs Avgit`iþK fweI`r wþSZvq GLbB GB kw3i h_vh_ e`e`vcbvi Dþ`vM MþY KitZ nte| Avi GLbB nte h_vtchþB mgq|

bevqbþhM` kw3 : mxgve×Zv

eZþt b bevqbþhM` kw3i e`vcK Pvn`v | AþbK AvþQ| Zþe wþtþ Avgiv`i bevqbþhM` kw3i e`enþi Amjeav t`Lv hwq| wþtP Zv Avþj wþbvi Kitv nj |

- evþqMm t`þK th we`yr cvl qv hwq Zvi cwi gY Kg Ges mxgZ|
- evqyI tmþZ t`þK th bevqbþhM` kw3 cvl qv hwq Zvi Drm mxgZ| Kvi Y Gi Rb` th cþv ^Zvi KitZ nq Zvi Rb` myeavRbK RvqMv jþtM|
- tmþi kw3 wþfþ bevqbþhM` kw3 cvl qv hwq mþhi`Avþjv _vKvi I ci, hvi Drcv`b eþvdi Rb` e`vNvZ NþU|
- AþbK mgq cwbI tRvqvi - fþUvtK bevqbþhM` kw3i Drm wmmþe e`enþi i dþj b`xi MwZc_ cwi eZþ ntq hwq| GQov b`xi Dci eþR ev e`vþi R wþgþY RvnvR Pj vPj | evaMþ` nh|
- tmþi, evqyI cwbI t`þZ t`þK DrcbKZ bevqbþhM` kw3 mvavi YZ e`qeuj |
- evqyI gva`þg Drcv`þbi Ab`Zg mgm`v nj me`vB evqycëvn _þK bv|

cW-10 : AbevqbþhM` kw3

AbevqbþhM` gvtbB nþj kw3 GKvi e`enþi Kitv nq Zv t`þK cþivq kw3 DrcbKiv hwq bv| GwU nj gjZ cþKwZK mþu hv cþivq DrcbKiv hwq bv| cþKwZtZ Gþi ^Zvi KitZ hZ mgq jþtM Zvi tPþq Kg mgþq e`vqZ nq| AbevqbþhM` kw3i gta` Ab`Zg nj Kajv, tZj, cþKwZK Mvþm, wþDwKq kw3 (thgb BDþi wþqvg), ebR Kvhþ

AbevqbþhM` kw3i myeav

AbevqbþhM` kw3 myeav gjZ gyU w`K t`þK weþePbv Kitv nq| `vg I cþPhZv| teikfim hþcwZ ev hvbevnB th, tþjv AbevqbþhM` kw3i mnvþh Pþj| Gþi bevqbþhM` kw3i mnvþh Pvj vþZ AþbK teikLiP jþtM| thgb: mvavi Y Mvþm ev tZþj Kg LiþP Gme hvbevnB ev hþcwZ Pþj| Acicþtþ bevqbþhM` kw3 Drm thgb wi PvR`e`vUvi, tmþi kw3 Øvi v tKvb hvbevnB Pvj vþbv Kómva` I e`qeuj| eZþt b Avgit`i t`þK wi PvR`e`vUvi hvq Ggb e`vUvi i mnvþh weþfbhvbevnB Pj þQ hv tek e`qeuj I kw3i msKU ^Zvi KitQ| AbevqbþhM` RjwB m`v, Gþi Aí cwi gY t`þK teik kw3 cvl qv hwq, thgb Aí BDþi wþqvg t`þK AþbK we`þi kw3 cvl qv hwq|

Abeqb^hM^o kw³i mxgve^xZv

Abeqb^hM^o Ryj wbi Amjeav nj

- GwU Abeqb^hM^o I `Z dñi tq hq; Giw gj Z w^b:^ n^tq hq |
- cwi tek^tK tek D^oPgv^tvq `w^b Z K^ti |
- G^t i `n^tb Kie^t WB A^t BW evZt^tm Qorq dtj tMvej I qvings ^Zwi K^ti |

cW-11 : kw³i msKU

gvb^t Rxeb avi^tY I Dbaqb^hj K KgR^tEi Rb^t hv wKQz K^ti ZtZB kw³i ctqvRb nq | w^b w^b teoB Pj^tQ kw³i e^oenvi, dtj ^Zwi n^tQ kw³i msK^tUi | w^tgr³ Kvi Y^tj vi Rb^t kw³i msKU Ab^tZg `vax |

- µgeag^tb RbmsL^tvi Pw^tn` v tgUv^tbvi Rb^t Aw^tK n^ti kw³i ctqvRb n^tQ |
- th R^tZ hZ te^tk Dba^t tm R^tZi gv_wcQz kw³ e^oq ZZ te^tk | G avi Y^tt^tK c^tZU t^tk KLbI KLbI em^tZ n^ti kw³ e^oq n^tQ |
- DbaqbKv^t kmg^t e^ovcK n^ti `vjb-^tKW^t, iv^tiv-N^tU, Kj - Kvi Lv^tb BZ^tw^t wbg^t Ki^tQ Ges hibevnb e^oenvi K^ti | G mKj wbg^t K^tR I hibevnb i^tY^te^tY^t Aw^tK kw³ e^oq Ki^tQ |
- gvb^t Dba^t Rxebhv^tbi Rb^t wej vmeuj em^tOni wbg^t K^ti | ti^tWI, w^tWf, w^tWmAvi, K^tuDUvi, kxZZvc wbg^t h^tcpwZ Aw^tKn^ti e^oenvi Kivi dtj kw³i msKU evotQ |
- g^tb^t i e^oemv-ewYR^t, KvRKg^t thM^thM^tw^tb w^tb ey^tx ct^tQ | G^tZ Aw^tK kw³i e^oq n^tQ |

Dctiv³ Kvi Ymg^tni w^tcQ^tb ctqvRbxq kw³i thM^tb w^ttZ e^o_ntj ^Zwi nq kw³i msKU | ZvB Avgut^t i^tK w^tKi kw³i m^tUb K^tZ n^tQ |

cW-12 : kw³i w^tKi Dr^tmi m^tÜv^tb

G hveZ c^tKwZK kw³i gta^t tZj, M^tvm, Kqj v we^tyr ct^tZ Aw^tiZ e^oenvi i dtj w^ttkl n^tq h^tQ | cvi g^ty^teK kw³ m^tebvgq Drm w^ttmte Aw^tef^t n^tj | Gi c^tip^tK LiP te^tk kw³ mieivn i^tq^tQ Aw^tðqZv I w^tct^t i S^tK |

Augut^t i c^tKwZK M^tvm Agj^t m^tu^t | w^tK^tyGU beqb^hM^o bq | beqb^hM^o bq Ggb tKv^t kw³i Dr^tmi Dci Avi w^tf^t Kiv hq bv | Augut^t i t^tki c^tq 15 tKwU t^tKi Lv^t c^t' tZi Rb^t ivb^t-evb^t K^tR e^tti c^tp^t c^tp^t Z Ryj w^tb e^oeuZ n^tQ | G me Ryj w^tb gta^t i^tq^tQ Kw^t, LoK^tUv, tMvei ct^tZ cPbkj c^tv^t G^t j^tv gw^tji De^tZv ey^tx m^tWqK | w^tK^tyv^t K^tR e^oq n^tq h^tl qvq ^Re mvi w^ttmte e^oenvi m^tWgZ n^tQ | dtj gw^tji De^tZv nm ct^tQ | ivb^t K^tR c^tp^t Z Ryj w^tb w^ttmte K^tV^ti e^oenvi m^tWAK | dtj t^tki i^tayebR m^tu^t B a^tsm n^tQ bv, Augut^t i cwi te^tkl tb^tg Aw^tQ eo ai^tbi wech^t |

G mKj w^tl q w^ttePbv K^ti Ryj w^tb G w^tivU Lv^tZ w^tKi Dr^tmi m^tÜv^tb Kiv n^tQ Aw^tiZ | B^tZtgta^t w^tÁvbx^t ev^tqM^tvm ct^tkw³ D^tmb^t K^ti tQb | tm^tSi kw³tK Aw^tikKf^te n^tj | K^tR j^tM^tZ mg^tntq^tQb | tm^tSi kw³ mg^t t^tm^tZ | evqkw³ GK GKUv Drm w^ttmte Aw^tef^t n^tq^tQ |

^Re M̄m Drc̄` t̄bi ēe^-v Ki‡Z c̄it̄j m̄ i c̄j oM̄t̄q Rij w̄b, Ni Arit̄wKZ Kivi Arit̄j v, w̄w̄f Pyj v̄bvi gZ w̄yr c̄l qv h̄q| G c̄b̄^3 M̄Y Ki‡j c̄Kw̄ZK ebR m̄ut̄ i Dci Pvc Kḡe| c̄i tēki fvi m̄ḡ eRv̄q iLv̄ m̄t̄ n̄t̄| R̄gi DePZv msi ¶Y K̄i Aw̄K dm̄ dj v̄b h̄te| m̄t̄eC̄i Avḡt̄` i cieZ® c̄R̄t̄b̄i Rb̄ Avḡv GKUv m̄y i | c̄i "Qb̄ec̄i tek ti‡L th̄Z c̄i e| m̄Z̄i vs ev̄qM̄m c̄b̄^3 Aēj āb, m̄t̄ch̄i Y | msi ¶t̄Yi c̄q̄RbxqZv Ac̄i m̄ḡ |

c̄W 13 : Avḡt̄` i Rxet̄b kw̄^3 i c̄f̄ve | Gi m̄k̄ox ēenvi

c̄q c̄t̄bi t̄Kw̄U RbmsL̄v Aaj̄w Z Avḡt̄` i ev̄j v̄t̄ k| c̄Z eQi iV̄b̄-ev̄b̄i Kv̄R c̄Pi Rij w̄b ēeūZ n̄t̄Q| Gi c̄q meUw K̄w, LoKUv, b̄vov, iK̄b̄v t̄M̄v̄i BZ w̄ | c̄Pij Z Rij w̄b w̄nt̄m̄te Ḡt̄j v̄ ēenv̄i i dt̄j t̄t̄ki ebR m̄u` Kḡt̄o, gw̄U DePZv n̄v̄t̄Q Ges c̄i tek wec̄b̄n̄t̄Q| Avḡt̄` i RbmsL̄v ēp̄x i n̄v̄ tēk| dt̄j Aw̄mḡx w̄tb ev̄aZ RbmsL̄v Rij w̄b Pw̄n̄ v̄ c̄t̄Y Avḡt̄` i‡K w̄nḡk ḡ t̄t̄Z n̄t̄ | Rij w̄b msKU t̄gv̄Kwej̄vi w̄el q Avḡt̄` i‡K Aek̄B f̄v̄t̄Z n̄t̄| Rxet̄bi c̄Zw̄U t̄¶t̄B Avḡv kw̄^3 i ēenvi Kiw̄Q| Avḡt̄` i ev̄Pvi Rb̄ thgb kw̄^3 i c̄q̄Rb, t̄Zḡb Rxebḡb Db̄t̄bi Rb̄` l kw̄^3 i c̄q̄Rb| kw̄^3 bv̄ n̄t̄j Avḡt̄` i Rxeb Pt̄j bv̄| Zv̄B kw̄^3 Avḡt̄` i Aw̄Z‡Zj i m̄½ m̄u`^3| Avḡv t̄‡Lw̄Q th, Rxek̄f Rij w̄b Avḡt̄` i kw̄^3 i GK w̄iU Drm| w̄KšyG kw̄^3 m̄xḡZ Ges GK mḡt̄q w̄b:t̄kI n̄t̄q h̄te| Zv̄B ḡv̄b j kw̄^3 i w̄Kí Dr̄t̄mi m̄Uv̄b m̄t̄Pó| beq̄b̄t̄hM̄ kw̄^3 i Drm w̄KQUv m̄t̄ebyḡq et̄j gt̄b n̄t̄Q| hZ ¶Y Avḡv Adi Š-kw̄^3 i t̄Kv̄b Drm n̄t̄Zi Kv̄Q bv̄ c̄w̄Q ZZ ¶Y c̄B kw̄^3 ēenv̄i Avḡt̄` i Aek̄B m̄t̄PZb | w̄ḡZ̄ēq̄x n̄t̄Z n̄t̄| ^`b̄w̄` b Rxet̄b kw̄^3 i Acēenvi ev̄ AcPq t̄iva Kiv Avḡt̄` i ^`b̄w̄ZK `w̄qZj| G Rb̄ w̄bgi w̄LZ c̄` t̄¶c t̄b̄l qv̄ c̄q̄Rb:

- kw̄^3‡K ēw̄^3MZ m̄u` bv̄ t̄f̄te mḡw̄MZ m̄u` w̄tePbv Kivi ḡb̄uM̄KZv m̄j̄o
- t̄i w̄I , w̄w̄f, ew̄Z, Gq̄i K̄w̄Ukb c̄f̄Z ^ēj̄w̄ZK h̄s̄c̄w̄Z | mi Ävg c̄q̄Rt̄b ēenvi K̄i Ab̄ mḡq ēU iLv̄|
- T̄w̄Uc̄Y©h̄bevn̄b ev̄ h̄s̄c̄w̄Z tēk kw̄^3 ēq K̄i | G Rb̄ G m̄Kj mi Ävgw̄ i m̄w̄K msi ¶Y Ac̄i n̄t̄h®
- w̄bv Kvi t̄Y/Ac̄q̄Rt̄b h̄bevn̄b iB̄Ab Pyj bv̄ iLv̄| G‡Z kw̄^3 i AcPq n̄q|
- kw̄^3 i msi ¶Y Avḡt̄` i ēw̄^3MZ LiP Kḡq|

GB Aāv̄t̄q bZb kā

KvR, ¶gZv I kw̄^3, t̄m̄ši kw̄^3, ev̄qykw̄^3, kw̄^3 i c̄iŠt̄, beq̄b̄t̄hM̄ kw̄^3, Ab̄e q̄b̄t̄hM̄ kw̄^3, ev̄qM̄m̄, kw̄^3 i msKU, w̄Kí kw̄^3 i Drm|

GB Aāv̄t̄q h̄v̄ w̄kLj̄g

- KvR Kivi m̄g_B nj kw̄^3|
- Avḡt̄` i Pvi c̄t̄k i‡q̄t̄Q kw̄^3 i w̄ew̄fb̄oDrm|
- kw̄^3 i m̄j̄o ev̄ w̄bvk tbB, kw̄^3 t̄Kej GK i‡K Aci GK ev̄ GKw̄aK i‡c c̄i ēw̄ZZ n̄t̄Z c̄i|i
- beq̄b̄t̄hM̄ kw̄^3 i c̄q̄Rb w̄qZv thgb Avḡt̄` i t̄‡k Ab̄-xKvh¶Zḡb Gi c̄BZv A‡bKUv mnR|
- w̄b w̄b t̄etoB Pj t̄Q kw̄^3 i ēenvi, dt̄j %Zw̄i n̄t̄Q kw̄^3 i msKt̄Ui|
- ^`b̄w̄` b Rxet̄b kw̄^3 i Acēenvi ev̄ AcPq t̄iva Kiv Avḡt̄` i ^`b̄w̄ZK `w̄qZj|

Ab~~k~~xj bx

kb'''wb ciY Ki :

msw 13 DEI cökœ

- ¶gZv | kʷ³i g̥ta⁹ ci_R⁹ Ki?
 - kʷ³i n̥bZ⁹ Zv e⁹vL⁹ Ki |
 - kʷ³i msKU m̥jó i Kvi Y, t̥j v Dt̥j L-Ki |
 - Abevgbt̥hM⁹ kʷ³i myeav Kvf̥te ci_l qv hvq?

e-mail: Pub_Co@kce.ac.in

1. t̪Kibil kʷ³i Aberqb̥thʷM Drm?
 K. evqy L. cʷmbi t̪m̩Z M. t̪mši N. Kqjv

2. AZ̥k KLbI KLbI iʷt̪Z jʷBUh³ PwRf dʷt̪bi mʷnʷθ̥ cʷt̪j Lv Kt̪i | G t̪t̪t̪ tm eʷenwi Kt̪i -
 i. Aʷt̪j vK kʷ³
 ii. w̥eʷyr kʷ³
 iii. iʷmʷqʷbK kʷ³

Wb†Pi †KvbwU mWVK?

- K. i | ii L. ii | iii M. i | iii N. i, ii | iii

mbPi DÍ xc Ki A†j †K 3 I 4 bɔ̄i cikie DËi `vl :

GKRb e^vqgme` 200 tKwRi fvi D^tEj b Ktib Ges fvi w^U w^tP bvgjb| Gici w^{KQijY} wek^ö wbtq
Lvevi tL^tZ tL^tZ Mwb i b^tZ j w^tj b|

3. fvi DtEj b t_‡K fvi wbtP bvgv‡bv chS-kw³i i evš‡ii mWVK µg tKvbW?

- | | | | | | | | |
|----|-------------------------------|---|-----------------------|---|-----------------------|---|-----------------------|
| K. | <i>i v̄m̄v̄q̄l̄b̄K̄ k̄w̄³</i> | → | <i>hw̄š̄K̄ k̄w̄³</i> | → | <i>w̄' w̄Z̄ k̄w̄³</i> | → | <i>hw̄š̄K̄ k̄w̄³</i> |
| L. | <i>hw̄š̄K̄ k̄w̄³</i> | → | <i>w̄' w̄Z̄ k̄w̄³</i> | → | <i>hw̄š̄K̄ k̄w̄³</i> | → | <i>kā k̄w̄³</i> |
| M. | <i>w̄' w̄Z̄ k̄w̄³</i> | → | <i>hw̄š̄K̄ k̄w̄³</i> | → | <i>kā k̄w̄³</i> | → | <i>Z̄v̄c k̄w̄³</i> |
| N. | <i>hw̄š̄K̄ k̄w̄³</i> | → | <i>w̄' w̄Z̄ k̄w̄³</i> | → | <i>hw̄š̄K̄ k̄w̄³</i> | → | <i>w̄' w̄Z̄ k̄w̄³</i> |

4. fvi DѣEj тKi Lv" MѣY I Mvб тkvbi mv‡_ тKib kw³ `Bui m¤úK‡ tq‡Q |
 K. Zic I kã L. Zic I we`jr M. i vnvqubK I kã N. w"vZ I Zic

m,Rbkxj cökæ

1. Av`xei Mögi ewo btevEgcji GLb chS-wr`yr tcQvqwb| ZvB Mögewmi AtbKB tmši we`yr
e'envi Ktib| Avevi MZ Cf`i QutZ gvgvi mw‡_ tm KvBvB teovtZ wM‡q t‡L cwb t‡KI we`yr
Drci b Kiv ntQ|

K. kw³i cōb Drm Kx?

L. cÖKwZK M'vm Abvevqb kw³ tKb? e"vL"v Ki |

M. Av` x̄tei t̄ Lv K̄vB̄B̄t̄gi c̄mb̄ w̄ ēyr Dr̄cv̄ t̄bi t̄K̄šk̄j ēvL̄v Ki

N. Av` xtei Mögevmxi tm̄si kw³ e'env̄t̄ i myear | Am̄yeav e'vL̄v Ki

2. iŋk` mvne B`wbs Zui nungji Mx | Miæi Lvgti i weôr AveRøv t_łK wetkl cñpqvq GK aiłbi
M'vm DrcbaKi tQb | GtZ Lvgti i weifbaKułR kw³ | M'vimi Pwn`v wgułtq AwZui³ M'vm weip KiłZ
cvi tQb |

K. ΠΙΓΖΙΚΙ?

L. k^W³ i eVš‡i i cÖqyRbxqZv eYDv Ki |

M. Dī xct̄K DrccbM̄m t̄Kv̄ ai t̄bi k̄w̄³i Drm ēvL̄v Ki |

N. kw³ msi ¶‡Y i v‡k` mv‡ntei Kvh‡gi i Zj wetk H Ki

Aóg Aāvq kṭāi K_

tZigvi Ntii i ` i Rvq VKVK&kā ntj Ziq eS̄tZ c̄ti v tZigvi ` i Rvq tKD Āc̄t̄v Ki tQ | ` i Rv Kij st̄ej evRtj | Avgiv eS̄tZ c̄wi tKD Gm̄tQ | Kv̄ti v c̄t̄qi kā ītb Ziq eS̄tZ c̄ti v th, tKD Av̄tQ | Avgiv hv mKQz īb ZvB ntj v kā | kā Avgit` i Rxetb L̄B , iZc̄Ȳf̄ngKv c̄j b K̄ti | Guv Āt̄b̄ i mv̄t̄_ thMv̄t̄hv̄t̄M mn̄vqZv K̄ti | Avgiv Avgit` i Pvi c̄t̄k bvbvb iKg kā ībt̄Z cvB | eūki mj, M̄moi nȲ KK̄ti i tND̄t̄ND, QM̄t̄j i ēv ēv, gj̄Mi KK̄ti K̄ti c̄wiLi Kj ZvB BZ̄w̄ | kā GK c̄Kvi kw̄3 hv Avgit` i ībt̄Z mn̄vqZv K̄ti | kā Kxf̄te Drcb̄enq? Kxf̄te m̄Av̄j Z nq? Kxf̄te Avgiv m̄ew̄fb̄ei Kg kā wPb̄t̄Z c̄wi BZ̄w̄ w̄b̄t̄q GB Aāv̄t̄q Av̄t̄j vPb̄v Ki t̄ev |



GB Aāvq c̄W tkt̄l Avgiv

- kṭāi ^eñkó eYb̄v Ki tZ c̄ie |
- kā m̄Av̄j b ēvL̄v Ki tZ c̄ie |
- K̄wb, Zij I evqexq gvāt̄g kṭāi tēMi Zj bv Ki tZ c̄ie |
- c̄ñY Kxf̄te kā ībt̄Z cvq ēvL̄v Ki tZ c̄ie |
- k̄ñZvi mxgv I b̄t̄qR ēvL̄v Ki tZ c̄ie |
- kā Drcv̄ bK̄wi ht̄š; kā m̄oí Kvi Y ēvL̄v Ki tZ c̄ie |
- % b̄w̄ b Rxetb (b̄t̄qR I ` f̄Y) kṭāi ēen̄t̄i i T̄ZKi w̄ K m̄xút̄K̄w̄t̄R m̄PZb n̄tev Ges Ab̄`t̄l m̄PZb Kie |
- ` jMZ Kv̄t̄R mncw̄t̄ i ē3ē ībt̄ev, m̄uq Ask M̄b̄Y Ki t̄ev Ges m̄xv̄š-M̄b̄t̄Y mn̄thwMZv Kie |

cW-1: kā I Gi %eukó

Avgiv hv wKQz iwb ZvB n̄tj v kā | GKU w̄tj i ēwU t̄K tḡtS̄tZ t̄dtj v, kā i b̄tZ c̄te | Z̄g hLb K_v etj v ZLb ḡt t̄K kā i b̄tZ cvl | Awq v Zvi M̄moi Gj v̄gP k̄tā Ng t̄tK D̄tV | tm Zvi ^j h̄evi c̄t_ b̄vbvb i Kg kā i b̄tZ cvq | c̄wLi KvKvij, iv̄ l̄vq wi· vi tetj i UsUis kā, M̄moi nb̄o ḡub̄t i ^n%P BZ^w b̄vbvb i Kg kā | eÜv hLb K_v etj ZLb Mj vi ^i t̄tK me i Kg kāB Z̄g wPbtZ c̄tiv Ges ej t̄Z c̄tiv t̄K GB kā Drcv`b Ki t̄Q | Avgiv hZ i Kg kā i b̄tZ cvB Zvi wKQzk̄Z gaj | Gt̄ i ḡta“ mj Avt̄Q Ges i b̄tZ f̄v j v̄M | Gi Kg kā n̄tj v ewki mj I nv̄i ḡubq̄tgi kā | wKQz t̄Mj t̄gtj, mj nx̄b I weiw̄³Ki | Gi Kg kā n̄tj v M̄moi n̄tbo kā, tj̄v KvUvi kā I KKt̄i i t̄NDt̄ND |

KvR : mj hy³ I mj nx̄b kā kbv³ Kv

cxwZ: 5/6 Rb Kt̄i Kt̄hKU `t̄j f̄M n̄tq hvI | t̄Zvgiv th b̄vbvb i Kg kā i Kt̄Z cvl Z̄t̄ i ḡta“ t̄Kvb, t̄j v mj hy³ I t̄Kvb, t̄j v mj nx̄b Zv w̄t̄Rt̄ i ḡta“ Avt̄j vPbv Kt̄i wK Kt̄iv | Avt̄j vPbv t̄tK cvl qv mj hy³ I mj nx̄b k̄tāi GKU Zwj Kv ^Zvi Kt̄iv | `t̄j i GKRb t̄k̄t̄Z Dc ^vcb Kt̄iv |

kā mj hy³ ev mj nx̄b hvB t̄nvKbv t̄Kb mKj k̄tāiB GKU Drm Avt̄Q | kā t̄Kvb bv t̄Kvb Dr̄tm Drcb̄e nq | k̄tāi ^eukó t̄tK Avgiv ēS̄tZ c̄wi k̄tāi Drm Kx? thgb t̄NDt̄ND kā i b̄tj bv t̄LB Avgiv ēS̄tZ c̄wi KKj wKt̄Q, t̄Uj t̄dib DVt̄j B Avgiv KÉ^-i i t̄b ēS̄tZ c̄wi Aci c̄t̄ší t̄K K_v ej t̄Q?

cW-2 I 3 : k̄tāi DrcvE

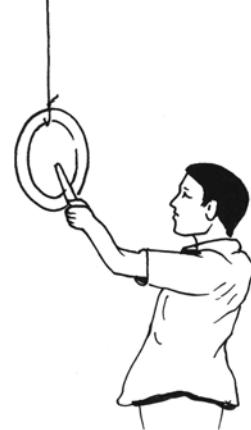
kā GK c̄Kvi k̄i³ h̄vi Kv̄t̄Y Avgiv i b̄tZ c̄B | GLt̄b Avgiv wKQz KvR Kt̄er hv t̄tK tevSi h̄te kā Kxv̄te Drcb̄enq? t̄Zvgi t̄ i ^j i N̄Uv hLb evRt̄bv nq ZLb Zv ^úk̄Kt̄i t̄tLv | N̄UwU th Kv̄t̄c Zv wK Abf̄e Kt̄Z c̄tiv?

KvR : k̄tāi DrcvEi Kv̄t̄Y Rv̄bv

c̄q̄Rbxq DcKiY : GKU avZe cv̄t̄, wKQz mo I GKU j wV

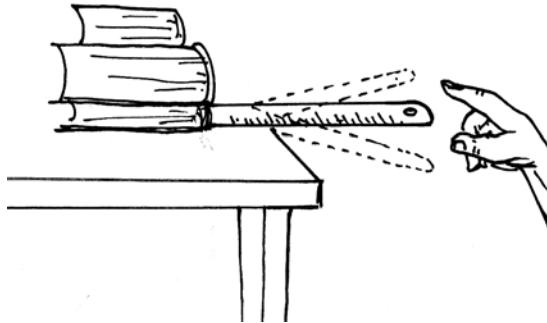
cxwZ : avZe cv̄t̄wU (w̄t̄j ev Āv̄j ḡubq̄tgi t̄Kvb cv̄t̄ n̄tZ c̄ti) `moi m̄nv̄t̄h̄ m̄jeavRbK ^v̄t̄b S̄v̄j t̄q `vI | tLqyj i w̄t̄Z n̄te GUv thb t̄Kvb wKQz Kt̄i | Gevi j wV w̄t̄q cv̄t̄wU t̄K AvNvZ Kt̄iv | t̄Zvgi n̄t̄Zi AvOj w̄t̄q cv̄t̄wU Avj t̄Zv̄te ^úk̄Kt̄iv | Z̄g wK cv̄t̄i Kxub t̄Ui cv̄Q? j wV w̄t̄q cv̄t̄wU t̄K Avevi AvNvZ Kt̄iv Ges m̄t̄_ m̄t̄_ t̄Zvgi n̄Z w̄t̄q cv̄t̄wU k̄t̄i at̄i i v̄t̄Lv GLt̄bv wK kā i b̄tZ cv̄Q? bv kā t̄kvbv hvqbv |

cv̄t̄wU t̄K Avevi AvNvZ Kt̄iv, kā kb̄tZ c̄te | kā eÜ n̄tq t̄M̄t̄j cv̄t̄wU ^úk̄Kt̄iv | GLt̄bv wK cv̄t̄wU Kv̄t̄Q? bv, Kv̄t̄Q bv |



wP̄ - k̄tāi DrcvE

KvR: kṭāi Dr̄c̄Ei KvY R̄b̄v
 c̄q̄Rb̄q DcKiY: GKU avZe ev c̄w̄ t̄K i j vi ,
 GKU eB I GKU t̄Uej
 c̄w̄Z: i j vi w̄ Ggb̄v̄te t̄Uetj i Dci i v̄L̄v thb
 Pvi f̄t̄Mi w̄Zb f̄M t̄Uetj i evB̄t̄i v̄K i j vi i th
 c̄š-t̄Uetj i Dci Av̄Q tm c̄š-GKU BU ev f̄vix
 eB w̄ t̄q Pv̄v̄ `v̄l | i j vi i th c̄š-t̄Uetj i evB̄t̄i
 Av̄Q tm c̄š-h̄t̄Pi w̄ t̄K t̄Utb bw̄gtq n̄v̄r K̄t̄
 t̄Qto `v̄l | Z̄g Kx t̄ L̄Z cr̄Q? Z̄g t̄ L̄Z cr̄e
 th, i j vi w̄ Z̄vi c̄eP R̄qM̄q w̄d̄t̄i h̄t̄Q Ges K̄c̄t̄Q |
 m̄t̄_ m̄t̄_ GŪ kāl ^Z̄vi Ki t̄Q | th ḡn̄t̄Z̄K̄ub eÜ n̄t̄Q tm ḡn̄t̄Z̄B kā eÜ n̄t̄q h̄t̄Q |



MP̄ : kṭāi Dr̄c̄E

KvR : kṭāi Dr̄c̄Ei KvY R̄b̄v
 c̄q̄Rb̄q DcKiY : GKU avZe (w̄ t̄j i
 _v̄j v̄), GKU Pv̄gP I w̄KQz c̄w̄i ḡv̄ c̄w̄b |
 c̄w̄Z : _v̄j v̄q c̄w̄b X̄t̄j v̄ | Pv̄gP w̄ t̄q _v̄j vi GK
 c̄š-í Av̄v̄Z K̄t̄iv |
 Z̄g w̄K kā i b̄t̄Z cr̄Q? _v̄j w̄U t̄K Averi
 Av̄v̄Z K̄t̄iv Ges m̄t̄_ m̄t̄_ t̄Z̄gv̄i nv̄Z w̄ t̄q
 _v̄j w̄U t̄uk̄K̄t̄iv | _v̄j w̄U th K̄c̄t̄Q Zv̄ w̄K Z̄g
 t̄Ui cr̄Q? |



MP̄ : kṭāi Dr̄c̄E

GL̄t̄b̄w w̄K kā i b̄t̄Z cr̄Q? b̄v̄ kā tk̄b̄v̄ h̄q̄b̄v̄ | _v̄j w̄U t̄K Averi Av̄v̄Z K̄t̄iv Ges c̄w̄bi w̄ t̄K Zv̄Kv̄ |
 c̄w̄b̄t̄Z w̄K t̄Kv̄ t̄XD t̄L̄Q? _v̄j v̄ K̄c̄v̄i d̄t̄j c̄w̄b̄ K̄c̄t̄Q Ges c̄w̄b̄t̄Z t̄XDt̄qi m̄j̄o n̄t̄q̄t̄Q |

Dc̄t̄i i KvR, t̄j v̄ t̄_t̄K Avḡv̄ R̄b̄t̄Z cr̄j v̄g th, t̄Kv̄ ē ūj K̄út̄bi d̄t̄j kā m̄j̄o n̄q̄ | K̄úbk̄j th
 ē' kā m̄j̄o K̄t̄i Z̄v̄ n̄t̄j v̄ kṭāi Dr̄m |

c̄W- 4: kṭāi m̄Av̄j b

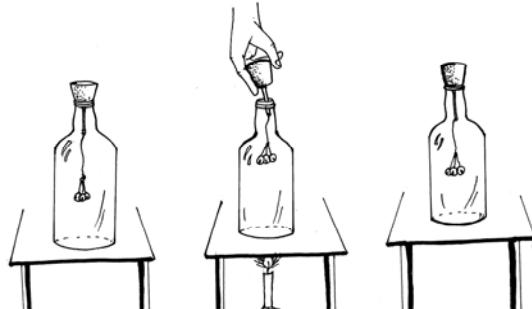
Avḡv̄ R̄w̄b̄ K̄úbk̄j ē' kā m̄j̄o K̄t̄i | tk̄Z̄vi w̄b̄KU G kā Kx K̄t̄i tc̄Qv̄q? GKU D̄v̄ni Y w̄t̄ePb̄v̄
 Kv̄ h̄K̄ | t̄Kv̄ ev̄ t̄ht̄š̄i K̄úbk̄j Z̄vi ev̄ t̄Kv̄ m̄j̄ k̄j v̄Kv̄ K̄úbk̄j ev̄ Ḡt̄i Pv̄c̄t̄ki ev̄q̄j̄
 AȲt̄j v̄t̄K̄ K̄úZ̄ K̄t̄i | ev̄q̄j̄ GB K̄úZ̄ AȲt̄j v̄ Ḡt̄i K̄úb̄t̄K̄ c̄k̄s̄w̄Z̄ev̄q̄j̄ AȲt̄j v̄t̄Z̄ t̄v̄b̄v̄š̄i
 K̄t̄i ev̄ c̄v̄ K̄t̄i t̄_q̄ | ch̄q̄mūt̄g Gf̄v̄t̄eB kā t̄XDt̄qi ḡt̄Z̄v̄ Dr̄m t̄_t̄K̄ tk̄Z̄vi w̄b̄KU tc̄Qv̄q | t̄Kv̄
 ḡv̄āt̄gi KȲt̄j v̄ K̄út̄bi d̄t̄j m̄o th Av̄t̄v̄j b̄ ḡv̄āt̄gi gā w̄ t̄q̄ P̄t̄j ev̄ m̄Av̄j_ n̄q̄ Z̄t̄K̄ t̄XD et̄j |
 GKU j̄ ūj w̄ ūj w̄t̄q̄ Gi GK c̄š-Av̄v̄Z̄ K̄t̄j t̄ L̄t̄e w̄ ūj w̄t̄j m̄st̄Kv̄Pb̄ I c̄h̄v̄i t̄Yi d̄t̄j k̄w̄³ m̄Av̄j Z̄
 n̄t̄Q | kṭāi t̄XD w̄K̄ Gf̄v̄t̄eB m̄Av̄j Z̄ n̄q̄ | kṭāi GK t̄_t̄K̄ Ab̄ ūj t̄_t̄b̄ h̄v̄Z̄q̄v̄Z̄t̄K̄ kā m̄Av̄j b̄
 et̄j |



চিত্র ৮.৪ : স্পন্দয়ের সংকোচন ও প্রসারণের দ্বারা শক্তি সঞ্চালন

kā mĀvj tbi Rb̄ gvāg c̄lq̄Rb | GB gvāg n̄Z c̄t̄i K̄Wb, Zij I evqexq | kā metP̄tq `Z P̄tj
K̄Wb gvātg, Zvici Zij gvātg, Gici evqygvātg | cieWZP̄Z K̄t̄Ri gvātg Agiv Zv c̄ḡY Kie |
kā W̄K gvāg Qrov Pj t̄Z c̄t̄i ? G c̄lki Rētei Rb̄ Avgiv GK̄U K̄R Kie |

K̄R : gvāg Qrov kā mĀvj Z nq bv Zv Rb̄v
c̄lq̄Rbq DcKiY : GK̄U avZe SbSib, GK̄U
m̄i "K̄W. GK̄Ueo ḡl qv̄j v̄ tevZj I GK̄U KK[©]
c̄xWZ : K̄WVi GK ḡv̄vq SbSibWt̄K m̄yv w̄ t̄q
etav | K̄WVi Aci ḡv̄vU K̄t̄K̄WfZt̄i i ḡt̄L XK̄V |
Gevi c̄t̄i v̄ ēē-WUt̄K tevZt̄j i WfZi Ggbfite
XK̄V KK[©] thb WQici K̄R K̄t̄i | fv̄j K̄t̄i WQiciU
eÜ K̄t̄i v̄ Ges tevZj WU S̄K̄V | t̄Lq̄j i v̄L̄te SbSib
thb tevZt̄j i t̄qj ~uk̄bv K̄t̄i |
W̄P̄ : gvāg Qrov kā mĀvj Z nq bv Zv Rb̄v
evB̄t̄i t̄t̄K SbSib ḡa k̄b̄t̄Z c̄te | Gevi KK[©] L̄j GK̄UzDp̄zK̄t̄i t̄t̄L tevZt̄j i Wb̄t̄P GK̄U Rj Š-
tḡgeWZ w̄ t̄q Zv̄c v̄l | Mi t̄g tevZt̄j i me evZm tevZt̄j i Wb̄t̄P GK̄U Rj Š-
tevZj W̄Ēv n̄l qv̄i ci Averi S̄K̄V | t̄K̄b kā i b̄t̄Z c̄v̄Q W̄K?
bv, t̄K̄b kā t̄kv̄v h̄t̄Pv̄Q bv ev L̄e P̄k̄Y kā t̄kv̄v h̄t̄Q | Gi A_~K̄? Gi A_~K̄a gvāg Qrov mĀvj Z
nq bv |



W̄P̄ : gvāg Qrov kā mĀvj Z nq bv Zv Rb̄v

c̄W- 5 : Zij c̄v̄t̄_K̄t̄ai mĀvj b | k̄t̄ai teM

Avgiv AvMB ēt̄j W̄Q th, kā mĀvj tbi Rb̄ gvāg `i K̄V | gvāg Qrov kā mĀvj Z nq bv | kā metP̄tq
`Z P̄tj K̄Wb gvātg, Zvici Zij gvātg, Gici evqexq gvātg | cieWZP̄Z K̄t̄Ri gvātg Agiv Zv
c̄ḡY Kie |

K̄R: Zij c̄v̄t̄_K̄t̄ai mĀvj b

cōqvRbxq DcKiY: GKvU tejpb I wKQzcvigY cwb
 c×wZ: tejpbwZ cwb fwZ^Ktiw| tejpb GKh K tZvgvi
 Kvbi mft_ ativ Ges Aci w tK Avt-Í Kti tejpb Apo KvUv|
 Ziq wK Aptoi kā i bZ cft"Q?
 Ziq Aptoi kā tRvti I -úó i bZ cft|



wP̄ : Zij c`v_kṭāi mĀvj b

KvR: Zij c`v_kṭāi mĀvj b
 cōqvRbxq DcKiY: GKvU avZe NvU I GK evj wZ
 cwb
 c×wZ: NvU evRvI Ges kā tkvb| Geri NvU
 cwbZ wftq evRvI Ges cwb bi Dci Kv b ivtL|
 Ziq wK AvtMi tPqtewk tRvti Ges -úó kā tkbZ
 cft"Q? cwbZ kā tewk tRvti Ges -úó kā tkb
 hvte|



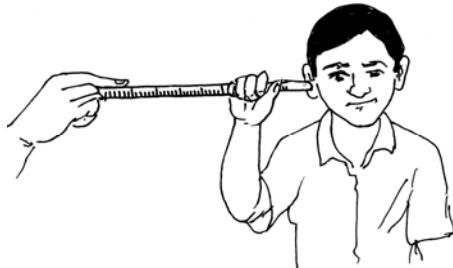
wP̄ : Zij c`v_kṭāi mĀvj b

Zij c`v_kēvqj tPq fvjfvte kā tkb hvq| KvY, cwbZ kṭāi teM evqj tPq tewk| evqjZ
 kṭāi teM 330 mgUv /tm̄KU, cwi v cwbZ 1440 mgUv /tm̄KU | mgf i cwbZ kṭāi teM 1500
 mgUv /tm̄KU |

cW- 6 : KvWb c`v_kṭāi mĀvj b I kṭāi teM

KvWb gva"tg kā evqj| Zij gva"tgi tPq `Z I fvj fvte mĀvj Z nq|

KvR: KvWb c`v_kṭāi mĀvj b
 cōqvRbxq DcKiY: GKvU avZe t-j ev j x̄ avZe `E
 c×wZ: t-j ev `tEi GK cōs-tZvgvi Kvbi mft_
 ativ Ges Ab cōs-tZvgvi tKvb eÜtK Avt-Í Avt-Í
 Apo KvUZ ejv| Ziq wK Aptoi kā i bZ cft"Q?
 tZvgvi Avtkcwk `wofq _kv eÜt` i wRÁmv Ktiw
 Zviv tKvb kā i bZ cftQ wK bv?



wP̄ : KvWb c`v_kṭāi mĀvj b

Gi Kg GKvU cwi tZvgi v GKvU KvUv ev avZe tUvej wbZ Ki tZ cftiv| KvRvU Kti t L Ges KvRvU
 t tK Kx tctj Zv tZvgf i LvZvg wj L| KvRvU t tK RvbZ cft te th, kā tKvb avZi ev KvW w tql
 Pj vPj Kti ev mĀvj Z nq| wewfbekWb c`v_kṭāi teM wewfbek Kg|

KvP kāi teM 5000 t_‡K 6000 wguvi /‡m‡KÜ
 w‡tj kāi teM 5000 wguvi /‡m‡KÜ
 B‡U kāi teM 5000 wguvi /‡m‡KÜ
 Gjygwqitg kāi teM 6420 wguvi /‡m‡KÜ
 MövB‡U kāi teM 6000 wguvi /‡m‡KÜ

m̄z̄is wewfbægva‡g kā wewfbæteM m̄Awj Z nq | Kvib gva‡g kā evqy | Zij gva‡gi tP‡q `Z |
 fij fvte m̄Awj Z nq | Awei kā evqy gva‡gi tP‡q `Z | fij fvte Zij gva‡g m̄Awj Z nq |

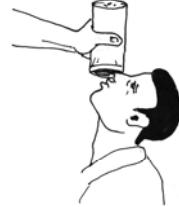
cW- 7 : c̄Myi v Kxfvte kā kb‡Z c̄vq

Augiv Rwb Kxúbkj e-’ kā Drccbekti Ges tm kā gva‡g w‡q mKj w‡K m̄Awj Z nq | GLb c‡kœ ntjv Augiv Kx Kti kā gb‡Z c̄vB?

Augit i Kvbi evBtii Aski AvKwZ t`L‡Z A‡bKUv d‡b‡j i g‡Zv | kā hLb Gi wfZi c‡ek Kti ZLb kā GKwU w‡c‡_ hwq hvi tkI c‡šÍ GKwU UvbUvb cvZjv c`P_w‡K | G‡K ejv nq Kvbi c`P GB c`PGKwU ,iZcY©KwR Kti | KwRwU ntjv kāi Kxúb Kvbi c`PwK Kvcvq |

c`PGB Kxúb‡K Kvbi wfZti i Ask t‡Q t`q | tmLvb t_‡K kā gw-†‡®< tc‡Qvq | GfvteB Augiv kā i b‡Z c̄vB | Kvbi c`Pth ,iZcY©KwR Kti Zv Rvbvi Rb” Augiv GKwU cwi ¶v Ki‡er |

KvR: kāi Kxúb Kxfvte Kvbi c`PwK Kxúb m̄o Kti
 c‡qyRbxq DcKiY: w‡bi GKwU cv† (mdw w‡1/4i Kvib
 w‡Z c‡v) | GKwU iev‡i tej‡p
 c×wZ: Kvbi `B gv_v tKtU bv | tej‡pU UvbUvb Kti
 jwM‡q ievi evwU ev m̄zv w‡q tetk Kvbi GK gv_v eÜ
 Kti `v | UvbUvb Kv tej‡bi Dci 4/5 Uv M‡gi `v
 PwDj i‡Lv | tZvgi tKtU eÜ‡K Kvbi tLvjv g‡Li mg‡b
 ðui‡i ðui‡i kā Kv‡Z ejv | tLqyj Kti t`‡Lv Mg ev Pyj
 Gi Kx NU‡Q? Mg ev Pyj Dcti w‡P jvd‡”Q tKb?
 tZvgi eÜi m̄o kāi Kxúb tej‡b Kxúb m̄o Kv‡Q, ZvB Mg ev Pyj jvd‡”Q |



wP† : kāi Kxúb Kvbi c`PwK
 Kxúb m̄o Kti

cW 8-9 : k‡e Zv i mxgv I b‡qR

Augiv Rwb th, tKtU e-’ i Kxúb‡bi d‡j kāi DrccbE nq | mKj Kxúbkj e-’ i kā wK Augiv i b‡Z
 c̄vB? bv, mKj Kxúbkj e-’ i kā Augiv i b‡Z c̄vB bv | th kā c‡Z tm‡K‡E 20 wJi Kg Kxúb w‡q
 m̄o nq Zv Augiv gw‡l i i b‡Z c̄vB bv | Gi Kg kā Ak‡e | Gi Kg kā‡K k‡Zce©kā ejv nq | Awei

AṭbK teñk Kxúṭbi dṭj mō kāṭKI Avgiv ḫbṭZ cūBbv| cūZ tmṭKṭĒ 20,000 wui teñk Kg Kxúṭbi dṭj mō kāṭK ḫbṭZ cūq bv| Gi Kg kāl Akle| GṭK kūZ-DĒi kā ejv nq| mžiṣ gvbṭl i Rb ḫlē Zvi mxgv ntjv 20 tZṭK 20,000 Kxúb w tq mō kā| cūZ tmṭKṭĒ tKvb e-’ hZUv Kxúb t q ZvṭK ejv nq H e-’ i Kxúv½ | GB Kxúv½ cūkṭki GKK ntjv nwR® tKvb e-’ tmṭKṭĒ 20 evi Kucṭj Zvi Kxúv½ 20 nwR® 20,000 evi Kucṭj 20,000 nwR® mžiṣ gvbṭl i Kvṭbi kle Kxúv½ i mxgv 20 t_ṭK 20,000 nwR® GB Kxúv½ i kāṭK kle kā eṭj |

tKvṭbv tKvṭbv cūY 20,000 nwR®Kxúv½ i tPṭq teñk Kxúv½ i kā ḫbṭZ cūq| KKṭi i GB ¶gZv AvṭQ| cūk k AñZ D'P Kxúv½ i úBṭmj eñenvi Kṭi hv KKṭi ḫbṭZ cūq wKšygbj ḫbṭZ cūq bv| wPwKrmwéAvṭbi AṭbK AñZkā (kūZ-DĒi kā eñenvi Kwi) hṭš̄i mñt_ Avgiv cūwPZ| Gi Kg hṭš̄i GKvU ntjv Ayj UñmṭbMg| G hš̄ 20,000 nwR® tPṭq teñk Kxúv½ KvR Kṭi |

mžle kā I bṭqR: Avgv` i Pvi cūk Avgiv bvbvb i Kg kā ḫbṭZ cūB| G` i gṭa” AṭbK kā ḫbṭZ fij jvM, mžki I Añb` `vqK| Gi Kg kā ntjv Mñbi mj, ewki mj, nwigbqṭgi kā, tmZvṭi i evRbv BZw` | Gi Kg kā mžle” ev mñijv| AṭbK kā ḫbṭZ Kó jvM, hš̄bv` vqK I weiw³Ki | Gi Kg kā ntjv tcti K tVvKvi kā, wbgPKvṭRi kā, teñw®tj Lvi mgq Pṭki wKPwKP&kā| th kā ḫbṭZ fij jvM, mžki, gaj I Añb` `vqK Zvṭ i mžle” ev mñijv kā etj| e-’ i wbgZ ev mj g Kxúṭbi dṭj mžle” kā Drccbñq| th kā ḫbṭZ Kó jvM, hš̄bv` vqK I weiw³Ki Zvṭ i bṭqR ev tMj gvj etj| e-’ i AñbqwgZ ev Amg Kxúṭbi dṭj bṭqR Drccbñq|

kā `tY: Avgiv mevB cūb `tY I evqy` tYi mñt_ cūwPZ| cūbṭZ hv hv _vKv DñPZ Zv bv t_ṭK hw` Ab” wKQz_vṭK Zv ntj ZvṭK Avgiv cūb `tY ejv| evqṭZ hv hv _vKv DñPZ Zv bv t_ṭK hw` Ab” wKQz_vṭK Zv ntj ZvṭK Avgiv evqy` tY ejv| Gi Kg Avgv` i cūi teñk hw` AñZv³ ev AewAZ kā _vṭK ZLb ZvṭK ejv kā `tY kā `tYi KṭqKvU Drṭmi GKvU Zvij Kv^Zvi Kṭi| kā `tYi cūb cūb Kvi Y ntjv, Mñoi kā, tKvb wētCv i tYi kā (cUKv ev teñg dñv kā), tKvb hṭš̄i kā, gwBṭki kā, wbgPKvṭRi kā| GQvov tUjwfk I tñwI tRvṭi evRvṭbv kā, i bñt i wRbmcṭi kā, Gqvi Kj vṭi i kā BZw` kā `tYi Kvi Y|

tZvgvi GjvKvq kā `tYi Kvi Y, tjv wPwY Z Kṭi v Ges wbtRt` i gṭa” Avṭj wPbv Kṭi Kvi Y, tjv LvZvq wjL| 5/6 Rṭbi `j Kṭi G KvRvU KtZ cūti|

kā `tYi Kvi tY Kx ¶wZ nq?

tZvgiv wK Rvṭbv, Pvi cūk AñZv³ kā bvbvb i Kg ^v-“mgm” mñó Kṭi | Gme mgm” ntjv, Añb` , gvw eñv, D'P i³Pv, weiw³, `flebv I Avṭi v AṭbK i Kg mgm”| tKvb gvbj AṭbK w b AñZv³ tRvṭjv kā tKvb tj KvbKvj vntq thtZ cūti A_P Kṭb Kg ḫbṭZ cūti ev bvI ḫbṭZ cūti |

kā `tY Kxfvṭe tñva Kiv hvq?

kā `tY wbgšy KtZ ntj kṭāi DrmṭK wbgšy KtZ ntj| Guv Kxfvṭe Kiv hvq? tKvb AwemwK GjvKvq kā `tY wbgšy KtZ ntj -

- b̄qR m̄óKwi me w̄KQ‡K Gj Kvi evB‡i i v̄L‡Z n‡e |
- b̄qR m̄l UKwi t̄Kv̄b Kj Kvi Lv̄v̄ Awewm̄K Gj Kq ‐'vcb Kiv h̄te bv |
- h̄bevn̄tbi nb̄hZUv m̄‡e Kg evRv̄‡Z n‡e |
- t̄i w̄WI , t̄Uw̄fkb I Ab̄v̄b̄ ev̄ ‐h̄šiD"p k‡ā evRv̄‡bv̄ h̄te bv |
- i v̄v̄i c̄‡k, Ni ew̄oi Pvi w̄ ‡K M̄Qci j v̄M̄‡Z n‡e h̄‡Z Ni ew̄o‡Z kā Kg tc̄Qq |

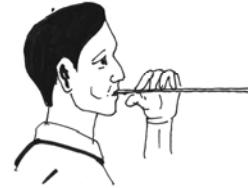
Ḡv̄ov̄ kā` †Y t̄iva Ki‡Z neḡtbi B̄Äb, h̄bevn̄tbi B̄Äb I Kj Kvi Lv̄v̄ tḡk‡b m̄B‡j bm̄vi j v̄M̄‡Z n‡e | m̄B‡j bm̄vi nt̄j v̄ Ggb GKU ēe‐v̄ hv̄ Drcbok̄‡K evB‡i th̄‡Z †` qbv̄ |

cW- 10 I 11: kā m̄óKwi h̄ši

kā m̄óKwi h̄ši `j K‡gi -m̄‡ij v̄ h̄ši I tem̄iv̄ h̄ši m̄‡ij v̄ h̄ši nt̄j v̄, ew̄k, nvi ḡibqg, GKZv̄v̄, †`v̄Zv̄v̄, tm̄Zvi BZw̄` | tem̄iv̄ h̄ši A‡bK Z‡e Avḡ‡ i Aw̄Z cwi w̄PZ `jU nt̄j v̄, M̄woi nb̄‡I m̄B‡Kj ev̄ vi · tej |

ew̄k : ew̄ki w̄fZi Kvi evZv̄mi K‡utbi d‡j mi m̄ó nq | d̄ȳw̄ ‐tq ew̄ki b‡j evZv̄m XKv̄‡bv̄ nq | ew̄ki ^N‡I w̄Q`^msL̄v̄ Dci k‡ai Zx¶Zv̄ w̄fP K‡i |

Kv̄R : b‡j i ^‡N‡P m̄‡_ k‡ai Zx¶Zv̄ cwi eZØ †` Lv̄
 c̄q̄Rbxq DcKiY : GKU c̄b Kiv̄ bj I GKU
 K‡P
 cxiZ : bj w̄i GK c̄S ‐PPv̄ K‡i bv̄ | GLb ‐PPv̄
 c̄S ‐PP‡i g‡Zv̄ mi "K‡i Kv̄Uv̄ | Kv̄Uv̄ c̄S ‐PP‡i g‡L
 w̄b‡q d̄ȳv̄ |
 Kv̄ i Kg kā nq j ¶ K‡iv̄ | Gvi b‡j i Aci gv̄w̄U tK‡U
 Lv̄Uv̄ K‡iv̄ | Drcbok̄‡ai Zx¶Zv̄ t̄Kv̄b cv̄R̄ ‐ib‡Z cv̄Q w̄K?
 Lv̄Uv̄ b‡j k‡ai Zx²Zv̄ tew̄k |



w̄P‡ : b‡j i ^‡N‡P m̄‡_ k‡ai
 Zx¶Zv̄ cwi eZØ †` Lv̄

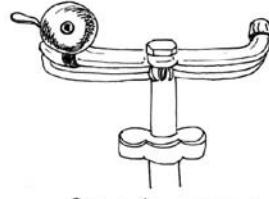
GKZv̄v̄ I †`v̄Zv̄v̄ : Giv̄ Zvi w̄ekó ev̄ ‐h̄ši | Gme h̄ši Zv̄ii K‡utbi d‡j m̄‡le ev̄ m̄‡ij v̄ kā m̄ó nq | Gme ev̄ ‐h̄ši Zvi t̄K t̄U‡b t̄Q‡o w̄ ‐tj ev̄ t̄Kv̄b w̄KQz` ‐tq bv̄ov̄Pv̄ov̄ K‡i Zv̄ Kv̄‡c Ges m̄‡j v̄ kā Drcbok̄‡ti | Zv̄ii ^N‡I c̄jZi ew̄o‡q ev̄ Kv̄‡q Ges tew̄k k³ K‡i Uv̄bUv̄b K‡i k‡ai Zx¶Zv̄ cwi eZØ Kiv̄ hv̄q |



চিত্র : একতারা ও দোতারা



*mvBtKj ev wi · vi tej : Avgiv mvBtKj ev wi · vi tetj i UsUis kt̄ai mv‡_
cni wPZ | KšyGB tej Kx Kti kā DrcbēKti Zv tZvgiv Rvb wK? GB
tetj tMvj vKvi GtKKU aiZe ewU Dcj Kti iLv nq | ewUi wb‡P GKU
aiZe nvZio jw‡bvi nq | GKU nvZ‡j i mvn‡h nvZio bvoiPvov Ki‡j
Zv ewU‡Z AvNvZ Kti | ewUi Kxú‡bi dtj UsUis NvUr ev‡R |*



চিত্র : সাইকেলের বেল

GB Aa ՚ ՚ q t k L w b Z b k ā

kłę̄, Akłę̄, Ktłbi c`p, kłz-cekā, kłz-dēi kā, mklę̄ kā, btqR, kā `tY

GB Aa “ ” q h v w k L j v g

- e⁻ i K^ꝝútbⁱ d^tj kā Dr^cb^ønq|
 - kā mÂyj t^bi R^b gva^g c^øq^vR^b | f^vK^øg ev kb^u gva^{tg} kā P^j t^Z c^vi bv|
 - gvb^ti K^tbⁱ k^øZvi mxg^v 20-20,000 n^vR^ø
 - KKⁱ 20,000 n^vR^ø t^Pt^q te^w K^øút^{1/4}i kā i b^tZ c^vq|
 - 20 n^vR^øK^øút^{1/4}i w^bt^Pi kātK k^øZ-ce^økā et^j |
 - 20,000 n^vR^øte^w K^øút^{1/4}i kātK k^øZ-D^øi kā et^j |
 - k^tai teM K^øb c` v^t_m^etP^tq te^w Ges evqeq^q c` v^t_m^etP^tq Kg|
 - wei^w³Ki kā nt^jv b^tqR|
 - cwi t^tkA^wZvi³ ev Aew^ñZ k^tai Dc^w⁻WZ nt^jv kā `tY|kā `tY `tY -^t⁻i R^b ¶^wZKi | kā `tY t^tk A^wb^v, g^vve^v, D^tPi³Pvc, Kv^tb Kg t^bvb^v, wei^w³ BZ^w⁻ ti^wM nt^Z c^vi |
 - iv⁻Ív ev ewoi A^wkc^vt^k M^wQ j^wM^tq kā `tY Kgv^tbv hvq|

Ab_jx_j bx-8

kb'-'wb ci Y Ki :

msw | B cökœ:

1. kle!^q Akle” ktai gta” cv_R” Kr?
 2. köZ-ce!^q köZ-DEi kä Kr!K etj?
 3. btqR I mkle” ktai cv_R” Kr?
 4. mKj Koxut!V4I kä wK Avgiv i btZ cvB? Avgut` i kleZvi mgv KZ?

eüberPub cökœ

1. t̪Kv̪b g̪va̪t̪g k̪t̪ai teM met̪Pt̪q teW?

WbPi Abt,"U fvjtjfvte cto 2 I 3 b¤^i c¶ki DEi `vI:
P>`^c‡o c¶E w¶vviY Ges c¶_exc‡o eo gvtVi `ic¶¶šÍ e`‡Ki bj t‡K ,wj tei ntjv| Dfq t¶¶†
mº Avtjvi Sj Kwb t`Lv tmj |

2. we**t**ù vi**t**bi kā i**t**b**t**Z n**t**j cw_ex t_K-

- i. Pþ`í `í + Zj Kg ntZ nþe ii. cþ_ex I Pþ`í gvtS gva"g _\KtZ nþe
iii. kð"Zvi mxgv 20 t_þK 20000 nvR®ntZ nþe

wb†Pi †KvbWU mWVK?

- K. i L. ii M. iii N. ii | iii

3. Dfq NUbv GKBm‡_ msN‡UZ n‡q _K‡j †KvbU me‡k‡l ch‡¶Y Kiv n‡j v?

- K. e`‡Ki ˘w̥i kā L. e`‡K mó Au‡jv M. w̥et̥ùvi ‡Yi kā N. w̥et̥ùvi ‡Yi Au‡jv

4. **mfZtii** evZv^tm K^xútbⁱ d^tj m^j m^pó nq tKvb ev` h^tš?

- K. *tmZvi* L. *GKZvi* M. *wMUvi* N. *ewuk*

mRbkxj cökœ

1. **kṭāi** teM 330 mg/tm (eqqfZ)

tevgv dñUvi 6 tm. ci kā i'bñZ cñq |



K. kā KūtK eṭj?

L. tij cvtZ Kvb iLtj `i t_‡K tij Mwo Pj vi kā i bv hvq tKb?

N. Wej x I t̄j v K U GKB mḡtq tevgv d̄v̄vi kā ūb̄tZ n̄tj Wej x tK K tZv ` ūtZj tKvbw` tK mi ūtZ n̄te |
Mw̄Yw̄ZK ēvL̄v Ki |

2. GZ`b h̄er Zctbi ev̄m̄ t_‡K ^-tj i NÈv aÝbi kā tkv̄v thZ bv| m¤úlZ NÈwJi | Rb wK ti tL
MVtb wKQz cwi eZØ Kiv n‡q‡Q| dtj GLb tm ev̄m̄ t_‡KB NÈv aÝbi kā i b‡Z c‡i |

K. mke^ö kā Kx?

L. eñki eñki btj i ^N^Kg ntj ktai ZyZvi Kxi e cni eZ@ Añte?

M. - <đ> i NÈv aÝwb Zctbi Kvþb tc ovi tKškj eYðv Ki |

N. NÈvq tKb ai‡bi cwi‡bi Kvi‡Y Zcb evnv †‡KB GLb NÈvi kā i‡b‡Z cvq| Dchj‡ Kvi Ymn
we‡k‡Y Ki |

beg Aa"vq Zvc | Zvcgv̄v

Zvc gvbt̄ i Rb" Acwi nvh©GKU k̄l̄³ | Zvc Avgv̄t̄ i Mi tgi Abf̄v̄Z Rb̄v̄q | Avi KZUKz Mi g Abfe
KiQ Zv c̄k Kiv nq Zvcgv̄v̄ w̄ tq | tevk Zvcgv̄v̄ i v̄b t̄t̄K Kg Zvcgv̄v̄ i v̄b Zvc w̄ZbU c̄uqiq
mĀvj Z nq | Zvc w̄t̄j ev mvi tq v̄b t̄j A_ P Zvcgv̄v̄ ci eZbi d̄t̄j evqj Pv̄c | Av` Zvi ci eZb nq,
w̄v̄fboc` v̄_ māuñwi Z nq | Zvtci Ggb cf̄ve Avgv̄t̄ i t̄K bvbv f̄v̄e cf̄weZ K̄i |

G Aa"vq tk̄l̄ Avgv̄v

- Zvc | Zvcgv̄v̄ ḡta" ci_R" Ki t̄Z ci e |
- dv̄t̄ibn̄BU | tm̄j w̄mqm t̄t̄j i ḡta" māuñK©'vcb Ki t̄Z ci e |
- v̄ḡv̄v̄i eñenvi K̄i m̄f̄f̄v̄e Zvcgv̄v̄ ci gvc Ki t̄Z ci e |
- evqj Pv̄c | Av` Zvi eñL̄v Ki t̄Z ci e |
- evqj Pv̄c | Av` Zvi Dci Zvcgv̄v̄ ci eZbi cf̄ve w̄t̄kH Ki t̄Z ci e |
- c̄v̄t̄_ P Zvcxq māuñwi Y eñL̄v Ki t̄Z ci e |
- Pv̄ci t̄k msNv̄UZ w̄v̄fbñNUv̄i Zvc mĀvj b eñL̄v Ki t̄Z ci e |
- w̄Kik I tk̄l̄t̄ki ḡta" ci_R" Ki t̄Z ci e |

cW 1 : Zic Kx ?

Tzigiv Rlb G gnwetk! hv wKQz AvtQ ZvtK `fvM fW Kiv hvq | GKU fvM AvtQ c`v`n` i | Rb ev fi
AvtQ, RvqMv `Lj Kti Ges ej c!qvtM evav t`q | Ab`fvM AvtQ kw³ | Gt` i tKvb | Rb tbB, RvqMv `Lj
Kti bv ev ej c!qvtM tKvb evav t`q bv | Gt` i tK Avgiv Bw`q Øiv Abfe Ki‡Z cwi | Zvc Ggb GK
ai‡Yi kw³ | cÅ Bw`‡qi gta` Zvc‡K tKej ZK Øiv Abfe Kiv hvq |

KvR : cütg `ju Mm bvl | Mm `ju tK a:t i t`L tKgb VlÜv ev Mig| Gevi GKU Mm Mig cwb I
AbwUtz ei:di UKiv bvl | `B wgbU Atc¶v Ktiv| Mm `ju t_#K cwb I eid td:jt `vl | Gevi cvj v
Kt i `ju Mm a:iv| tKb Mm tKgb Abfe Ki:jt? GKU Mm Mig AbwU VlÜv| Gevi tZgiv
Av:tj vPbv Ki , Mig Mm UZ Kx Ggb Av:tQ hvi Kvi tY Mig jM:tj v? Ab" Mm tKb VlÜv jM:tj v? GU:tZ
Kx Av:tQ ev tbB?
mveawbZv: Mig cwb Ggbf:te Xvj te hv:tZ M:tq bv c:to| Mig cwb:bi cv:† ev Mm Lwj nvZ w:tq
bvovPbv Ki te bv|

Avgiv ej‡Z cwi, tKvb wKQz WÛv bv Mig Zvi tcQtb i‡qtQ Zvc | Zvtci Kvi †Y tKvb wKQ‡K Avgif i
WÛv ev Mig jvtM| e-’ hLb Zvc MôY K‡i ZLb Zv Mig nq| Avevi e-’yhLb Zvc eRø K‡i ZLb tmwU
WÛv nq| Mig MwU Mig cwb t‡K Zvc Môb K‡i‡Q| ZvB GU‡K Mig jM‡Q| Avevi Ab” MwU
ei d‡K wKQz Zvc w`‡q w`‡qtQ| ZvB GU‡K WÛv gtb ntqtQ|

CW 2 : Zvägvi Í v Kx?

†Zigiv Rübſj Zvc n‡jv GKai †Yi kw³ hvi Kvi †Y tKib e⁻ †K Mig ev VwÜv jv‡M| Gevi A†i Kvw Kvi
Kiy hviK

KvR : GKvU w÷ t̄j i M̄vZ w` tq at̄i t̄L | GUv wK W̄Ev bv Mig? KZUv Mig Zv ḡt̄b ivL | Gevi
M̄vU t̄Z Mig cwb t̄Xt̄j cYKt̄iv | Gevi GK wgbU ci ci M̄vU ai | M̄vU Avt̄-Í Avt̄-Í Mig nt̄q h̄t̄"Q |
Gevi cwb t̄dt̄j w` tq GK wgbU ci ci M̄vU ai M̄vU W̄Ev nt̄"Q |
m̄veabZv: Mig cwb Ggbf̄t̄e Xij te h̄t̄Z M̄t̄q bv c̄to | Mig cwbci c̄v̄ ev M̄v Lw̄j nvZ w` tq bvovPvov
Ki te bv | nvZ w` tq Mig cwb cY M̄v teik T̄Y at̄i ivL te bv |

†Zgiv † L†j Mig cwb fWZ~~W~~U ax‡i ax‡i tek Mig ntq‡Q| Avevi Mig cwb tdtj † I qvi ci ax‡i
ax‡i WÊv ntq‡Q| KZUKz Mig ev WÛv Zv terS‡Z Zvcgv†v ev DòZv e‰envi Kiv nq| tekx Mig ntj
Zvcgv†v tek, Kg Mig ntj Zvcgv†v Kg| Gfv‡e Zvcgv†v †Kvb wKQi Zvcgv Ae‐'‡K c‡Kvk K‡i |

Zvnþj Zvc l Zvcgvî vi cv_R" Kx eþtj?

Zvc ntj v GKai †Yi kwi³ hvi Kvi †Y †Kvb wKO‡K VwÛv ev Mig jv‡M | Abw` †K KZUKz VwÛv ev Mig
jw‡Q Zv c‡Kvk Kivi hš‡K Zvcgv‡v etj |

cW 3- 5 : Zicgvī cwi gvc

tZicgvī AvMi KrvitZ t̄tLQ Mig cwbcy M̄M̄U GK ḡbu cici n̄Z t̄q aitj Mig evoZ _t̄K | tKbū b mKt̄j Kg Mig _t̄K wKšy`ct̄i Mig temk _t̄K | Avgiv tKb wKo aitj ev Avgit̄ i Zt̄Ki t̄t̄k wKo eſt̄Z cwi Mig teſtoQ bv Kt̄gQ wKo eſt̄Z cwi KZUv Mig teſtoQ wKšyGt̄Keſt̄i mWKFvte ejv h̄q bv KZUv Mig teſtoQ mWKFvte ejvi Rb Avgiv ht̄š̄i m̄n̄t̄h Zicgvī tḡc _wK | Zicgvī cwi gvt̄ci ht̄š̄i bv̄ n̄t̄j v̄t̄ḡgUvi | v̄t̄ḡgUvi ēenvi Kt̄i gvb̄t̄i kixt̄i Zicgvī gvcv nq | Avenv qm̄e MY evqj Zicgvī gvcv Rb v̄t̄ḡgUvi ēenvi Kt̄ib wKíKri Lvbvq w̄b̄ S Zicgvī eRvq iL̄t̄Z nq | tmRb Kj Kri Lvbvq v̄t̄ḡgUvi ēenvi Kt̄i Zicgvī gvcv nq |

tZicgvī c̄ti i cW t̄j v̄t̄Z f̄t̄j v̄v̄te Rvb̄te th, Zicgvī cwi eZB n̄t̄j Zij c̄v̄t̄_P AvqZb ev̄to ev Kt̄g | Zij c̄v̄t̄_P AvqZb KZUKz ev̄ot̄j ev Kgt̄j v̄ tḡc Zicgvī KZUKz ev̄ot̄j ev Kgt̄j v̄ tei Kiv nq | v̄t̄ḡgUti cwi ` Gj t̄Kv̄j BZ w̄ Zij ēenvi Kt̄i Zicgvī gvcv nq | w̄t̄P GKU cwi v̄t̄ḡgUti i eYDv t̄q n̄t̄j v̄ |

cwi ` v̄t̄ḡgUvi th v̄t̄ḡgUti cwi ` ēenvi Kt̄i Zicgvī gvcv nq ZvB cwi v̄t̄ḡgUvi | tZicgvī w̄b̄qB Rj gvcv v̄t̄ḡgUvi t̄t̄L? ḠU GKU cwi v̄t̄ḡgUvi | w̄t̄P i w̄P̄t̄i ḡt̄Zv G v̄t̄ḡgUti mi "I my g w̄h̄p GKU c̄j "KvPbj v̄t̄K | bj w̄i GKc̄t̄S-cvZj v̄t̄qj mn GKU ejv̄t̄K | ejv̄t̄U cYt̄Kt̄i d̄cv bj w̄i wKo Ast̄k cwi ` f̄v nq | bt̄j i ewK Ast̄k i ayL̄e mvgv̄b cwi gvb cwi ` ev̄t̄v v̄t̄K | bj w̄i M̄t̄q Zicgvī cwi gvt̄ci w̄b̄ S t̄-j Abh̄vq ` M̄ KUv nq | v̄t̄ḡgUti i bt̄j w̄t̄U L̄e mi " ZvB ev̄t̄j | Zicgvī GKU ev̄ot̄j B mi "w̄Q w̄t̄q cwi ` At̄bKLw̄b Dc̄ti D̄t̄V h̄q | cwi ` bt̄j i tKb ` M̄ ch̄S-DVt̄j | Zv t̄t̄L tevSv h̄q Zicgvī KZUKz teſtoQ |

w̄t̄Riv Ki : v̄t̄ḡgUti i m̄n̄t̄h Rj w̄Yq

gvb̄t̄i kixt̄i i v̄f̄meK Zicgvī 98.4 w̄M̄d̄t̄i bnvBU | Gi t̄P̄t̄q Zicgvī temk n̄t̄j Rj n̄t̄q̄t̄Q et̄j aiv nq | M̄t̄qi Zicgvī 101 w̄M̄d̄t̄i bnvBU Gi Kg n̄t̄j W̄3v̄t̄i i ki Yvcbenl qvi c̄t̄q̄Rb t̄bB | GKU W̄3v̄x v̄t̄ḡgUvi ēenvi Kt̄i tZicgvī tKv̄i c̄PRb w̄P̄t̄i kixt̄i Zicgvī tḡc LvZvq w̄j L | G t̄t̄K w̄m̄xv̄S-bv̄l Kt̄i v̄ Rj n̄t̄q̄t̄Q w̄K bv̄?

Zicgvī cwi gvt̄ci t̄-j

tKb wKo cwi gvt̄ci Rb GKU w̄b̄ S Av̄k̄gb w̄K Kt̄i t̄b̄l qv nq | Zvci t̄mB Av̄k̄gvt̄bi m̄t̄_Zj bv Kt̄i bZb tKb wKo cwi gvc tei Kiv nq | Zicgvī cwi gvt̄ci Gi Kg Av̄k̄gb Av̄t̄Q | Gt̄P̄t̄i w̄b̄ S Zicgvī ēear̄bi GKU Ask̄t̄K Av̄k̄gb at̄i t̄b̄l qv nq | GB w̄U w̄b̄ S Zicgvī t̄K w̄t̄i v̄t̄ 1/4 et̄j | GKU t̄K w̄b̄ḡe w̄t̄i v̄t̄ 1/4 | Abw̄U t̄K DaYw̄t̄i v̄t̄ 1/4 et̄j |

w̄b̄ḡe w̄t̄i v̄t̄ 1/4: v̄f̄meK P̄t̄c th Zicgvī v̄q w̄i x eid M̄t̄j c̄w̄b̄t̄Z cwi YZ nq, t̄mB Zicgvī t̄K w̄b̄ḡe w̄t̄i v̄t̄ 1/4 et̄j |

DaYw̄t̄i v̄t̄ 1/4: v̄f̄meK P̄t̄c th Zicgvī v̄q w̄i x c̄w̄b d̄t̄U ev̄t̄v cwi YZ nq, t̄mB Zicgvī t̄K DaYw̄t̄i v̄t̄ 1/4 et̄j |

DaŶ°I mbḡew' i v 1/4 i ga eZr e ēavb tK newfbomsL K mḡib As tK fM Kiv hq| G e ēavb tK Kq U mḡib As tK fM Kiv ntj Zvi wf E tZ newfbet < j c v l qv hq| Zvcgv̄ v c wi gvtci `BnU t < j c Pwz | mb tP G `yU t < j e v L v Kiv ntj v|

tmj wmqm t < j : G t < j mbḡew' i v 1/4 tK 0 MM (0⁰) Ges DaŶ°W i v 1/4 tK 100 MM (100⁰) aiv nq| ga eZr e ēavb tK mḡib GKZ fM fM Kiv nq| c Z K fM tK GK MM tmj wmqm (1⁰ tm.) ej v nq|

meĀvb tmj wmqm G t < j D t M eb Ktib ej Zvi bvg Abm t i G t < j tK tmj wmqm t < j ej v nq| eĀvbK KtR G t < j e ēenvi Kiv nq| GQov Ab v b KtR I evsj v k mn c w exi newfbet tK G t < j e ēenvi Kiv nq| thgb tZvgi Avenv qv Le t i tkv b th, w tbi m t e P Zvcgv̄ v Qj 32 MM tmj wmqm| ga eZr e Z tK 100 fM fM Kiv nq ej G tK tmwU t M (Centi A_GKZ Ges grade A_fM) t < j | ej v nq|

dv t i bnvBU t < j : G t < j mbḡew' i v 1/4 tK 32 MM (32⁰) Ges DaŶ°W i v 1/4 tK 212 MM (212⁰) aiv nq| ga eZr e ēavb tK mḡib 180 fM fM Kiv nq| c Z K fM tK GK MM dv t i bnvBU (1⁰ dv.) ej v nq|

meĀvb dv t i bnvBU G t < j D t M eb Ktib ej Zvi bvg Abm t i G t < j tK dv t i bnvBU t < j ej v nq| thgb tZvgi Rj ntj tKD nqtZv ej _ v tK b th, Rj 101 MM Amtj tZvgi M t q i Zvcgv̄ v Qj 101 MM dv t i bnvBU|

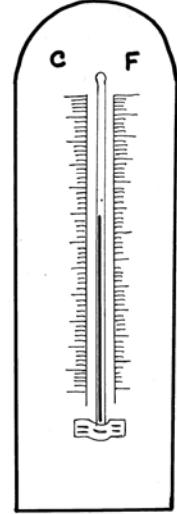
tmj wmqm | dv t i bnvBU t < j i m x u K^o

tmj wmqm t < j Zvcgv̄ v Rvb v _ v Ktj tZvgi v ZtK dv t i bnvBU t < j i e v s t KtZ c t i v| Avenv D t e v u l Kiv hq| Gi Rb tZvgi t GKU mgxKiY Rvb tZ nte| mgxKiY U n t j v thL t b C ntj v tmj wmqm t < j Zvcgv̄ v Ges F n t j v dv t i bnvBU t < j Zvcgv̄ v|

Gevi GKU D`vni Y t L v h v K|

KvR : GKU tmj wmqm t < j m v a v i Y Rj g v c v i GKU dv t i b n v B U t < j b v l Ktmi 5Rb e Ü i M t q i Zvcgv̄ v dv t i bnvBU t < j e ēenvi Kt i c wi g v c K i c wi g v c K Z Zvcgv̄ v m t e ēenvi Kt i tmj wmqm t < j i e v s t Kt i mb t P i Q K (mb t R i LvZv q QKU Kt i mb t Z n t e) c i Y K i

w k P v _ f b v g	dv t i bnvBU t < j Zvcgv̄ v	tmj wmqm t < j Zvcgv̄ v	g s e ..
1			
2			



P̄ : tmj wmqm |
dv t i bnvBU t < j

cW 6, 7 : Zvci cFite c`v‡_P cÖnvi Y

ZvC cÖqM Ki‡j AmaKsk c`v‡_P AvqZb evto | Kwb c`v‡_P Lp Aí cwi gvtY evto | teukifM Zij c`v‡_P K ZvC w‡j ZvLp teuk cÖnvi Z nq bv| Z‡e evqexq c`v‡_P K ZvC w‡j ZvA‡bKUv cÖnvi Z nq| Kwb c`v‡_P cÖnvi Y:

KvR : Kwb c`v‡_P cÖnvi ‡Yi cÖvY

cÖqvRbxq DcKiY : wCZ‡j i ^Zwi ej I wi s, Av, b, ÷vÛ|

wCZ‡j i GKwU ej I wi s Ggbfite ^Zwi Kiv nq hv‡Z ej wU tKibi Ktg

wi s Gi †fZi w‡q P‡j hvq| wP‡†i g‡Zv K‡i ÷vÛ wi s I ej h‡

K‡iv| Gevi ej wU ^v‡weK Ae^vq wi s Gi †fZi w‡q w‡q th‡Z tPov

K‡iv| †L‡e ej wU wi s Gi †fZi w‡q P‡j tM‡Q| Gevi ej wU tei K‡i

Mig K‡iv| mweatb wi s Gi †fZ‡i tbqvi tPov Ki | ej wU wK wi s Gi

†fZi w‡q P‡j hv‡Q? hv‡Q bv, AvU‡K tM‡Q|



চিত্র : কঠিন পদার্থের প্রসারণ

Mig Kivi d‡j wCZ‡j i ej wU †Kb wi s Gi †fZ‡i pK‡Q bv? Gi Kvi Y ej wU wKOuv eo ntq‡Q| ZvC c‡l qvi d‡j ej wU wKOuv eo ntq tM‡Q| G †_‡K cÖvYZ ntjv th, th ZvC cÖq‡M Kwb c`v‡_P cÖnvi Z nq| wKš' G cÖnvi Y Lp teuk bq ej Avgi v mn‡R e‡‡Z cwi bv| Kwb c`v‡_P g‡a^ ZvC cÖq‡M mwavevi YZt avZe c`v‡_P cÖnvi Z nq|

~ b` b Rxe‡b Kwb c`v‡_P cÖnvi ‡Yi cFite

w‡Pi D`vnvi Y‡j v †‡K tevSv hv‡te Avgi v % b` b Rxe‡b Kwb c`v‡_P cÖnvi Y‡K Kxvite Kv‡R j wMB|

(1) KLbI wK †‡LQ Rv‡gi, m‡mi ev Ab^ †Kvb wKO‡i Kv‡Pi tevZ‡j i ev wKvki avZe g‡wU tLyv hv‡Q bv? Gi Kg Ae^vq mwavevi YZ tevZ‡j i avZe g‡wU Mig Kiv nq| Zvci Zv tg‡Po w‡j mn‡RB L‡j Av‡m| †Kb mn‡R g‡wU L‡j Av‡m? Kvi Y avZe g‡wU Zv tc‡q cÖnvi Z ntq tevZj †‡K wKOuv Avj M ntq hvq| ZvB GwU mn‡R L‡j Av‡m|

(2) †Zvgi v Kx tij jvBb †‡LQ? `wU mgv‡i vj tjvnvi cv‡Zi Dci w‡q tij P‡j| tLqvj Ki‡e `wU tjvnvi cv‡ZB wKO‡`‡ ci‡i KvUv| Avmtj B‡Q K‡iB tjvnvi cv‡Zi As‡ki g‡a^ wKOuv dwK ivLv ntq‡Q| tij Mwo Pj vi mgq ti‡j i tjvnvi PvKvi mv‡_tjvnvi cv‡Zi NI‡Y tjvnvi cvZ Mi g ntq hvq| G‡Z tjvnvi cvZ wKOuv te‡o hvq| tjvnvi cv‡Zi ms‡hM^v‡b dwK bv _vK‡j Zv te‡K thZ| dwK _vKvq tjvnvi cvZ te‡o dwKUkyc‡Y K‡i| G‡Z tjvnvi cvZ te‡K hvq bv|

Zij c`v‡_P cÖnvi Y : Kwb c`v‡_P Zj bvq Zij AvqZ‡b teuk evto| Zij avZvci ‡i cÖnvi Y‡K Kv‡R j wM‡q _v‡g‡gUv %Zwi Kiv nq| †Zvgi v G m‡u‡K‡B‡Zg‡a^B †R‡b‡Qv| †Zvgi v Rje‡y cwi eZ‡ Aa^v‡q Rvb‡e th, c‡‡xi ZvcgvI v te‡o hv‡Q| dtj mg‡`‡i c‡‡bi AvqZb te‡o mg‡`‡i D‡PZv te‡o hv‡Q|

evqexq c`v‡_P c hvi Y :

DcKib : GKW KWPi tevZj, `WU cWbi cW†, Mi g I WWEv cWb, tejWp, mWZv
KvR : GKW k³ I LwW KWPi tevZj bWI | tejWpW bW dWj tWq tevZtj i gWL j wWMWtW q wW tWq mWZv wW tWq
teWta `WU | GKW cW† dWšWí Mi g cWb Ges AciWtZ WWEv cWb bWI | Gevi tevZj uWm veatWb Mi g
cWb tZ WevI | Kx tWLWQ? tejWpW wWKQW dWj DWVWQ? Gevi tevZj uWa t*i* WWv cWb tZ WevI | tejWpW
wWK PWcWm tWMWQ? tWKb Ggb nWQ?

evqeqx c`v_©Zic tcđj metPđq teñk evđo | tevZj Wl Mig cwbđZ Wewtj tevZđj i tfZđi i evqy Zic tcđq
cñhwí Z nđQ| dđj tevZđj i evqy tejđb cñek Kđi WKOđv dđj DVđQ| Averi hLb tevZj Wl Èv cwbđZ
Wewtby ntj tevZđj i tfZđi i evqy msKpZ nđQ| dđj tejđbi evqy tevZđj i tfZđi wdđi AvmđQ| ZvB
tejđb Wl Pctm hvđQ| G t_đK cñwYZ nq th, Zic tcđj evqeqx c`v_©cñhwí Z nq |

evqexq c`v‡_P cñwi †Yi cñive: evqexq c`v‡_P cñwi †Yi cñive cñKñZ‡Z Ges Avgv‡` i ^` bñ` b Rxetb tek t` L‡Z cvl qv hvq | tZvgiv wK i wU tmk‡Z t` tL‡Q? GKchv‡q i wU tek dtj I †V i wUwU GKUzQ^` K‡i w` tj k‡ K‡i wKQz tevi †q Avgm | tKb Gi Kg nq? tZvgiv Rv‡bv Avvvi my‡_ cwb mgk‡q i wU ^Zwi Kiv nq | i wU tFZ‡i i cwb Mrg n‡q Rj xq ev‡®u cwi YZ nq | Rj xq ev®u Avi | Zvc tc‡q cñwi Z nq | dtj i wUwU dtj D‡V |

Zvčci dtj Mvčmi cñwi YtK KvčR jwMq BwčAb Pvj včbv nq | tZvgiv eo nq Avčiv fvčjvfite ešte |
BwčAb Pvj včbv Rb Ryvbx cjočq Zvc wčq evqfK cñwi Z Kiv nq | cñwi Z evqy th av°v t`q ZvčK
e'envi Ktj BwčAb Pvj včbv nq |

Zvtci dtj evqycñmwi Z nI qvi dtj evqyGÜtj AtbK cni eZD nq| wbtP G m¤útK©Argiv Rvbtev|

cW 8 : Av` Zv | evqPtci Dci Zvcgv†vi c†ve

evqjZ evqjKYv, t̄j v QzUvQzU Ki‡Z _‡K | ZvB Zviv tKvb wK0‡Z evav tctj Zv‡Z av°v t̄q ev ej c‡qM
Kti | dtj evqj Pvc i‡q‡Q| GKK t¶†dtj i Dci evqyth ej c‡qM Kti ZvB evqPvc| evqymew‡K Pvc
t̄q| tKvb -'v‡bi evqPvc wbfP Kti tmLvbKvi Zvcgv†vi Dci | Zvcgv†vi evotj tKvb exct† evqexq
c`v‡_P Pvc te‡o hvq| wKšjevqg‡Ej Zvcgv†vi evotj evqPvc K‡g hvq| Gi Kvi Y evqg‡Ej ex cv† bq;
GvU tLyj v| Zvc tctj evqynvj Kv n‡q Dcti D‡V hvq| d‡j evqj NbZ; K‡g hvq | evqPvc K‡g hvq| ZvB
tKvb -'v‡b Zvcgv†vi te‡o tMtj evqPvc K‡g hvq A_P wbf‡ci m‡ó nq| Avi thLvb Zvcgv†vi Kg
tmLvb D"PPv‡ci m‡ó nq| tZvgiv Rj evqy cvi eZD Aa"v‡q t Lte Krfv‡te wbf‡ci | D"PPv‡ci dtj
evqc‡vni m‡ó nq|

Rj xq er®ú, evqj Av` Zv I ZvcgvÍv : tZvgiv Rjb th, f-cđoi cwb er®ú ntq evqjZ wgtk | evqjZ memgqB Gfvđe wKQz cwi grY Rj xq er®ú _vK | evqjZ Rj xq evt®úi cwi grYtK evqj Av` Zv w- tq cđik Kiv nq | evqjZ Rj xq er®ú tevk _vKtj evqj Av` Zv tevk nq | Rj xq er®ú Kg _vKtj evqj Av` Zv Kg | ZvcgvÍv evotj cwb tevk Ktj evt®úi cwi YZ nq | Averi ZvcgvÍv evotj evqj tevk Ktj Rj xq er®ú avi Y KiđZ cwti | Avgvđ i t` tk kđeY I fv`^ gvtm f'vcmv Mig cđo | Kvi Y ZLb tgđmgx evqj eđ½vcmv Mi

t_‡K c‡Pi Rj xq ev®ú Dwo‡q w‡q Av‡m | Rj xq ev®ú ev Av` Zv te‡k _vK‡j Avg‡` i M‡q Nvg nq | Rj xq ev®ú evq‡Z te‡o tM‡j GKch‡q Zv NbxfZ n‡q tgN Ges tk‡l ejó nq |

cW 9-10 : Zvc mÂvj b

tZvgiv Kx KLbI tlqyj K‡i 0, Mig Zi Kwi i ew‡Z ÷ x‡j i PvgP ivLv _vK‡j Zv Mig n‡q hwq? Zi Kwi t_‡K Zvc Kxv‡te tZvgvi nvZ ch‡Sí G‡jv? Zvc te‡k Zvcgī vi ~'vb t_‡K Kg Zvcgī vi ~'vb th‡Z cv‡i | Zv‡ci GB ~'vb cwi eZ‡tK Zvc mÂvj b etj | Zvc mÂvj b wZbf‡te nq-cwi enb, cwi Pj b | we‡KiY |

Zvc cwi enb : Mig Zi Kwi i ew‡U t_‡K Pvg‡Pi gva‡g Zvc cwi enb c×wZ‡Z mÂwj Z nq | G c×wZ‡Z Kwb c`‡_‡Zvc mÂwj Z nq | tZvgiv Rv, Kwb c`‡_‡ KYv,‡j v w‡tRiv ~'vb cwi eZ‡tK t‡i bv | Zviv tKej w‡tR‡` i ~'vb t_‡K ‡`yj tL‡Z cv‡i | Kwb c`‡_‡ Mig KYv,‡j v ‡`yj tL‡q cv‡ki WÛv KY‡K Zvc w‡q ‡`q | cv‡ki WÛv KYvU Mig n‡q Zvi cv‡ki WÛv KY‡K Zvc ‡`q | Gfv‡te KYv,‡j v w‡tRiv ~'vb cwi eZ‡tK t‡i Zvc‡K Mig c‡Sí t_‡K WÛv c‡Sí w‡q hwq |

Kwb c`‡_‡ g‡a" avZe c`v_‡‡j v thgb, tjv, Zvgv, wZj, A`v‡g‡bqvg, ~`v G,‡j v `Z Zvc cwi enb K‡i | GRb" ivb‡i Rb" avZi ^Zwi nwo eenvi Kiv nq | AavZi thgb K‡, m‡Z K‡co, gwU Gme Zvc cwi enb K‡i L‡B Kg | ZvB Mig nwo aivi Rb" Avgiv Kvc‡oi UKiv eenvi Kwi | GKB Kvi ‡Y ivb‡i Rb" Kv‡Vi bvowb eenvi m‡eavRbK |

cwi Pj b : Zij I evqexq c`‡_‡ G c‡qvg Zvc mÂwj Z nq | GK‡U cv‡t c‡b w‡q Pj vi Dcti ew‡q Zvc w‡tj ct‡i cv‡t i c‡bB Mig n‡Z _v‡K | G‡¶‡t c‡bi KYv,‡j v Zvc M‡Y K‡i k‡³ AR‡t K‡i | k‡³ AR‡t K‡i Mig c‡bKYv nvj Kv n‡q Dcti D‡V hwq | Dcti i WÛv c‡b KYv,‡j v w‡tP tb‡g G‡m Zvc M‡Y K‡i | Gfv‡te ch‡q‡t g‡mKj KYv Zvc M‡Y K‡i D‡B nq Zvc GK~'vb t_‡K Ab~'vb mÂwj Z nq | Gfv‡te KY‡` i ~'vb cwi eZ‡b‡i gva‡g Zvc mÂwj ‡b‡i c‡qvi bv g‡mKj KYv,‡j v Zij c`‡_‡ KYv g‡Zv evqexq c`‡_‡ KYvivl D‡B n‡q mn‡RB ~'vb cwi eZ‡b‡i gva‡g Zvc mÂwj b K‡i | tZvgiv wK KLbI k‡tZ Av,‡b‡i cv‡k `w‡qQ? k‡tZi mg‡q M‡g g‡b‡i i v Kv ev WÛv cyj v tR‡j Av,‡b‡i tcvnq | Av‡b‡i cv‡k `w‡qj Avg‡` i wKQ‡v Mig j‡M | wK‡vZv hw‡tZvgvi nvZUv m‡eav‡b Av,‡b‡i wK Dcti bv‡t Zv‡j t‡L‡e te‡k Zvc j‡M | Kvi Y cwi Pj b c×wZ‡Z evqj KYv D‡B n‡q Dcti i w‡tK I‡V, cv‡k Av‡m bv‡t ZvB Av,‡b‡i cv‡ki t_‡K Dcti Zvc te‡k AbfZ nq |

Zvc we‡KiY : mh‡v‡ci gj Drm | mh‡Avi c‡‡xi g‡SL‡b c‡q meUKB d‡Kv | tKv evqexq c`v_‡ tbB | Zv‡j mh‡‡t_‡K Zvc Kxv‡te Avg‡` i Kv‡Q G‡m tc‡Q? mh‡‡t_‡K Zvc Av‡m we‡Ki‡Yi gva‡g | thL‡b‡tKv Ro gva‡g tbB tmL‡b Zvc we‡Ki‡Yi gva‡g mÂwj Z nq | tZvgiv Dcti i tK‡v‡tZ Rv‡te th Zvc GK‡gi Zi ½ hv tKv Ro gva‡g QvovB D‡B ~'vb t_‡K k‡Zj ~'vb th‡Z cv‡i | we‡Ki‡Yi mg‡q Zvc Zi ½vK‡i mÂwj Z nq | Av‡m gj gva‡g _vKK ev bv _vKK, D‡B e~' we‡KiY c×wZ‡Z Zvc w‡M‡ K‡i |

wKQ‡v c`v_‡mn‡R Zvc we‡KiY K‡i, G‡`i‡K etj we‡KiK | we‡KiK c`v_‡Zvc we‡KiY K‡i WÛv n‡q th‡Z Pvg | we‡KiK c`v_‡Zvc t‡v‡Yi K‡i | Av‡v wKQ‡v c`v_‡Zvc t‡v‡Yi K‡i tbq, Zv‡i‡K etj t‡v‡K | t‡v‡K Zvc t‡v‡Yi K‡i D‡B nq | Zij c‡b, Rj xq ev®ú, K‡v‡WBA· vBW, wgt_b, K‡vP, c‡‡‡K Gme c`v_‡Zvc t‡v‡Yi K‡i tbq |

mh©Zvc newKiY Kt̄i , ZvB Gt̄K Avgiv newKiK ej t̄Z cwi | c̄_ex m‡hp Zvc tkvIY Kt̄i DËB nq |
c̄_ex t̄K tkvI K ej t̄Z cwi | wKšj c̄_ex GKBm‡ newKiK i vZi tej vq DËB c̄_ex Zvc newKiY Kt̄i
kxZj nq | t̄Zvgi v Rj evqy cwi eZD Aa v t̄q Rvbte evqg E t̄j i KieD WBA· vBW, Rj xq er®ú, wgt_b Gme
M'vm newKi xZ Zv t̄ci tkvI K vntmte KvR Kt̄i Avgut̄ i Rxebt̄K cfweZ Ki t̄Q |

G Aa“v‡q Avgiv hv wLj vg

- Zvč ntj v GKai tYi k w³ hvi Kvi tY tKvb mQdK Wūv ev Mi g j vM| Abūw tK KZUKzVvE v ev Mi g j M²Q Zvcgv̄i v Zv cKv k Kt i |
 - mīavi Y KvR Zvcgv̄i v cwi gvtci Rb cvi ` _vgtgūv i e envi Kiv nq| Zvcgv̄i v `ju t < j teik cPvj Z - tmj v mqv m t < j | dvti bnvBU t < j |
 - Zvč c̄qqtM c` v_ mīavi YZt c̄hwi Z nq| Kwb I Zij Kg cwi gvtb c̄hwi Z nq, mKš̄einqexq c` v_ Zvtc tek c̄hwi Z nq|
 - Zvcgv̄i v cwi eZ²b evqj Pvc I Av` Zvi cwi eZ²b nq hv Avenvl qvi cwi eZ²b fngKv i vL|
 - Zvč wZb c̄qqtq mĀwj Z nq- cwi enb, cwi Pj b I mKtYi gra tg|

Abjkxj bx

kb--'vb c:Y Ki :

1. Zij I evqeqq gva[†]g Zic ÑÑÑÑÑÑÑÑÑÑ cñpuqvq mÂwjj Z nq |
 2. ^vfwieK Pv‡c th Zicgv†vq wei[‡] cwb d‡U ev‡®ú cwiYZ nq, tmB Zicgv†‡K ÑÑÑÑÑÑÑÑÑÑ
w[—]iv^{1/4} e‡j |
 3. tmj wmqvg †<‡j i wbgav[—] iv^{1/4} ÑÑÑÑÑÑÑÑÑÑÑÑÑ wWwMÖtmj wmqvg |
 4. d‡i bnvBU †<‡j wbgav[—] iv^{1/4} ÑÑÑÑÑÑÑÑÑÑÑÑÑ wWwMÖd‡i bnvBU |
 5. Rj xq ev‡®úi cwi gvY Kg _vK‡j evqj ÑÑÑÑÑÑÑÑÑÑÑÑ Kg _‡K |

msw\P\B D\i c\k\ae

1. Zvc I Zvcgv̄ vi ḡta" cv_ꝝ" Kx?
 2. t̄ i j jvBtbi c̄t̄ Zi mst̄hM̄' t̄j M̄KOv̄ d̄t̄Kv̄ i vLv̄ nq t̄Kb?
 3. Av̄, t̄bi c̄t̄k̄ `m̄ot̄j hZUv̄ Mi ḡ jv̄M̄, Av̄, t̄bi M̄K Dc̄t̄i M̄Z i vLt̄j Zvi tP̄t̄q AtbK tewk Mi ḡ jv̄M̄ G i Kḡ nq t̄Kb?
 4. ivb̄eKivi Mi ḡ nwo Lw̄j n̄t̄Z bv̄ āti Kv̄ctoi UKiv̄` t̄q ai v̄ nq t̄Kb?
 5. Zvcgv̄v̄ evot̄j evqḡŪt̄j i Pvc K̄tḡ h̄q t̄Kb?

1. tKvbuU evqqÜtj fvjtj v tkvl K mntmte KvR Kti?

K. bvBüRb L. Rj xq er®ú M. Añt Rb N. awj KYv

2. Zicgvī ^eikó n̄tj v, GvU-

K. Abfe Kv v hvq L. cwi gvc thM M. GKai tbi kri³ N. ej c̄qitM evav t̄ q

m̄tPi Qm̄U fvjtj fvft e j¶ Ki Ges 3 | 4 b¤^i c̄kē D̄i `vl :

3. 2 b¤^i wP̄t̄i _vtg@Uv̄t̄i -

i. wbḡi v¼ 32°F ii. tḡw K fM 200°F
iii. DaYw' i v¼ 232°F

m̄tPi tKvbuU m̄WK?

K. i L. ii M. i I ii N. i, ii I iii

4. wP̄t̄-1 | wP̄t̄-2 Gi Zij tK Zicq ms-ütkq vLtj Kv Nu te?

K. Ztci c̄en wP̄t̄ 1 t̄tK 2 Gi w̄tK n̄te L. Ztci c̄en wP̄t̄ 2 t̄tK 1 Gi w̄tK n̄te
M. Ztci c̄en Pj tZB _vKte N. Dftqi Zicgvī Kj Zicgvī vq tc̄o te

mRbkxj c̄kē

1. kviwb 7g tkv̄tZ cto| GKv b mÜvq tm Rj Ri t̄va Kij | AZci Zvi evmvq i wP̄t̄ tmj wmqm
_vtg@Uvi w̄tq M̄tqi Zicgvī tḡt c̄tLj 37° tmj wmqm | kviwb dv̄tibnvBU t̄tj Rj i Zicgvī v
eS̄tZ cvi t̄j | tm̄tUtm̄v t̄tj G Zicgvī eS̄tZ cvi j bv | ZvB wP̄t̄Z n̄q Wv³v̄i i KvQ tm̄j |
Wv³vi dv̄tibnvBU _vtg@Uvi w̄tq Zicgvī tḡt ejj th Zvi Rj tbB |

K. Zicgvī Kv?

L. cvi ^vtg@Uv̄t̄i cvi ^e en̄t̄i i meav e vL v Ki |

M. kviwb M̄tqi Zicgvī dv̄tibnvBU t̄tj KtZv wQj?

N. Wv³vi tKb ej t̄j b kviwb Rj tbB Ges dv̄tibnvBU I tm̄tUtm̄v t̄tj i m̄xúK®Rvbw _vKtj
kviwb Kv meav n̄tZv wetkH Ki |

2. KvRj Aíeq̄mi n̄tj I ^b̄t̄b Rxetb NtU hv̄l qv bv̄v NUv̄ tm ḡb̄t̄hM mnKt̄i ch̄e¶Y Kti |
GKv b tm fvZ ivb̄i mgq cwZt̄j i ej et̄ i av°vq WvKbvU cto th̄tZ t̄tLj v | Abw̄tK Zv̄t̄i
KvVi ^i Rvq M̄tKv̄tj tKv̄t v̄tKv̄tj i KxZKv̄tj wKQz dv̄tKv̄tj ¶ Kij | D̄tj wZ ^t̄Uv NUv̄B
Zv̄tK fwetq Zjj |

K. tKv c̄v _Zt̄c metP̄t̄ fevk c̄hwi Z n̄q?

L. t̄j j vB̄t̄i ms̄t̄hM ^t̄j dv̄t̄K i vL v n̄q tKb?

M. fvZ ivb̄i mgq KvRt̄j i ch̄e¶YKZ NUbvUj KvY e vL v Ki |

N. KvRt̄j i ch̄e¶YKZ KvVi ^i Rv i KxZ I M̄t̄S^ØZ AñPit̄Yi KvY metkH Ki |

‘ kg Aa“vq

me`yr | Pr^Ki NUbv

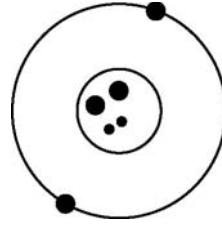
me`yr Avgv‡` i emo, - ev Avdm‡K Av‡j wKZ Ki‡Q| Pj v"Q d"b, ti WI -tUj wfkb, Bw-‡, wUvi, tgUvi, KwúDUvi | Av‡iv A‡bK wK0| me`yr Gi cikcwk Pr^Ki eenvi | Avgv‡` i ^` b`b Rxeb‡K mgx K‡i‡Q| eZgib Aa“vq Avgiv me`yr | Pr^K m¤úKZ wnfbaelq wbtq Av‡j wKvZ Kie|
GB Aa“vq cW tk‡l Avgiv-

- Pr‡R‡ ag©e„L“v Ki‡Z cvie|
- cwi evnx, Acwi evnx | Aa©wi evnx e„L“v Ki‡Z cvie|
- w`i me`yr m¤óí gwa“tg Pr‡R‡ ag©c‡k‡ Ki‡Z cvie|
- GKwU mij eZbx ^Zw| Ki‡Z cvie|
- wZ“ e„enjh‡hs‡cWZ‡Z me`yr‡Zi e„envi e„L“v Ki‡Z cvie|
- Pr^Ki ag©c‡k‡bi ga“tg tP§‡K | A‡P§‡K c`v‡_‡ g‡a“ c‡_‡ Ki‡Z cvie|
- A‡P§‡K c`v‡_‡ tP§‡K e„L“v Ki‡Z cvie|
- cW_exi tP§‡K t¶† e„L“v Ki‡Z cvie|

cW - 1 | 2

Avant le Professeur Dr. W. E.

Avgiv Rwb c`v_©KZ, t̄jv ¶i^a ¶i^a KYvi mgš^tq MwZ | hvi bvg cigvYj
 Bt̄j KUb, tcÜb I wbDUtbi mgš^tq cigvYj MwZ | cigvYj tKt̄s^a _vt̄K
 wbDwKepm | hv tcÜb I wbDUtbi mgš^tq MwZ | Bt̄j KUb GB wbDwKepfmi
 Pvi c̄t̄k cöw¶Y Kti | tcÜb abvZK (+) Avavbhj³, Bt̄j KUb FYvZK (-)
 Avavbhj³ Ges wbDwB nj wbic¶ KYvi



¶Kšygrvi e'vci nj cigiYybR ¶Kšyhbic¶ AvPiY Kti | cigiYyabiZK ev FYizK tKvbUvB bq | cigiYtZ tKvb PvR®_vK bv | Gi KviY Kx? KviY ntjv GKvU cigiYtZ th KqvU tcÜb _vK tmB KqvUB Btj KUb _vK | hvi dtj cigiYpVr®ev Avavb vbi tc¶ nq | ¶KšyLbB `tUv c`v_®K NIY Kiv nq ZLb GKvU c`v_® Btj KUb Ab" GKvU c`v_®Ptj thtZ cvi | dtj GKvU c`v_®Btj KUtbvi AmaK" t` Lv w`tZ cvi | Gevi GKvU D`vniY t`qy hvK | GKvU KvtPi tevZj tK GKUKiv wmtéi Kvco Øviv NIY Kiv nj | GtZ t` Lv hvte wmtéi Kvco KvP t_tK Btj KUb tK AvKIY Kti Zvi w`tK vbtq tMtQ | GtZ tevZj w aibvZK Avavb h® Ges wmtéi KvcoU FYizK Avavbh® ntqtQ | Zntj GKUv e'vci GLvtb t'ó th NIYi dtj bZb tKvb Avavtbi mÓ nq bv eis c`v_® gta" we`"gib Avavb GK c`v_®tK Ab" c`v_® Ptj hvq |

Avalb ev PrtR® ag©

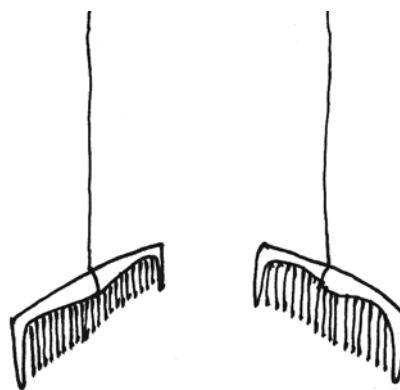
Augiv GLb ~~wbDq~~ eS~~t~~Z cvi wQ, Kxfvte Avavtbi Drc~~W~~E nq | Gevi Augiv t` L~~t~~ev GB Avavb, tjv (abvZK
I FYvZK) wKi e ag^c~~o~~ k~~b~~ K~~t~~i | Gi Rb["] Augiv ~~wb~~tPi KvR, tjv Ki t~~e~~v |

KvR: Praktische ag^CRwbw

c̄q Rbxq DcKiY: `ju Piib, ckgx Kvo

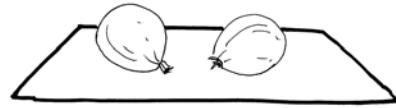
c×wZ: GKUJ tQWJ cWóKí wPiwbK mZv w tq teJa
GKUJ t Ktbv

KwMi gr̄_vq Sij tq `vI | GuJ Ggbfvte Sj tZ n̄te hv̄tZ
Ait̄Kcv̄t̄k t̄Kib w̄KQz _úk^obv Kti | Gevi Ait̄i KwJ i Ktbv
KwMi gr̄_vq Ab^{..} GKuJ c̄w̄t̄Ki w̄Pi^{..}b Sj vI hv̄tZ Guv
gj³fvt̄e Sj tZ _v̄K | Gevi Dfq w̄Pi^{..}b t̄K w̄KO^{..}Y ckgx
Kvco w̄ tq NI | GLb w̄Pi^{..}b `yut̄K KvQvKwQ Avb | w̄K j^{..}
KiQ? w̄Pi^{..}b `yU ci^{..}úi t̄K weK1^{..}Y Ki t̄Q | Gevi ckgx
Kvco uJ w̄Pi^{..}b KvQ Gt̄b t̄L GuJ w̄Pi^{..}b KvQ Pt̄j Avm̄te |



WP[†] : PvR^C ag^CRvbv

KvR: Pr̄R̄P āḡP c̄ K̄
c̄q̄R̄b̄q̄ DcKiY: `yU tej̄b̄, m̄Z̄v, D̄t̄j̄ i Kvco A_ ev M̄t̄qi tm̄t̄q̄Uvi , Km̄t̄R̄i UKiv



MP̄ : Pr̄R̄P āḡP c̄ K̄

Cx̄Z: `yU tej̄b̄t̄K dol̄ t̄q m̄t̄Z̄v w̄ t̄q fv̄ f̄v̄te tet̄a b̄l | Gevi GK̄U tej̄b̄t̄K D̄t̄j̄ i Kvco ev M̄t̄qi tm̄t̄q̄Uvi w̄ t̄q N̄t̄i C̄K̄M̄t̄R̄i UKiv | Kv̄Q aīt̄j̄ t̄`Lv h̄v̄te tej̄b̄ Km̄t̄R̄i UK̄t̄iv, t̄j̄ v Kv̄Q t̄Ūt̄b̄ w̄b̄t̄Q | c̄p̄īq̄ w̄Z̄x̄q̄ tej̄b̄w̄t̄K D̄t̄j̄ i Kvco ev M̄t̄qi tm̄t̄q̄Uvi i m̄t̄_ t̄P̄t̄c̄ aīt̄j̄ t̄`Lv h̄v̄te tej̄b̄w̄U Kv̄ct̄oi M̄t̄q̄ t̄j̄ t̄M̄ Av̄t̄Q | Gi Kv̄Y Kr̄? Kv̄Y NĪP̄ȲP̄ d̄t̄j̄ D̄t̄j̄ i Kvco I tej̄b̄ wecīx̄Z̄ aḡP̄ Av̄t̄bi m̄j̄O n̄t̄q̄t̄Q | Gevi h̄L̄b̄ w̄Z̄x̄q̄ tej̄b̄t̄K c̄l̄ḡ tej̄b̄bi Kv̄Q t̄b̄l̄ q̄ n̄t̄e Z̄L̄b̄ w̄K̄ t̄`L̄t̄e? t̄`L̄t̄e th̄ MP̄t̄ī b̄v̄q̄ `yU tej̄b̄ cī- ūī t̄_ t̄K̄ `yU tej̄b̄b̄ GKB aīt̄Ȳī Av̄t̄bi m̄j̄O n̄t̄q̄t̄Q |

Dct̄iv³ KvR, t̄j̄ v t̄_ t̄K̄ Z̄ḡ w̄K̄ t̄K̄t̄b̄v̄ w̄m̄x̄v̄S̄- w̄b̄t̄Z̄ c̄īt̄ī? n̄t̄ Gi t̄_ t̄K̄ `yU w̄m̄x̄v̄S̄- t̄b̄l̄ q̄ h̄v̄;

K) mgaḡP̄ Av̄aib̄ cī- ūī t̄K̄ weKĪȲ K̄t̄ī (`yU tej̄b̄ A_ ev `yU w̄Pīb̄ī t̄P̄t̄ī) |

L) wecīx̄Z̄ Av̄aib̄ cī- ūī t̄K̄ Av̄K̄ĪȲ K̄t̄ī (D̄t̄j̄ i Kvco I tej̄b̄)

CW - 3

Pr̄R̄P Aw̄- t̄Z̄ī

Gevi Avgīv GK̄U mn̄R Kv̄R̄ī ḡv̄āt̄ḡ Pr̄R̄P Aw̄- t̄Z̄ī c̄ōȲ Kīt̄ev |

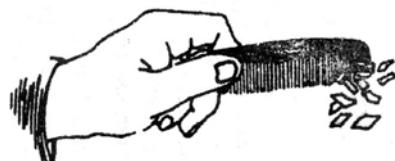
KvR: Pr̄R̄P Aw̄- t̄Z̄ī c̄ōȲ

c̄q̄R̄b̄q̄ DcKiY: GK̄U c̄w̄ōt̄K̄ī w̄Pīb̄, Let̄ī i Km̄t̄R̄ī UKiv |

Cx̄Z: GK̄U Let̄ī i Km̄t̄R̄ī w̄K̄Q̄ Ask t̄K̄t̄U t̄Q̄U t̄Q̄U UK̄t̄iv Ki | Gevi Km̄t̄R̄ī UK̄t̄iv, t̄j̄t̄K̄ t̄Ūt̄ēt̄ī i Dci Q̄ōt̄q̄ `v̄l̄ | Gevi ej̄t̄Z̄ c̄īt̄e GK̄U c̄w̄ōt̄K̄ī w̄Pīb̄t̄K̄ Let̄ī i Km̄t̄R̄ī UKiv, t̄j̄ vi Kv̄Q Av̄b̄t̄j̄ w̄K̄ NŪt̄e? Gevi w̄Pīb̄t̄K̄ ckg ev D̄t̄j̄ i Kvco (Ggb̄w̄K̄ t̄Z̄ḡv̄ i K̄t̄b̄v̄ P̄t̄j̄ |

N̄t̄ī t̄`L̄t̄Z̄ c̄v̄) w̄ t̄q N̄t̄ī Av̄evi Km̄t̄R̄ī UK̄t̄iv i mḡt̄b̄ awi | ej̄t̄Z̄ c̄īt̄e w̄K̄ NŪt̄e Ges

t̄K̄b̄? t̄`L̄t̄e Km̄t̄R̄ī UK̄t̄iv, t̄j̄ v j̄ w̄d̄t̄q̄ w̄Pīb̄ī Kv̄Q P̄t̄j̄ Av̄m̄t̄e GL̄t̄b̄ c̄w̄ōt̄K̄ī w̄Pīb̄ NĪP̄Ȳī d̄t̄j̄ ckg ev D̄t̄j̄ i Kv̄ct̄oi c̄īḡȲt̄_ t̄K̄ B̄t̄j̄ K̄Ūb̄ M̄b̄Ȳ K̄t̄ī w̄b̄t̄R̄ āȲb̄v̄Z̄K̄ P̄w̄R̄Z̄ n̄t̄q̄t̄Q̄ h̄v̄ī d̄t̄j̄ m̄n̄t̄RB̄ Km̄t̄R̄ī UK̄t̄iv, t̄j̄t̄K̄ Av̄K̄ĪȲ K̄īt̄Z̄ c̄īt̄Q̄ | Kv̄Y F̄Ȳv̄Z̄K̄ Pr̄R̄C̄P̄w̄R̄Z̄ w̄Pīb̄w̄U Km̄t̄R̄ī UK̄t̄iv, t̄j̄ v Dct̄i i w̄_ t̄K̄ B̄t̄j̄ K̄Ūb̄ t̄j̄t̄K̄ Dct̄i i w̄_ t̄K̄ Av̄K̄ĪB̄ K̄īt̄Q̄ | w̄Pīb̄ Ḡt̄P̄t̄ī Km̄t̄R̄ī F̄Ȳv̄Z̄K̄ c̄īs̄t̄_ t̄K̄ B̄t̄j̄ K̄Ūb̄ t̄j̄t̄K̄ Dct̄i i w̄_ t̄K̄ Av̄K̄ĪB̄ K̄īt̄Q̄ | w̄Pīb̄ Ḡt̄P̄t̄ī Km̄t̄R̄ī F̄Ȳv̄Z̄K̄ c̄īs̄t̄_ Av̄K̄ĪȲ K̄īt̄Q̄ h̄v̄ī d̄t̄j̄ Km̄t̄R̄ī UKiv, t̄j̄ v Dct̄i D̄t̄V w̄Pīb̄ī K̄īt̄Q̄ Av̄m̄t̄Q̄ | ḠU n̄j̄ w̄_ i wējr̄ |



চিত্র : চার্জের অস্তিত্বের প্রমাণ

cW 4 : cwi evnx, Acwi evnx | Aa[©]cwi evnx

Avgiv cwi evnx | Aci evnx kā `yui mt_ cwi wPZ | cwi evnx c`v‡_ P Btj KUbmga GK ci givYt_ tK Ab^o
ci givYtZ mn‡RB Pj wPj Ki‡Z c‡ti | thgb avZi we‡kl K‡ti, wmj fvi, Kcvi, A‡vj y‡lbqwg Kve‡ AavZi
ntj | Gi GKwU i€ M‡dvBU we`yr m‡wi evnx |

Acwievnx c` v‡_P t¶† Gi c i gYj B‡j KUb mn‡R Pj vPj Ki‡Z c‡i bv| Z‡e Acwievnx c` v‡_K N‡l
AwnZ Kiv hvq| GQrov hv` B‡j KUb M‡nZ ev evR‡ nq Zvntj| Acwievnx c` v‡_Avavbhj‡ nq| thgb:
c‡_K, M‡n| i ievi |

mbgæZvcgv̄ vq Aa  wi evnx c`v  Acwi evnx gZ AvPiY K  ti | Zvcgv̄ v evor j G  U cwi evnx gZ AvPiY
K  ti | m  avi YZ Aa  wi evnx c`v  nj K  Wb Z  te W  Qz Zij c`v  P i  tq  Q hwi v Aa  wi ewn | w  mj Kb,
Rytg  qyg, M  wj qyg BZ  w   Aa  wi evnx c`v  P D`vniY |

KvR: cwi ewn | Acwi ewn e⁻, kbr³KiY

c̄q̄q̄Rb̄q̄ DcKiY: c̄w̄t̄K̄i w̄Pi w̄b̄, t̄j̄v̄v̄, t̄m̄b̄v̄-i ēv̄i ^Z̄w̄i
ē', K̄P̄, K̄W̄, c̄w̄t̄K̄, t̄Q̄Ū K̄M̄t̄R̄i ŪK̄i v̄

c×WZ: c̄t̄g GKU D̄t̄j i K̄coθiv wPīȳb̄Ūt̄K NĪY K̄vi | t̄ Lv
hv̄t̄e wPīȳb̄Ū t̄Qv̄ K̄M̄t̄Ri UK̄v̄t̄K AvK̄ĪY Kīt̄Q| Gevi wPīȳb̄Ū
t̄j̄v̄vi mȳt̄_ NĪY K̄vi Ges c̄p̄īv̄q K̄M̄t̄Ri Kv̄t̄Q Avb̄t̄j t̄ Lv
hv̄t̄e wPīȳb̄Ū Avi K̄M̄t̄Ri UK̄v̄t̄K AvK̄ĪY Kīt̄Q bv̄ K̄vi Y t̄j̄v̄vi

me`jr cwi evnx ejt wPi**lb** t_#K Btj KUb tjvnitZ `vbušni Z n‡q‡Q| Avevi, cbiq D‡j i Kvco w‡q NI‡Y Ki‡j t`Lte GiU cbiq K‡MiR UKiv‡K AvKI‡Y Ki‡Q| Gevi G Ae^-vq GiU‡K GKvU Kv‡Pi my‡_ `uk‡Kwi‡q cbiq Km‡Ri UKivi K‡Q Avbtj t`Lv h‡te GiU Km‡Ri UKiv‡K AvKI‡Y Ki‡Q| KviY KiP me`jr Acwi evnx nI qvq wPi**lb** Btj KUb mgn `vbušni Z n‡Z cv‡i bvB| Gfv‡te N‡i Aew^-Z newfbœ^-‡K `uk‡Kwi‡q e§i h‡te tKvbvU me`jr cwi ewn Ges tKvbvU Acwi ewn|



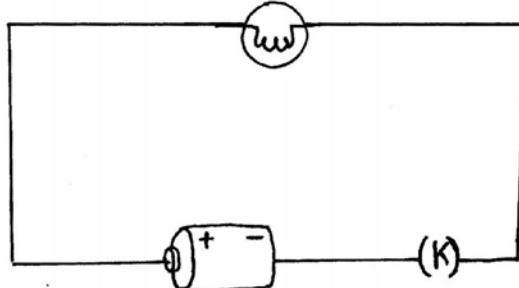
cW N 5 : w' i we`jr ntZ Pj we`jr mWÓ

c^{et}e^o cix[¶]vi mvnvh Avgiv t⁺ tLwQ, c^{et}ó⁺Ki w⁺Piy⁺K D⁺tj i Kvco w⁺ tq N⁺I K⁺i tQwU KvM⁺Ri UK⁺i vi
mvg⁺b ai⁺tj GwU KvM⁺Ri UK⁺i vK AvK⁺ K⁺i | Gici nvZ w⁺ tq w⁺Piy⁺wU úk⁺Ki t⁺j t⁺Lv hvte w⁺Piy⁺wU
Avi tQwU KvM⁺Ri UK⁺i vK AvK⁺ K⁺i tQ bv| Gi t⁺K w⁺K tevSv hvq? tevSv hvq th, w⁺Piy⁺tZ Drcbœ⁻i
we`jr tbB| GB w⁻i we`jr tKv_vq tMj? nv⁺Zi ga⁺ w⁺ tq c^{et}vnZ n⁺q IB we`jr w⁺Piy⁺t⁺K gwU⁺Z P⁺j
tM⁺Q| Gfute th we`jr tKv_b c⁺v⁺ga⁺ w⁺ tq c^{et}vnZ n⁺q GK ⁻vb t⁺K Ab⁻ ⁻v⁺b ev GK e⁻ t⁺K
Ab⁻ e⁻ t⁺Z P⁺j hvq Zv nj Pj we`jr|

GLvþb gþb iLv cþqyRb th, NIþYi dtj tKib e- tZ GKU wþw S I mvgvb cwi grY we`yr ev Avavb
Drcbænq| nvZ ev avZe c`v`w tq -úk©Ki tj GB Avavb mv_ mv_ gwUtz Ptj hvq| Avavb dñi tq
hvævi dtj we`yr cðvn eÜ ntq hvq| myi vs Gfute iay KQ1tYi Rb" we`yr cðvn myó nq| we`yr cðvn
eRvq iLv Rb" tKib Drm t_k Avæng we`yr mieivn _KtZ nq| G weI tq Avgiv cieZtZ Avi |
Avak avi Yv cve|

cW N 6 : mij eZBX I Gi eenvi

gwbjli Pjvi Rb^o thgb ct_i ctqRb, we`jr c_etni Rb^o ctqRb w_b c_ | we`jr c_etni Pjvi GB
w_b c_tK eZBX etj | m_aviYZ we`jr Dr_tmi abizK ct_i t_tK FY_tZK ct_i we`jr c_etni Rb^o
m_auY^cc_tK we`jr eZBX etj | m_aviYZ GB eZBXtZ evj!, e_vUwi, Zt_i i m_anv_b mshy^b v_tK | G_tjv
hLb h^b n_tq eZBX ^Zvi nq | w_bPi wP_tGKU mij eZBX t^c L_tbv n_tjv |



চিত্র : সরল বর্তনী

cW - 7 I 8

w' i I Pj we`jr_tZi eenvi

we`jr c_etni 0_iiv Av_tjv I Zvc Drcr` b Kiv h_bq | Ggb_tK Gi 0_iiv h_wSK K_ti we_vfba_vK_tR m_aub_aK_tv
h_bq | Gevi Av_iiv D_vn_iY m_mmt_e %e`jwZK evj!, UP_cjvBU, Bw_t, w_bUvi, %e`jwZK cvLv I dt_tU_tK_tc
tg_tk_tb w_bKf_te we`jr eenvi nq Zvi m_t_ cwi wPZ n_tev |

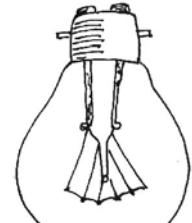
^e`jwZK evj!

Av_iiv mevB GB ev_tj! m_t_ cwi wPZ | `Bw_t tg_tUv Zvi GKU evqy kb^o ev w_bEq
M_m cY_te_tj! evqybi^c g_tLi ga^c w_tq wfZ_ti c_tek Kiv_tbv v_tK | ev_tj! wfZ_ti
Zt_iii `B ct_i m_t_ mi "Ust_t÷t_tbi Zt_i i K_tUj_t mshy^b v_tK | Gu_tK wdj v_tg_tU
etj | GB evj_tK we`jr Dr_tmi m_t_ m_th_tM K_ti j wdj v_tg_tU c_t Zvc Drcr` b K_ti
Ges ev_tj! GB wdj v_tg_tU c_t4w_t Z n_tq Av_tjv we_vKiY K_ti Z v_tK |
UP_cjvBU

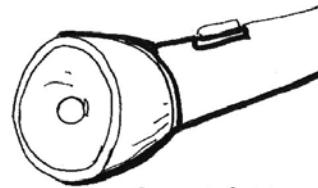
Av_iiv mevB UP_cjvB_tUi m_t_ cwi wPZ | UP_cjvB_tU gjZ e_vUwi i m_t_ tQwU
GKU evj! v_tK | m_tBP w_tc_tj evj! R_tj | GB evj_tei Av_tjvK Q_to_tq t` evi
Rb^o m_tg_tb GKU K_tP eenvi Kiv nq | G t_tl_t U_tPP e_vUwi tZ w' i
we`jr v_tK | m_tBP t` l q_ti ci Zv Pj we`ytZ i ei_vSH Z nq |

^e`jwZK cvLv

^e`jwZK cvLv tZ we`jr c_ent_tK eenvi Kiv gjZ h_wSK K_ti Rb^o |
G_tZ gjZ we`jr kw^btK h_wSK kw^btZ i ei_vSH K_ti cvLv tK Nj v_tbv nq |
G_tZ cvLv M_mZ tK w_bq_tY Kiv Rb^o GKU ti ,t_tui eenvi Kiv nq |



চিত্র : বেদুতিক বাল্ব



চিত্র : টর্চলাইট



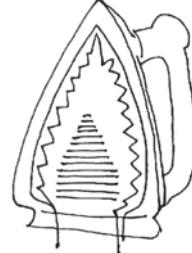
চিত্র : বেদুতিক পার্থা

^e`jwZK wUvi

Avgiv AþþtKB %e`jwZK wñUv|i i mv‡_ cwi wPZ| wñUv|i i g‡a" Acwi evnx c`v‡_P GKwU tMyj PvKwZ _v‡K| PvKwZ‡Z bvB‡mu¤ Zv‡i i KÛj x mwR‡q ivLw nq| we`yr c‡vn Pvj bv Ki‡j Zvi wU Mig nq Ges DËß ntq Zvc weñKi Y Kti | Avgv‡ i evnv evn‡Z ^e`jwZK wñUvi Pvj tq ivbœKiv nq|

^e`yZK Bw^-?

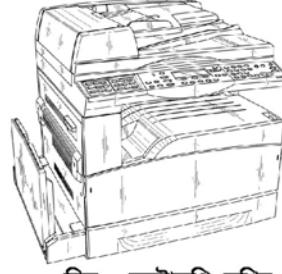
%e`jwZK wñUv‡i gZB Bw-‡i MvB cñvjx GKB| G t¶†† bñB‡µng ZvñU
Bw-‡i wbtPi gmb tjŠn wbgZ ZjñU‡K DËB K‡i | G‡¶†† Zvc Drçv` b we`jr
cñvni lci wof¶kxj | cñvn tevk ntj Bw-, tevk DËB nq|



চিত্র : বৈদ্যুতিক ইন্সি

dѣUvKic тгѡkb

Tzgiv BtZigta" tejbtk tmvtqUvi w` tq Avavbhj³ Kiv t` Ltovi dUvKic
tgiktbI wKsjcjq GKB aiibi NUb NtU _vtK| Gi wfZti gjZ _vtK
GKU Wtg Ges GKU tUbvi | cUtg WtgutK AwmZ ev PwRZ Kiv nq|
PwRZ nlqvi ci GiU GK aiYi AvKIfbi gva"tg tUbvtti i KYvtK
AvKIfbi | dtj dUvKic tgikb tKib Kvijr tj Lvi KmRtk AveKj
Kti Kic Kti tdj tZ cti |



চিত্র : ফটোকপি মেশিন

CW - 9 | 10 : P $\ddot{\alpha}$ K Kx?

Gukqv gvBb^ti g[~]M^blkqv bvgK c[~]₂ tk g[~]Mbvm bv^tg i^vLj ejv K evm Ki Z| tm mviv w` b gv^tV gv^tV tgl
PovZ I mÜ^vtej v ewo wdiz| GKw` b ewo tdivi mgq g[~]Mbvm Zvi j wVwU gwU t₂K Zj tZ wMtq t` Lj
j wVwU DVt^tbv hv^tQ b^vj wVi gv₂v GKwU cv₂ti i mw₂_ AvU₂K Av₂Q| tm j ¶ Kti t` L^tj v j wVi gv₂v
tj wVwU₂K cv₂i wU tU₂b ati Av₂Q| A_ P^t g[~]Mbvm t` Lj tj wnv GB AtPbv cv₂i wU₂K AvK1^tY Ki tQ|
g[~]Mb₂tm₂ bvgvb₂mti GB cv₂ti i bvg Kiv nj g[~]M^bU| g[~]M^btUi evsj v c₂Zkā nj P^tK| Avgiv GI
t` L^tZ tcj vg P^tKi tj wVwU₂K AvK1^tY Kivi ¶gZv Av₂Q| AvK1^tY GK c₂Kvi ej| ej w` tq KvR Kiv hvq|
AZGe, P^tKi KvR Kivi mg^v©Av₂Q| myZi vs P^tK GK c₂Kvi k^v3|

P&K ag[©]

KvR: Praktikum ag[©]

cōq|Rbxq DcKi Y: mv`v KMR, tj vni ,ov, Avj wcb, GKU `Ü

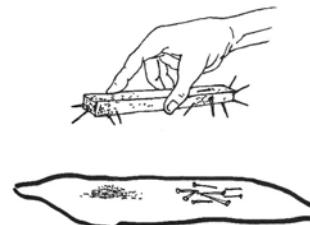
Pr^K |

CxWZ: †Umetji Ici GKwU mv`v KwfR wKQz tjvnvi , ov Nb

K̄ti w̄Q̄M̄t̄q̄ `v̄l̄ | t̄j̄w̄n̄v̄ī ,̄p̄v̄ ev̄ Av̄j̄w̄c̄t̄b̄ī D̄c̄ī Gēv̄ī `Ǖ

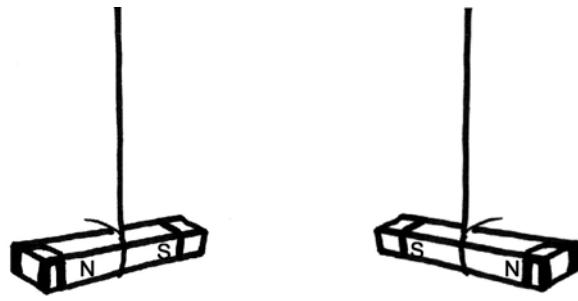
Pz^KuUtk KtqKevi brovPvov Kti DwNtq tdi | Kx t`Ltz

cr^Q | t` Lv hv^Q, tj vni , ov ev wcb, Pz^tKi Mv^q tj tM Av^Q |



fij fite j¶ Ki‡j † L‡Z c‡e tjvnvi , ¶ ev wcb teuk i fMB P‡Kui † Kej gvit † B c‡S-AwUK AwQ| c‡S-‡_‡K hZB gvtSi w‡K hv‡ qv hv‡ ZZB tjvnvi , ¶ ev wctbi cwi giv Kgt‡Z _vtK| nqtZv givSLvtb † Kv‡ wcb ev tjvnvi , ¶ vtK † L‡Qv bv| Gi †_‡K e‡v hvq P‡‡Ki AwKl¶ ¶ lgZv † B c‡S-me‡P‡q teuk| gj Z: GB `¶UB we` B nj P‡‡Ki wfbœ¶U tgi|

Gevi `yū GKB R̄iZxq `ū P̄x^K‡K
 ci-úti i KvQvKwQ Avb | Z̄ig R̄ib bv t̄KvbUv
 t̄Kib tgi" Z̄t̄ i‡K c̄l̄tg GKwU mZv w̄‡q
 ḡSLt̄b tet̄a ḡβf̄te Sij‡q `vI | w̄K
 t̄ LQ? P̄x^KwU ḡβf̄te Sj Š- Ae-`vq
 D̄Ei-`w̄Y w̄K K‡i w̄'i nt̄q Av‡Q |
 P̄x^KwU‡K GKBf̄te Sij‡q `vI | t̄ L̄e
 GKBf̄te P̄x^KwU ḡβf̄te D̄Ei-`w̄Y
 w̄K K‡i w̄'i nt̄q Avm̄te | Gi t̄‡K Avgiv
 m̄xvš-w̄bZ c̄wi th, ḡβf̄te Sj Š-P̄x^K me©v D̄Ei-`w̄Y ḡLx nt̄q w̄'i _‡K



চিত্র : চুম্বকের ধর্ম

Gevi Avgiv `Û Pø^K `ju^K N ev S Øviv tgi" PøyZ Kwi | Gevi cøg Pø^Kui DËi tgi‡K wZxq
Pø^‡Ki DËi tgi‡K v‡Q Av‡bv| Kx †`LQ? weKI¶ Ki‡Q| GKBfv‡e cøg Pø^KU `w¶Y tgi" wZxq
Pø^‡Ki `w¶Y tgi‡K KvQvKwQ Av‡bv| GKB NUbv NU‡Q? nü weKI¶ Ki‡Q| Gi †‡K Avgiv m×vS-‡b‡Z
cwi th, `ju mg‡gi"ci úi‡K weKI¶ K‡i |
Gevi cøg Pø^‡Ki DËi tgi‡K wZxq Pø^‡Ki `w¶Y tgi‡K v‡Q Avb| Kx †`LQ? GKBfv‡e wZxq
Pø^‡Ki DËi tgi‡K cøg Pø^‡Ki `w¶Y tgi‡K v‡Q Avb| Gi ci úi‡K Lø mn‡RB Kv‡Q tU‡b
wbtq‡Q? Guv †‡K Avgiv m×vS-‡b‡Z cwi th, Pø^‡Ki wecixZ tgi"ci úi‡K AvKI¶ K‡i | myZi vs
Pø^‡Ki mg‡gi"ci úi‡K weKI¶ K‡i Pø^‡Ki wecixZ tgi"ci úi‡K AvKI¶ K‡i |

CW - 11 :

†PŠOK | A†PŠOK C`V ©

ProperK Konx mKj c`_v_EKB AllKIg Konte? but, ProperK mKj c`_v_EK AllKIg Konti but| ProperK conbZ thev, wortKj , there*ve* Ges AllaKvsk ÷ xj theK AllKIg Konti | GB c`_v_Ctj wortK theProsectK c`_v_Cetj | Alleri AllbK c`_v_EK ProperK AllKIg Konti but thgb: Kv*er* , Allv j*ung*bqvg, worCzj , ^Y^C wormj f*er* , cvi` BZ^w` | Gi*er* ntj v AllProsectK c`_v_E

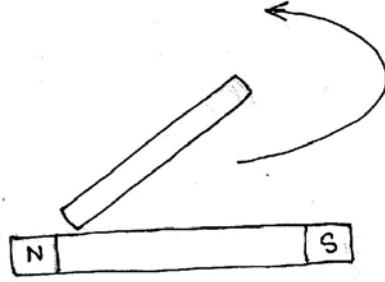
KvR: tP\$o^K | Atp\$o^K c`_l_@PwýZKiY
 c@q@Rbxq DcKiY: GKU Pz^K | wbRMjni weifbae~
 c@WZ: Pz^KU Avj@v Avj@vfite c@Z^KU e~ i mg@b ai | t L tKvb@tK Pz^K AvKI@ Kti
 tKvb@tK Kti bv| Gevi wb@pi QKU c@Y Ki |

Mjni weifbae~ i bvg	Pz^K AvKI@ Kti Kbv	tKb ai@bi c`_l_?

CW - 12 | 13

tP\$o^K c`_l_@K Pp@tK i@vS+
 K@g Dcv@q weifbae~te Pz^K c@' Z Ki v hq| wb@goNI@ c@WZ | %e`_j@ZK c@WZ Av@j@Pbv Ki v ntj@|
 NI@ c@WZ

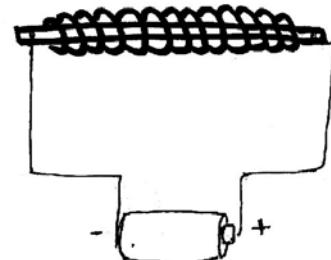
GB cix@_l@i Rb@` i Kvi GKU `U Pz^K | GKU tj@nvi
 `U | `U Pz^KU th tKb GKU tgi"0viv tj@nvi `t@i GK
 c@S-t@K Ab@ c@S@ ch@S@ N@l bv| Gf@te evi evi
 Ki@Z _vKb| GKU wcb@K tj@nvi `t@i K@Q @uk@Ki@j
 GUv Kx wcb@K AvKI@ K@Q? Gf@teB NI@ c@uqvq tj@nvi
 `U Pz^K c@iYZ Ki v nq| h@ Pz^KU i D@i tgi"0viv
 NI@ Ki v nq Z@e t`Lv h@e, c@_g th c@S@ t@K NI@ i@"
 n@e `t@i tmL@t@b D@i tgi"ges tkI c@S-`m@Y tgi@
 m@o n@q@Q|



ଚିତ୍ର : ସର୍ବଣ ପଦ୍ଧତି

^e`_j@ZK c@WZ

GKU t@nvi tc@iK bv| Gevi evR@i wKb@Z c@l qv hq Ggb
 m@aviY ^e`_j@ZK Zvi w@t@q tj@nvi tc@i@K tcr@t@q KEjx ^Zvi
 Kti@| Gevi Zvi `B c@S@K GKU e@Uvi i `B c@S-h@B Kib|
 Gevi GKU Avj@cb tc@i@K th tKb c@S-Avb@j t`Lv h@e
 tc@iKU Avj@cb@K AvKI@ K@Q| Z@or c@vn e@U Ki@j tc@iKU
 Avj@cb@K AvKI@ Kti bv| GUv t@K w@S-t@b@l qv hq, tc@iKU
 A`_vq@ Pz^K c@iYZ n@q@Q| Gi g@_v w@f@P Ki@e c@vnZ e@U@i i me`_j@r c@vn@i Dci |



ଚିତ୍ର : ବୈଦ୍ୟତିକ ପଦ୍ଧତି

CW_exi †PŠ¤^K †¶†

GKU `Ú Pz^K‡K myvi mvnth` Sij tq w`‡j w`i Ae`vq Zv me mgqB DEi `w`‡Y g‡L K‡i _‡K|
c‡_exi Pz^K‡Zj Rb`B G iKg nq| GKU tMy‡Ki g‡a` GKU `Ú Pz^K i‡L‡j thgb AvPiY †`Lv hvq
c‡_exi tP§‡`K AvPiYI tm iKg| c‡_exi me RvqM‡ZB f-Pz^‡Ki c‡vle eZ@yb| Sj Š-Ae`vq `Ú
Pz^‡Ki `B tgi`c‡_exi `B tP§‡`K tgi‡K mb‡`R K‡i| GLv‡b `Ú Pz^‡Ki DEi tgi“DEi w`K‡K
mb‡`R K‡i | w`‡KŠyGKU DEi tgi“me©v`w`‡Y tgi‡K AvKI‡Y K‡i| d‡j f-Pz^‡Ki `w`‡Y tgi“Avm‡j
DEi tgi“mnm‡te KvR K‡i |

GB Aa “ ¶ q ¶ kL v bZb kā

PvR[©] w̄' i wē'jr | Pj wē'jr, cwi evnx, Acwi evnx | AaÜ[©]wi evnx, mij eZðx, tPšx^K c`v[©], Atpšx^K c`v[©] f-Pp^K

GB Aa “ ” q h w k L j v g

- NI[¶]i dtj bZb tKb Avavbi m^o nq bv eis c`n[¶] gta" we[¶]"gvb Avavb GK e⁻ t[¶]K Ab⁻ e⁻ tZ "v[¶]v[¶] Z nq |
 - mgag[¶]Avavb ci⁻ui[¶]K weK[¶]I[¶]K[¶]i I weci xZag[¶]Avavb ci⁻ui[¶]K AvK[¶]I[¶]K[¶]i |
 - we[¶]jr c[¶]vn eRvq ivLvi Rb⁻ tKb Drm t[¶]K Aweivg we[¶]jr mieivn _vK[¶]Z nq |
 - GK[¶]U mij eZ[¶]D[¶]tZ we[¶]jr mKj Astk mgf[¶]te c[¶]vnZ nq |
 - P[¶]tKi `B tgi[¶] AvK[¶]I[¶]P[¶]gZv teik |
 - P[¶]tKi mg[¶]gi"ci⁻ui[¶]K weK[¶]I[¶]K[¶]i Ges P[¶]tKi weci xZ tgi"ci⁻ui[¶]K AvK[¶]I[¶]K[¶]i |
 - GK[¶]U `U P[¶]tK[¶]K my[¶]vi m[¶]vn[¶]h⁻ S[¶]j tq w[¶]tj w[¶]'i Ae⁻vq Zv me mgqB D[¶]Ei `w[¶]Y glx ntq _v[¶]K | c[¶]lexi P[¶]tK[¶]Zj Rb⁻B G iKg nq

Abjxj bx

kb--'vb c!Y Ki :

msw|B DËi cËe

1. Avavtbi DrwE nq Kxfvte?
2. ^e`jwZK ejj!Kxfvte Aitj v Qoq?
3. tPšx^K c`l_FK Kxfvte Pz^tK i evšt Ki v hvq?

eùmbePnbo cËe

1. ^e`jwZK cvLvg ti , tjUi e'envti i DfI k' ntjv-

K. cvLvi AvqP<ij ePx

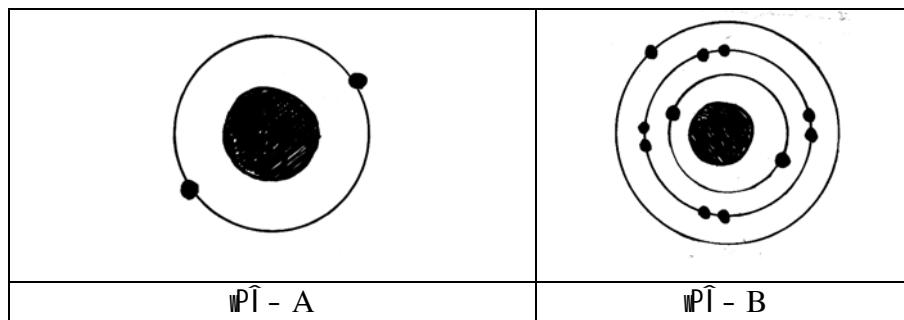
L. kã Kgvtbv

M. MwZ wbqSj

N. we`jr LiP Kgvtbv

2. tPšx^K atgP Dci wfwE Kti wbPi tKib tgSj mgm GKB `j fB?
- | | |
|--------------------------|------------------------------|
| K. wbPi , wnj fvi , Kvri | L. ^Y^tKvevë , wnj fvi |
| M. tKvevë , tjvnv , wbPi | N. tjvnv , cvi , A^yj wnbqvg |

wbPi wP̄ - jUv fufj vfitte jP̄ Ki Ges 3 | 4 bax^i cöké Reve `vI |



3. A wP̄t̄i ^ekó ntjv- GiU

- | | | |
|------------------|-----------------|-----------------------|
| i. PvRabitcP | ii. abwZK PvRnB | iii. PvRtP fvi mwgñxb |
| wbPi tKvbu mñVK? | | |
| K. i | L. ii | M. iii |

4. A I B wP̄t̄i tP̄t̄ -

- | | |
|----------------------------|----------------------------|
| K. A FbiZK PvRnB | L. B abwZK PvRnB |
| M. A I B Gi gta" AvKI\P nq | N. A I B Gi gta" weKI\P nq |

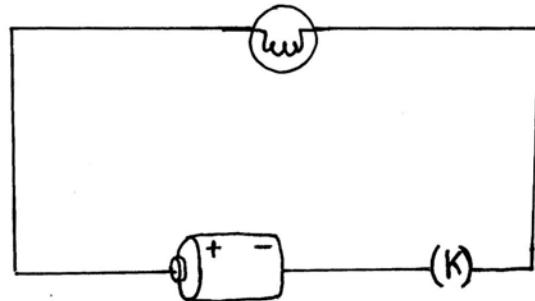
mRbkxj c̄kœ

1. m̄wgnvi w̄bKU GKwU ` ÚPz^K AñQ | tm NIΨ c̄lq̄q GKwU Pz^K | ^e` j̄wZK c̄xwZtZ AñiKwU
Pz^K ^Zwi Kij |
K. tPšx^K c̄v_@KtK eñj ?
L. c̄w ex GKwU weiwU Pz^K eñLñ Ki |
M. 1g Pz^K ^Zwi i tKškj eYñ Ki |
N. 2q c̄Ktii i Pz^KwU kñ3kjx nñj | ¶Y-’vqx- Dw3wU metkH Ki |

2.



(1)



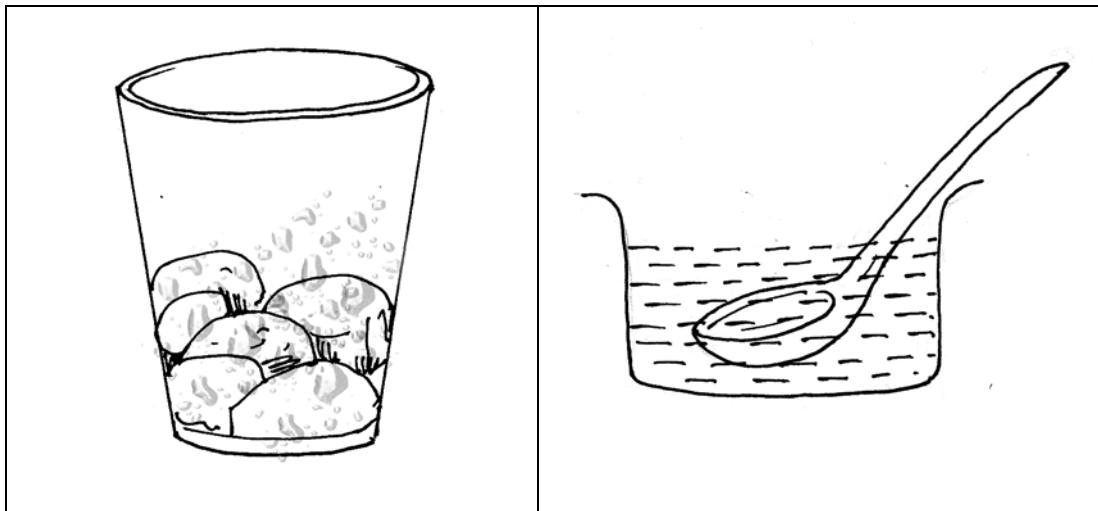
(2)

- K. w̄'i Zwor KtK eñj ?
L. avZwé`jr c̄w evnx nq tKb? eñLñ Ki |
M. 1 b¤^i wPtñ i htšç i Kihñej eYñ Ki |
N. 2 b¤^i wPtñ `B aiñbi we`jñZi Dcw-’wZ j ybxq | tPñ Dñj LœK metkH Ki |

GKr` k Aa"iq

cwi cwkR cwi eZD | newfbəNUbv

Avgit` i Pri cirk cÖZ gütZ©bvvi i Kg cwi eZD NtU hñtQ| Gt` i tKvb tKvbvi Avgit` i Rxeb avi tYi Rb AZ'ek Kiq Avevi tKvb tKvbvi nqZ bvbwia ¶zi Kvi YI ntZ cti | cKwZtZ NUv G mKj bvbwib NUbvi gva"tg newfbæc` vt_P tfSZ | i vvwqbK cwi eZD mwaZ nq|



GB Aa"iq cW tk‡l Avgiv

- cKwZtZ msMwZ newfbəNUbvi tfSZ | i vvwqbK cwi eZD e"vL"v Ki tZ cve|
- avZmsi ¶tYi cÖqvRbxqZv Dcj wX Kie|
- i vvwqbK wuqv Ges cwi eZbi wKQye"enwi K cÖqm t` LvtZ cve|
- j MZ KrR mncwVt` i e³e" ibtev, muq Ask MhY Ki tev Ges wmxvS-MhY mnthwMzv Kie|
- ci¶Y Krhptg cÖqvRbxq wbivcEvgj K e"e"v MhY mtPZb _vKtev Ges Ab"t` i mtPZb Kie|
- ci¶Y Krhptg e"eüZ hšcwZ mwK e"enwi m¶g ne|

cW 1: Mj b I Cúlb

KvR: GKU tQJU cVt̄i wKoy ei tdi UKiv ti tL wKoY AfcPv
 Ki | wK NUtQ? eid axt̄i axt̄i Mjt̄i cwbZ cwi YZ nt̄"Q| Av"Qv
 ej Z cwb I eid wK GKB c`v_@bv wfbaefbaec`v_? cwb I eid
 GKB c`v_@ Giv wfbaefbaec`v_@bq| Gt̄ i Ae"v i ay wfbaefbaec`v_@bq
 hLb cwbI AvKv̄i AvtQ, GUJ Zij Ae"v Avi hLb eid AvKv̄i
 AvtQ, GUJ nt̄j v Kwb Ae"v|



MP̄ : eid mn Mm

c`v_@K Kwb t_@K Zij Ges Zij t_@K Mvmxq Ae"v q cwi YZ Kivi mgq Zv̄ci tkvI Y nq, Avevi
 Mvmxq t_@K Zitj I Zij t_@K Kwb t_@K Zitj i evšti i mgq Zv̄ci wbmgb NtU|
 eid Mjt̄i cwb nl qvi GB cwi eZ@ thLvtb i ayAe"v i cwi eZ@ ntqfQ, Zv̄tK tfSZ cwi eZ@ ej v nq|
 cwbZ Zic w_@tj wK nq? cwbI Zicgv̄i evotZ _@tK Ges GK ch@q cwb dtutZ _@tK| Zv̄ntj cwbI
 Cúlb wK tfSZ cwi eZ@? n", AekB GUJ GKU tfSZ cwi eZ@, Kvi Y Gi dtj cwb tKejgv̄i Zij
 Ae"v t_@K evt̄"u ev Mvmxq Ae"v q cwi YZ nt̄"Q, GUJ bZb tKvb c`v_@cwi YZ nt̄"Q bv Ges Gi atgP
 tKvb cwi eZ@ NUtQ bv|

Avevi GKU eo KMFR tKtU hw` Avgiv KtqGU tQJU tQJU
 UKiv cwi YZ Kvi, Zv̄ntj GB cwi eZ@ wK tfSZ cwi eZ@
 ej e? n", GUtKI tfSZ cwi eZ@ ej e, Kvi Y Gi dtj KMFRi
 AvKvi i aytQJU ntqfQ wKšyGU GKB c`v_B i tq tMfQ Ges Gi
 atgP tKvb cwi eZ@ nqwb|



MP̄ : eo KMFR I KMFRi UKiv

Zv̄ntj th mKj tP̄t̄i cwi eZ@bi dtj msuk@ c`v_@P Ae"v i
 ev AvKvi AvKv̄iZi cwi eZ@ NtU wKšyZb c`v_@P mpo nqbv I
 c`v_@P atgP tKvb cwi eZ@ nqbv, Zv̄tK tfSZ cwi eZ@ ej v nq|

cW 2: avZi P̄q

tjvnvi ^Zvi iW tZvgiv mevB tPb| tjvnvi iW, wKoY b evBti tdtj iLtj Gi Dci gwi Pv cto I iW
 Avt̄ - Avt̄ - P̄q ntq hvq| tZvgiv wK Rvb gwi Pv Avmtj wK Ges wKfvté GUJ ^Zvi nq?

KvR : GKU cVt̄i AtaR cwi gyY cwb bvI | tc̄ti GU mveavtb Avt̄ - Kti cVt̄i cwbZ wewl |
 cVt̄i w_@y wZb w_@tbi Rb_@ t_@L_@vI | tc̄ti GUtZ tKvb cwi eZ@ tL_@Z cr"Q? n", tc̄ti tKi Dci fvtM
 gwi Pv ctoQ|

tjvnvi GB th, cwi eZ@ ntj v A_P gwi Pv coj GU wK ai tbi cwi eZ@? GU wK tfSZ cwi eZ@? GLvtb
 tjvnv evZtmi Aw tRb I cwbI mvt_ wevq Kti cwbh@ tdi K A· vBW ($Fe_2O_3 \cdot 3H_2O$) ^Zvi Kti |
 GB cwbh@ tdi K A· vBW ntj v gwi Pv| Zv̄ntj tL hv"Q tjvnv cwi eZ@ ntq wfbaec`v_@tdi K
 A· vBtW cwi YZ ntqfQ hvq ag@jvnvi t_@K m@uY wfbaefbaec`v_@tdi K

GB mKj cwi eZB thLvtb GK GKwaK c`v_©cwi eZB n‡q wfbaag®bZb c`v_©cwi YZ nq Zv‡` i‡K i vvwqwbK cwi eZB e‡j |

gwi Pv‡Z GKuNiv jM‡j B GwU L‡m c‡o hvq | A_® gwi Pv covi d‡j tjvni ¶q nq |

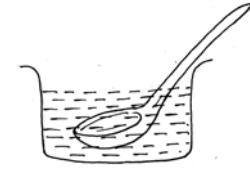
tjvni g‡Zv Abv b avZe c`v_® (thgb Gjgwbqvg I Zvgv) evZv‡m ti‡L v‡tj ¶q n‡Z c‡i | Z‡e wKQy wKQyavZe c`v_®thgb- tmvbi, cwUbvg G,tjv tLvj evZv‡m ivL‡j | ¶q nq bv| tm Kvi‡Y Giw Mnby ev KLb KLbI gy‡t^Zv‡Z e^euZ nq |

cW 3 : tÓBbtj m óxj

Av'Qv tZvgiv wK Rvb tÓBbtj m óxj wK Ges G‡Z gwi Pv c‡o wKbv?

tjvni m‡_ KveB, wb‡Kj I tmuwgqvg wkgv‡j tÓBbtj m óxj ^Zv‡i nq | GwU gjZt GK ai‡bi wkgvY | tÓBbtj m óxj tjvni tP‡q A‡bK ,b gRe‡ I k³ nq | Avi gRvi e^vci n‡jv G‡Z tjvni g‡Zv gwi PvI c‡obv | Givi ci¶v K‡i Zv t^Lv hvK |

KvR: GKwU c‡i †i `B-ZZxqsk cwb wb‡q Zv‡Z tÓBbtj m
óxj i GKwU Pv‡P weKv‡i i cwb‡Z wv‡l I K‡qKw` b ti‡L
`vI | Pv‡P wK gwi Pv c‡o‡Q? bv, c‡ob, Kvi Y tÓBbtj m
óxj tjvni _vK‡j I Gi ag^we‡i x tjvni t‡K Avjv`v e‡j GwU
Av‡tRb I cwb‡i m‡_ we‡q K‡i gwi Pv ^Zv‡i K‡i bv |



wP† : Pv‡P I cwb‡i c‡i

tZvgiv evmv ewo‡Z avZe c`v_®‡q ^Zv‡i bv bv i Kg wRbmc‡i Zv‡i Kv evbvI I t^L G‡`i g‡a‡
tKv‡i t‡jv ax‡i ax‡i ¶q n‡q hv‡Q Avi tKv‡i t‡jv ¶q n‡q hv‡Q bv | tKb GgbwU n‡Q Zv‡i wP‡v‡Ki |

avZe c`v_®g‡n µg‡MZ ¶q n‡Z _vK‡j GK ch‡q Zv e^env‡i i Ab‡t‡hMw n‡q co‡e | wKšyhv` Avgiv G
mKj avZe c`v_®e^env‡i m‡PÓ nB Ges G‡` i‡K thb‡Zb fv‡e e^envi bv K‡i h_v‡cv‡hv³ fv‡e e^envi
Kvi Zv‡j wKšyGB ¶q t‡va Kv‡i th‡Z c‡i | thgb ai tjvni ^Zv‡i wRbmc‡i h_v- nvZv‡o, tc‡i K,
BZ_w` cwb t‡K `‡i ev h_v m‡‡i K‡b‡v Rv‡Mq ivL‡j cwi | Avevi A‡bK mgq G‡` i‡K ^Zj ev M‡R
wf‡R‡q ivL‡j | gwi Pv cov ev ¶q n‡q t‡K i¶v K‡i hvq |

GLb c‡k‡ntZ c‡i th mKj avZe c`v_®¶q nq Zv‡`i ¶q wKfv‡e t‡va Kv‡i hvq?

avZi ¶q‡tva Kv‡i K‡qKwU Dci‡q n‡jv Mv‡j fv‡vB‡Rs, tcB‡Us I B‡j K‡U‡c‡Us | GLb Avgiv G‡`i
m‡‡‡K‡R‡b t‡b |

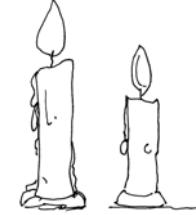
Mv‡j fv‡vB‡Rs : Avgiv‡`i ^`b‡b Rx‡bi wewbawK‡R Avgiv wRsK ev ^`v‡i e^envi K‡i _wK | Gi g‡a‡
AbvZg n‡jv Mv‡j fv‡vB‡Rs | tjvni ^Zv‡i ^`v‡i m‡‡‡i Dci ^`v‡i cvZjv Av‡`i b‡q‡K Mv‡j fv‡vB‡R‡b
e‡j | Mv‡j fv‡vB‡Rs Gi d‡j wRsK evZv‡mi Av‡tR‡bi m‡_ we‡q K‡i wRsK A‡vB‡Wi Avei b‡v ^Zv‡i
K‡i hv‡i t‡v‡K evZv‡mi Av‡tR‡b I cwb t‡K i¶v K‡i | d‡j gwi Pv co‡Z c‡i bv | tjvni ¶q‡i nq
bv | ^`v‡i e^`tj w‡b w‡q‡i A‡bK mgq Avei Y w‡q‡i avZe c`v_®K ¶q n‡Z i¶v K‡i hvq |

tcBՈUs : tcBՈUs ev is KՈi I avZe c`_figՈni ՊՈq tiva Kiv hq| evvi տՈndRՈt iUi , Avj gwi , MՈo , ՕՈxj i AmevecՈ GmeB is Kiv nq tcBՈU վՈ tq GՈ i ՊՈq tiva Kiv Rb| GB tcBՈU mgՈqi mvՈ_ mvՈ_ bՈ nq thՈZ cՈi | tmՈt ՊՈt hZ `Z mՈe Avevi cՈivq tcBՈUs KՈi tbqv fyj |

BՈj KՈUttcՈus: BՈj KՈUttcՈus nՈj v Zvor wekHՈYi mvnՈh GKՈU avZi Dci AvՈi KՈU avZi cՈZj v Avei Y ^Zvi i cՈuqy| GB cՈuqyq mvavi bZ mbKj , tmuqgqg , wJb , wJj fvi | tmvbv վՈ tq Avei b ^Zvi Kiv nq| GՈZ GKՈW tK thgb avZi ՊՈq tiva Kiv hq AbwՈK tZgub AvKl ՊՈq | PKPՈK nq| Lve*Ո*i tKShv , mwBՈKj G , tՈj vi ՊՈt ՊՈt tJ vnv ev wՈdivi Dci wJbi BՈj KՈUttcՈus Kiv nq |

cW 4: `nb

KvR : 11U վՈ qvjkvB KvW վՈ tq tgvgewZ Ryj vI | fyj fute j ՊՈ Ki մK NUtQ? tgvgewZi GKU Ask Av , tB cՈo hvtQ Ges Aci AskwU MՈj tgvgewZi Mv tefq bxP*Ո*i վՈ tK bigtQ Ges Rtg hvtQ | th Ask cՈo hvtQ GiU մK ai tbi cՈi eZD? Avevi th Ask MՈj bxP*Ո*i վՈ tK cՈo Rtg hvtQ tmvB ev մK ai tbi cՈi eZD?



ՊՈt : tgvgewZi `nb

tgvtgi GKՈU Ask MՈj mj tZi ga վՈ tq MՈq Av , tB cՈo hvtQ | tmLvtb tgvgewZ evZvtmi Aw tRtbi mvՈ_ weqy KՈi KveBWBA . vBW | cwbZ cՈi YZ nvtQ Ges mvՈ_ mvՈ_ Avtj vI Zvc kw³ DrcbaKՈi tQ | DrcbaKveBWBA . vBW eYvxb etj Ges cwb eYvxb | evvxfZ nq hq etj Avgiv GՈ i tK tLz cVb bv | Zvnjtj tgvgewZi GB cՈi eZD AekB iwmqibK cՈi eZD | KviY Gi dtj tgvgewZi tgvg mոuY@fbce agx³bZb c`v _KveBWBA . vBW | cwbZ cՈi YZ nvtQ | AbwՈK th AskwU MՈj bxP cՈo Rtg hvtQ tmvU մKš' iwmqibK cՈi eZD bq , tfSZ cՈi eZD , KviY GLvtb Zvtc tgvg Mtj Avevi AvMi Ae`vqB wd*Ո*i GtmՈQ Ges GՈZ Gi atgP tKvbB cՈi eZD nqib |

tgvtgi GB iwmqibK cՈi eZD thLvtb GiU evZvtmi Aw tRtbi mvՈ_ weqy KՈi Zvc kw³ DrcbaKՈi tQ GiU tK ejv nq `nb /

Avgiv evvi ewotZ Pjvq cՈIKZK Mv m cjofq ev Lvo վՈ tq th ivb*Ո*e Kvi tmvU մKshGK ai tbi `nb cոuqy| GLvtb Mv ev Lvo evZvtmi Aw tRtbi mvՈ_ weqy KՈi c*Ո*p i Zvc kw³ DrcbaKՈi hv վՈ tq Avgiv Lvevi ivb*Ո*e Kvi | GKBfute Kqj v ev Kvi tcvovtvl `nb Qrov մKQB bq |

tZvgiv մK Rvb Avgit i Lvevi մKfute nRg nq ev Avgiv th bv*Ո*v i Kg KvR Kvi Zvi Rb GZ kw³ tKv _ t_K Ges մKfute cVb ?

Avgiv th bv*Ո*v i Kg Lv` LvB Zv cVk` jxZ MՈq Rgv nq | tmLvtb GiU wb: kytmi mvՈ_ MՈY Kiv Aw tRtbi mvՈ_ bv*Ո*v i Kg GbRvB*Ո*gi Dcw`wZtZ weqy KՈi c*Ո*p i Zvc kw³ DrcbaKՈi | GB Zvc kw³ tK KvR jwmqB Avgiv bv*Ո*v i Kg KvR Kvi | hv` Zvc kw³ Drcba*Ո*v ntZv , Zvnjtj Avgiv kw³ i tcZig bv , tKvb KvR i KifZ cVg bv | Zvnjtj ՊՈo th , th cոuqy Avgiv Lvevi t_K kw³ cVb , tmvU GK ai tbi `nb cոuqy |

Avgiv h^w `xN^cmgq Lvevi bv LvB Zntj wK NtU? Avgiv k^w³l cwb bv| KvRI Ki^tZ cwi bv| Kvi Y Lvevi bv tL^tj cV^tK`j^tZ `nb eÜ ntq h^wq| dtj Zick^w³ Drcv` bI t^tg h^wq Avi Avgivl tKvb k^w³ cwb bv| mKj `nb c^wqB i v^wqB K cwi eZB|

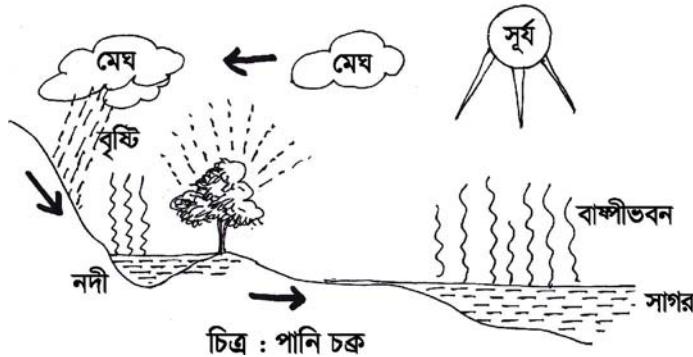
cW 5-6 : mv^tj vKms^tkH, cwb Pμ, Kve^t Pμ | Aw^t tRb Pμ

mv^tj vKms^tkH : tZgiv Rb th, mv^tj vKms^tkH Yi gva^tg M^wQcyj v m^th^w Avtj vi mvn^th^w tRt^t i Lvevi ^Zwi Kti | wKf^te GiU NtU Zv wK tZgiv Rb? GiU tfSZ bv i v^wqB K cwi eZB? mv^tj vKms^tkH Y M^wQcyj v Avtj vi mvn^th^w evZt^tm _Kv KvebWB A· vBW I cwb (Rj xq ev^tu) gta^w w^wq M^wKvR I Aw^t tRb ^Zwi Kti | Drcb wKvR M^wQcyj vi te^to DVvi KvtR j^wM Avi Aw^t tRb Avgt^t i wbtk^tmi KvtR j^wM |



Zntj t^t Lv h^wQ th, mv^tj vKms^tkH b Drcboc`v^wA^wM^wKvR I Aw^t tRb, w^wqK c`v^wKvebWB A· vBW I cwb t^tK m^wY^wAvj v v I wfbægx^w tm Kvi t^tY GiU GKvU i v^wqB K cwi eZB, tfSZ cwi eZB bq| h^w mv^tj vKms^tkH bv NU^wZv Zntj wK ntZv? Avgiv wbtk^tmi Rb^w ch^wB Aw^t tRb tcZg bv| Zntj Avgiv ej t^tZ cwi mv^tj vKms^tkH Ggb GKvU i v^wqB K cwi eZB h^w Avgt^t i tetP^w _Kvi Rb^w Acwi nh^w

cwb Pμ : tZgiv wK Rb cwb Pμ wK? cwb Pμ ntj v Ggb GKvU Pμ thL^tb Avgiv Rb^wZ cwi cwb wKf^te Ges wK wK c^wqB GK^w t^tK Ab^w t^tK Ab^w ev GK Ae^w t^tK Ab^w Ae^w q PμvKv^ti Pj vPj Kti | wbtg^w wP^t -G cwb Pμ t^t L^tb v ntj v :



cwbP^tμ R^wZ AwZ , i Zc^wC^wK^wqKvU cwi eZB nt^wQ ev^wfeb, Nbxf^web, ev^wO, c^wl^wb, T^wi Y| G^w i tKvbvU wK ai^tbi cwi eZB t^t Lv h^wK |

ev^wfeb : G c^wqB b` - b`x, Lv^w - wej | mgj t^tK m^th^w Zt^tc cwb ev^wfeb ntq Rj xq ev^tu cwi YZ ntq evqgEt^tj c^wek Kti | tZgiv ej Z ev^wfeb wK tfSZ bv i v^wqB K cwi eZB? GiU Aek^wB GKvU tfSZ cwi eZB Kvi Y G^wZ cwb i ayZij Ae^w t^tK ev^tu cwi YZ ntqf^wQ, wfbæagP^wtKvb bZp c`v^wZwi nqB |

Nbxfeb: er[®]ūxfetbi d[†]j m[†] Rj xq er[®]ū μgMZ Dc[†]i DV[†]Z _[†]K thL[†]b Zicgv[†] v Zj bvgf Kf[†]te Kg| d[†]j GK ch[†]q Rj xq er[®]ū NbxZ n[†]q c[†]bi tQ[†]U tQ[†]U KYv ev tg[†]N c[†]i YZ nq| Rj xq er[®]ū t[†]K tgN %Z[†]i c[†]uq[†]WB n[†]j v Nbxfeb| GiUI GK[†]U t[†]SZ c[†]i eZ[†] Ges gj Z ev[®]ūxfetbi wecixZ| GB c[†]uq[†]q c[†]bi tKej g[†]v[†] er[®]ū t[†]K Z[†]i j c[†]i YZ n[†]"Q, Gi at[†]gi tK[†]b c[†]i eZ[†] n[†]"Q bv|

c[†]-^b : GB c[†]uq[†]q M[†]Qcyj v c[†]bi tQ[†]to t[†] q| GiUI GK[†]U t[†]SZ c[†]i eZ[†] | Kvi Y G[†]Z c[†]bi M[†]Q t[†]K ev[®]ūK[†]i evqg[†]Ej c[†]ek Ki[†]Q, bZ[†]b tK[†]b c[†]v[†]mp[†]o n[†]"Q bv|

t[†]cm[†]ctUkv[†]b ev ei[®]ocvZ: GB c[†]uq[†]q tgN t[†]K ei[®]o nq| GiUI GK[†]U t[†]SZ c[†]i eZ[†] | Kvi Y G[†]ZI t[†]K[†]b bZ[†]b c[†]v[†]mp[†]o n[†]"Q bv|

Bbwdj t[†]Ukv[†]b/P[†]i Y: ei[®]o n[†]j Gi GK[†]U Ask g[†]uji ga[†] w[†] tq ax[†]i ax[†]i tb[†]g g[†]uji wb[†]Pi c[†]bi -[†]i Rgv nq Ges GiU[†]K P[†]i Y ev Bbwdj t[†]Ukb ej v nq| Aci Ask c[†]enZ n[†]q b[†]-b[†]x ,Lvj wej ev mg[†]-^M[†]q c[†]to| GQovl ei[®]ocvZi GK[†]U Ask w[†]K[†]i i g[†]a[†]tg M[†]Q P[†]j hvq|

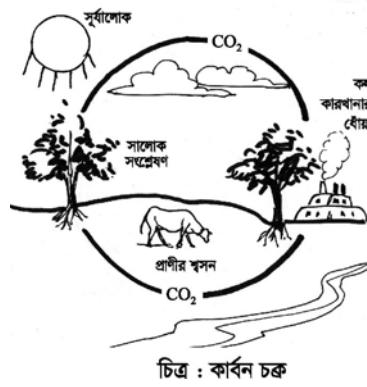
Kve[®] P[†]mu : Kve[®] P[†]mu g[†]a[†]tg Avgiv gj Z t[†]L[†]Z c[†]B w[†]Kf[†]te Kve[®]WBA. vBW c[†]K[†]Z[†]Z GK g[†]a[†]g ev Ae[†]-v t[†]K Ab[†] g[†]a[†]g ev Ae[†]-v P[†]mu K[†]i Nj[†]Z _[†]K | wb[†]g[†]e P[†]† Kve[®] P[†]mu t[†]L[†]bv[†]n[†]j v:

t[†]Zgiv w[†]K e[†]stZ c[†]i Q GL[†]b w[†]K ai[†]bi c[†]uq[†] ev c[†]i eZ[†] R[†]oZ? GL[†]b R[†]oZ c[†]i eZ[†]mg[†]ni g[†]a[†] GK[†]U n[†]j v m[†]j vKm[†]stj H| t[†]Zgiv Av[†]MB tR[†]bQ th, GB c[†]uq[†] M[†]Qcyj v evZ[†]mi Kve[®]WBA. vBW I c[†]bi t[†]K m[†]hP Av[†]vi m[†]nv[†]h[†] Zv[†]i L[†]evi A_vr M[†]H[†]K[†]R ^Z[†]i K[†]i Ges Avg[†]i Rb[†] A[†]v Rb[†] ^Z[†]i K[†]i | t[†]Zg[†]i w[†]K g[†]b Av[†]Q G[†]U w[†]K ai[†]bi c[†]i eZ[†]? GB c[†]uq[†] g[†]a[†]tg Kve[®]WBA. vBW evqg[†]Ej t[†]K D[†]W[†]C[†]i i k[†]xi c[†]ek K[†]i | Kve[®] P[†]mu GK[†]U ,i Z[†]c[†]Y arc n[†]j v M[†]Qcyj v t[†]K Rxevk[†] Rj[†] wb[†]Z i ev[†]st[†] | D[†]W[†]C[†] ev M[†]Qcyj v g[†]i t[†]M[†]j G[†]i t[†]ne[†]k[†]I e[†]vK[†]U[†] q[†]i m[†]nv[†]h[†] tf[†]½ hvq Ges GK ch[†]h Rxevk[†] Rj[†] wb[†] w[†]tm[†]e fM[†]F Rgv nq| Avg[†]i A[†]vZ e[†]eY[†]Z c[†]K[†]ZK M[†]v[†]m, Kqj v tK[†]i w[†]mb ev tc[†]U[†]j GmeB GB c[†]uq[†] ^Z[†]i nq| Z[†]e g[†]Z M[†]Qcyj v e[†]vK[†]U[†] q[†]i w[†] tq hLb fv[†]½ ZLb Gi GK[†]U Ask mi[†]vw[†]i Kve[®]WBA. vBt[†]W c[†]i YZ n[†]q evqg[†]Ej c[†]ek K[†]i | Rxevk[†] Rj[†] wb[†] ^Z[†]i n[†]l q[†]i n[†]l q[†]i mg[†] w[†]K ai[†]bi i ev[†]st[†] N[†]U? Rxevk[†] Rj[†] wb[†] Avgiv ivb[†]t[†]K k[†]j "K[†]i M[†]o[†]Z, w[†]K[†]i Kvi L[†]bvq ^nb K[†]i w[†]f[†]b[†]e[†]f[†]b[†]e[†]K[†]R e[†]envi K[†]i Q| GB ai[†]bi c[†]i eZ[†]bi d[†]j Rxevk[†] Rj[†] wb[†] Avevi Kve[®]WBA. vBW I c[†]wb[†]Z c[†]i YZ n[†]q evqg[†]Ej c[†]ek K[†]i t[†]Q| evqg[†]Ej t[†]K Kve[®] WBA. vBW Avevi m[†]j vKm[†]stj H[†]bi g[†]a[†]tg M[†]Qcyj v Øvi v tkw[†]Z n[†]"Q|

~ nb Qovl Avevi tK[†]bv[†]Dcv[†]q Kve[®]WBA. vBW evqg[†]Ej c[†]ek K[†]i t[†]Q w[†]K?

n[†]v, gvbt[†]i i g[†]Zv Ab[†]v[†] c[†]Yx[†]v[†] wb[†]tk[†]mi mg[†] Kve[®]WBA. vBW M[†]v[†]m tQ[†]to w[†]"Q Ges Zv evqg[†]Ej c[†]ek K[†]i t[†]Q| Avevi Ab[†] w[†]K M[†]Qcyj vi g[†]Zv c[†]Yx[†]n t[†]K[†]I w[†]K[†]s[†]Rxevk[†] Rj[†] wb[†] ^Z[†]i n[†]"Q| M[†]Qcyj v Qovl Avevi tK[†]bv[†]Dcv[†]q w[†]K Kve[®] WBA. vBW evqg[†]Ej t[†]K tkw[†]Z n[†]"Q?

n[†]v, evqg[†]Ej i Kve[®]WBA. vBW Gi GK[†]U Ask b[†]-b[†]x, Lvj wej | mg[†]-^i c[†]wb[†]Z ^exfZ n[†]"Q c[†]K[†]ZKf[†]te| Z[†]e GB c[†]uq[†] Kve[®]WBA. vBW c[†]bi m[†]_ w[†]muq[†] K[†]i K[†]fe[†]OK GiM[†]W ^Z[†]i K[†]i hv



চিত্র : কার্বন চক্র

Ljé GKUV -'vqx thSM bq| cwbj Zvcgvīv tefo tMtj GU tft½ Awei KveBWBA· vBtW cwi YZ nq | evqqEjtj cök Kti |

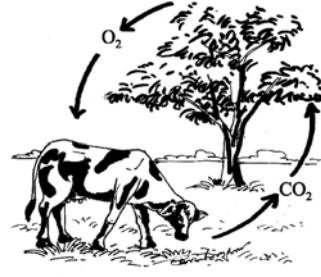
evqqÉj t_‡K KveBWBA. vBW cÍKuZK f†e cwb‡Z `bxfrZ n‡q Kite®K Gim‡W cweZ® nIqv I
tf‡o hvl qv wK i vvvqibK cweZ® bv ‡f\$Z cweZ®? wbmt‡`n i vvvqibK cweZ® KviY Drcw`Z
Kite®K GimW I evqqÉtj i KveBWBA. vBW m¤úY¶fbmag®`v_®

Av'Qv M^oCvj v wK K^eWBA. vBW tkvI Y Kⁱ i^aB L^evi ^Zwi Kⁱ? Giv wK K^eWBA. vBW tQ^o t` q^v? nⁱv, gvbj ev Ab^cYxi g‡Zv M^oCvj vI G‡` i wotk^jmi mgq K^eWBA. vBW tQ^o t` q|

GLb tZvgiv ej tZv M\Qcvj v ev c\oxt`n t_!K th Rxevk\ Rj w\ ^Zwi nq tm\U \K ai tbi cwi eZ@?

Guu Aek'B i vniqibK cwi eZB, Kvi Y GB cwi eZfb i dtj Drccboc` v_A_F RxevkY Rlj vbx MvQcvj vq _vKv
÷vP, tcñUb BZ'w` t_tK m¤úY@fbœagvF

AW vtRb Pμ : wbtgje wP† - G AW tRb Pμ t` Lvt bv ntj v| GB Ptμ
wK wK cülqv RwZ? fvj fvt e tLqyj Ki | MvQcyj v mtj vKmstk Hyi
gvaütg AW tRb tQto t` q | wbtRt i Rb Lvevi (thgb MK vR ev
óvPpmâq Kti vtL| Avevi Ab” wtK gvbj mn Ab” cüXi v MvQi
tQto t` qv AW tRb MhY Kti Ges MvQcyj v ev Ab” Drm ttK MpxZ
Lv“ H AW tRbi mvnh“ nRg Kti kw³ Drcbæ Kti I
KveBWBA· vBW tQto t` q hv Avevi MvQcyj v e”envi Kti wbtRt i
Lv“ Zwi i KvR |

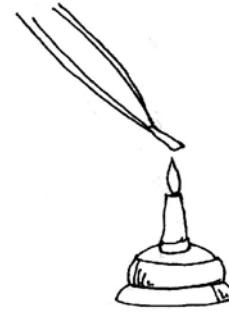


চিত্র : অঞ্জিজেন চৰ্ক

Zn̄tj t` Lv hv̄"Q th, m̄tj vKmst̄kH, KveD Pμ, cwb Pμ | Aව tRb Pμ cL̄P | c̄irvte Avgt̄ i Rx̄tbi m̄t_ A½vA½vte RwoZ |

cW 7, 8:

KvR : ḡM̄t̄b̄m̄q̄ḡ I ev̄q̄j̄ `nb ch̄f̄ēP̄Y
c̄l̄q̄v̄Rbx̄ DcKiY : ḡM̄t̄b̄m̄q̄ḡ wi eb̄, w̄PgUv̄ ĀsUv̄, (j̄ v̄B̄Uv̄)
w̄ūw̄i U j̄ v̄x̄ú / eþt̄mb̄ ev̄b̄f̄ |
c̄x̄Z̄: ḡM̄t̄b̄m̄q̄ḡ wi eþbī GK̄U t̄Q̄U UKīvī (8t̄m̄l̄ŪngUv̄ī)
GKgv̄v̄ w̄PgUv̄ w̄ t̄q̄ aī | t̄Pv̄t̄L̄ w̄b̄īv̄c̄Ēv̄ Pkgv̄ b̄t̄ō b̄v̄l̄ | wi eþbī
Ab̄ gv̄w̄U eþt̄mb̄ ev̄b̄f̄ ī w̄kL̄v̄ī Dcī aī | j̄v̄B̄Uv̄ w̄ t̄q̄l̄ ḠU
Kiv̄ h̄q̄ | L̄ȳ f̄v̄j̄ f̄v̄t̄ē j̄P̄ Kī w̄K̄ NUt̄Q̄? ḡM̄t̄b̄m̄q̄ḡ wi eȲU
Av̄, t̄bī w̄kL̄v̄ī Dcī aīq̄ w̄K̄ t̄L̄t̄j̄? wi eþb̄ Av̄, b̄ āt̄ī t̄M̄ Ges
AZ̄ ſ̄- c̄l̄q̄j̄ Z̄ w̄kL̄mn̄ Rj̄ t̄Z̄ j̄M̄j̄ | Gī KvīȲ n̄t̄j̄ v̄
ḡM̄t̄b̄m̄q̄ḡ ev̄z̄t̄m̄ Āw̄ t̄R̄b̄



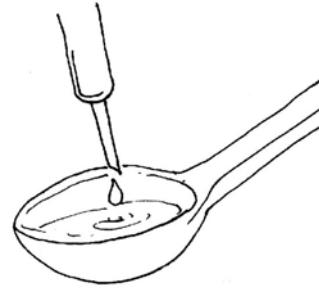
চিত্র : ম্যাগনেসিয়াম ও বায়ুর দহন পর্যবেক্ষণ

cptZ vK Avi Avgiv c04jZ lkLv t` LfZ cvB| Gfvte hLb mg - g'Mtbumqig cjo tkI ntq hvq,
ZLb Avcbv Avcbw lkLv wfif hvq| tkf tZvgiv QvB Gi g'Zv KQy t` LfZ cvQ vK? GvU Avmtj
g'Mtbumqig | Aif tRb cjo ^Zvi nl qv g'Mtbumqig A. vBW|

KvR : Kvte[¶]bU thSM | Gim[¶]Wi [¶]em[¶]qv ch[¶]e[¶]Y |
c[¶]q[¶]Rbxq DcKiY: PK, 1^WPvgP, cvZj v nvB[¶]W[¶]Kwi K Gim
cx[¶]Z : PKu[¶]K ,ov Kti bvl | PtKi ,ov Pvg[¶]P bvl | Gevi
Kv[¶]Pi W[¶]cv[¶] w[¶]fq cvZj v nvB[¶]W[¶]Kwi K GimW Pvg[¶]P thSM
Ki[¶]Z _vK| tKvb cwi eZ[¶] t` L[¶]Z cr[¶]Q ? M[¶]v[¶]mi ej ej DV[¶]Q?
n[¶]vv, M[¶]v[¶]mi ej ej DV[¶]Q Ges A[¶]bKUv tdbvi g[¶]Zv g[¶]b n[¶]Q |

Gi Kv[¶]Y w[¶]K? Kv[¶]Y ntj v PK nt[¶]Q gj Z K[¶]v [¶]mqv[¶] Kvte[¶]bU
(CaCO₃) | cvZj v nvB[¶]W[¶]Kwi K GimW thSM Kiv[¶]Z
K[¶]v [¶]mqv[¶] Kvte[¶]bU | nvB[¶]W[¶]Kwi K Gim[¶]Wi gta" [¶]em[¶]qv
N[¶]U Ges K[¶]v [¶]mqv[¶] tKv vBW | Kve[¶]WBA· vBW Dr**c**øenq |
GB Kve[¶]WBA· vBW M[¶]v[¶]mi Kv[¶]tYB Avgiv ej ej t` wL |
tdbvi g[¶]Zv t` Lvq | Dr**c**øe[¶]Kve[¶]WBA· vBW Ptj tM[¶]j Avgiv
`eY t` L[¶]Z cvB |

GwU w[¶]K ai[¶]bi cwi eZ[¶]b? tf[¶]Z br i [¶]mvq[¶]bK? GwU i [¶]mvq[¶]bK
tKv vBW, Kve[¶]WBA· vBW | cwb) K[¶]v [¶]mqv[¶] Kvte[¶]bU |
Ges G[¶]t` i ag[¶] c[¶]i vcv[¶] wf[¶]b[¶] PtKi e[¶]tj tZvgiv [¶]W[¶]gi tL[¶]m
K[¶]v [¶]mqv[¶] Kvte[¶]bU _v[¶]K |



চিত্র : কার্বোনেট যৌগ ও এসিডের বিক্রিয়া পর্যবেক্ষণ

Gi Kvi Y wK? Kvi Y ntj v PK nt"Q gj Z K"vj wmqvg KvtelbU (CaCO₃) | cvZj v nvBtWtKwi K GwMw thM
KivZ K"vj wmqvg KvtelbU | nvBtWtKwi K GwMwWi gta" weupq NtU Ges K"vj wmqvg tKvi vBW |
KveWBA. vBW Drcbeng| GB KveWBA. vBW M'v'mi Kvi tYB Avgiv ey ey t`L | tdbvi gZv t`Lq |
DrcbukveWBA. vBW Ptj tmjt Avgiv K"vj wmqvg tKvi vBtWi | cwbci cwi®<vi `eY t`LtZ cvB |

GwU wK ai tbi cwi eZb? tfSZ bv i vmlqwbK? GwU i vmlqwbK cwi eZB, KviY Drccbæc` v_©(K vj wmqvg tKvBW, KveB WBA· vBW I cwb) K vj wmqvg KvterpbU I nvBtWtKwi K GwmW t_tK m¤uY©Avj v v Ges G‡ i agP ctjivcji wfbd P‡Ki e` tj tZvgiv wN‡gi tLvmvI e envi Ki‡Z cvi KviY G‡Zi cPi K vj wmqvg KvterpbU _v‡K |

cW 9, 10 :

KvR : avZz I Gm̄tWi newpuqv ch̄teP|Y|
 c̄qyRbqg DcKi Y : ḡM̄tbumqvg wi eb, cvZj v nvBtWtKwi K Gm̄W, w̄ūwi U j̄v̄ú, tU ÷ w̄UDe
 c×w̄Z : tU ÷ w̄UDtei AtaR cwi grY f̄ti cvZj v nvBtWtKwi K Gm̄W bvI | ḡM̄tbumqvg weetbi
 KtqKwU tQuU tQuU UKiv Gm̄tW tQto `vI | tKvB M̄tmi ej̄ ej̄ DVtQ w̄K? bv DVtj w̄ūwi U j̄v̄ú
 Rwy t̄q tU ÷ w̄UDtei Zjvq njv Kv Zvc `vI | M̄tmi ej̄ ej̄ DVtQ w̄K? GiU ḡM̄tbumqvg |
 nvBtWtKwi K Gm̄tWi newpuqvg Drccb̄nBtWtRb M̄tmi ej̄ ej̄ | GuU nvBtWtRb M̄vm w̄Kbv Zv ci xP|v
 Kt̄i t̄ L̄Z cvi | tU ÷ w̄UDtei gt̄L GKwU Rj̄ Š-w̄qkjvB āti t̄ L̄ w̄K N̄tU? cc cc kā Kt̄i Rj̄ t̄Q?
 nūv w̄K ZvB | GuU nvBtWtRb Qrov Ab̄ M̄vm n̄tj Ggb kā n̄tZv bv| avZi m̄t_ cvZj v
 nvBtWtKwi K Gm̄tWi newpuqvg w̄K aitbi cwi eZB ? Aek̄B īm̄qibK cwi eZb | KvY Gt̄Z m̄sūY w̄fb̄e
 agPbZb c̄v̄t̄P m̄j̄Ó n̄t̄q̄t̄Q |
 ḡM̄tbumqvg wi eb QrovI tZvgiv w̄RsK, Gj̄ḡl̄bqvg, KcvI ev Ab̄ avZw̄ t̄qI G ci xP|v Ki t̄Z cvi |

w̄kj v MVb c̄puqv

Gi Av̄tM tZvgiv tRtBQ th w̄kj v w̄Zb aitbi nq, h̄v Av̄tMq w̄kj v, cvjv K w̄kj v I īev̄š̄v̄i Z w̄kj v | w̄kj v
 MVb c̄puqv w̄f̄P Kt̄i GuU w̄K aitbi w̄kj v Zvi Dci | c̄t̄g Av̄tMq w̄kj v K_vB aiv hvK | tZvgiv w̄K Rvb
 Av̄tMq w̄kj v w̄Kf̄te M̄vZ n̄t̄q̄t̄Q? nvRvi nvRvi eQi Av̄tM c̄_ex Zvcgv̄v AtbK teW̄ w̄Qj Ges axti axti
 W̄Ev n̄t̄q AvRtKi ev̄t̄hM̄ c̄_ex n̄t̄q̄t̄Q | c̄_ex W̄Ev n̄l qvi mgq f̄-M̄t̄f̄P Af̄ Š̄t̄i D̄EB | M̄j Z w̄kj v
 (hv ḡM̄gv bv̄g cwi w̄PZ) AvUtK c̄to | GB ḡM̄gv c̄ti W̄Ev n̄t̄q Kwb w̄kj vq cwi YZ nq h̄t̄K Av̄tMq w̄kj v
 et̄j | Znt̄j t̄ Lv h̄t̄Q th Av̄tMq w̄kj v gj̄Z D̄EB w̄gkY
 W̄Ev n̄l qvi dt̄j ^Zvi n̄t̄q̄t̄Q, bZb c̄v̄t̄Cm̄j̄o īgv̄v̄tg
 bq | Znt̄j Av̄tMq w̄kj vq MVb c̄puqv Aek̄B GKwU t̄f̄SZ
 cwi eZb, w̄K thgbwU N̄tU Rj̄xq ev̄t̄u t̄t̄K Nbxfetbi
 gvāt̄g c̄mb ev tgN ^Zvi ī mgq |

Gevi t̄ Lv hvK cvjv K w̄kj v w̄Kf̄te M̄vZ nq? Rj̄ ev̄qRbZ
 cwi eZtbi dt̄j evZm, c̄mb, Zl̄vi, I īngenv mḡt̄m̄Z, So,
 R̄j̄v̄Qm BZw̄i c̄f̄te Av̄tMq w̄kj v P̄q c̄t̄B nq | dt̄j P̄v̄
 w̄P̄D n̄t̄q tQuU tQuU KYvq cwi YZ nq | GB tQuU tQuU KYv, t̄j v
 c̄mb ev ev̄qjviv c̄ew̄nZ n̄t̄q b̄-b̄xi gvāt̄g mḡt̄ev m̄M̄t̄i
 M̄t̄q c̄to Ges Zj̄ t̄t̄k Av̄t̄- Av̄t̄- cvj̄ īt̄c Rgv nq | GB mgq Gi m̄t̄_ RxeRš̄ev M̄Qcvj v īt̄ n̄t̄kI
 cvj̄ t̄t̄i ī ḡt̄S AvUKv c̄to | c̄mbi PvC | Zt̄c bvbvi Kg īm̄qibK newpuqvi dt̄j RgvKZ cvj̄ axti axti
 Kwb w̄kj vq cwi YZ nq h̄t̄K cvj̄ K w̄kj v et̄j | th̄nZz cvj̄ K w̄kj v M̄t̄b bvbwea īm̄qibK newpuqv Rv̄oZ
 _v̄K, ZvB Gt̄`i MVb c̄puqv īm̄qibK cwi eZb N̄tU |

Gevi īev̄š̄v̄i Z w̄kj vi MVb c̄puqv t̄ Lv tbqv hvK | īev̄š̄v̄i Z w̄kj v ^Zvi nq Av̄tMq ev cvj̄ K w̄kj v t̄t̄K |
 Zvc, PvC | īm̄qibK newpuqvi c̄f̄te Av̄tMq ev cvj̄ K w̄kj v cwi eZb n̄t̄q bZb aitbi th w̄kj v ^Zvi
 Kt̄i ZvtKB īev̄š̄v̄i Z w̄kj v et̄j | thgb tej̄ cv_i (sandstone) GKwU cvj̄ K w̄kj v Ges GuU īev̄š̄v̄i Z



চিত্র : শিলা

n^hq tKvqU^hR (quartz) cwi YZ nq ej tKvqU^hR GK^hJ i evš^hi Z wkj v| GKBf^he Pbvcv_i t^hK gv^he^h
Ges Kaj v t^hK M^hdvBU ^Zwi nq ej gv^he^h | M^hdvBUI i evš^hi Z wkj v| i evš^hi Z wkj vi ag^hgj wkj v
t^hK Avj v nIqvq Ges i evš^hi mgq i vvvqwbK wewqvr RwoZ ej i evš^hi Z wkj vi M^hb GK ai tbi
i vvvqwbK cwi eZ^h wntmte aiv hvq |

GB Aa “tq Avgi v hv hv wLj vg

tfšZ cwi eZþbi dtj msuké c`v‡_P Ae- vi ev AvKvi AvKwZi cwi eZþ N‡U KšybZb c`v‡_P m||ó nqbv | c`v‡_P atgP tKvb cwi eZþ nqbv |

- i vvvqnbK cwi eZb GK GKwaK c`v_©cwi ewZQ n‡q wfboagPbZb c`v‡_cwi YZ nq |
 - tj vni _Zwi _t`mvgMöi Dci ``_vi cvZj v Av_!i b t`q‡K Mij fvbvB‡Rkb etj |
 - B‡j K‡U‡c‡hs n‡j v Zvor wek‡bi mnv‡h GKU avZi Dci Av‡i KU avZi cvZj v Avei b %Zwi i c‡uqv |
 - `ntb tKvb c`v_©evZvtmi Aw tRtbi m‡_weuqv Kti Zic k‡³ Drccb‡Kti |
 - c‡bP‡mu RwoZ AwZ ,iZcb© K‡qKU cwi eZb n‡"Q er®urfeb, Nbxfab, e‰ó, c‡-^b, ¶iY |
 - wkj v wZb ai‡bi nq, h_v Av‡Mq wkj v, cij wj K wkj v I i evšwZ wkj v |
 - Av‡Mq wkj vi MVb c‡uqv tf‡Z cwi eZb Ges cij wj K wkj v I i evšwZ wkj vi MV‡b i vvvqnbK cwi eZb RwoZ |

Ab~~j~~^{xj} bx

Kb"~ib ciY Ki :

mswΠΒ ckö

1. †fSZ I i v̄m̄q̄bK c̄i eZθ K̄t̄K ēt̄j ? D`vni Y `vI |
 2. `nb w̄K? D`vni bmn ēvL̄v Ki |
 3. Pj vq L̄o ev M̄v̄mc̄p̄t̄j t̄Kb ai t̄bi c̄i eZθ nq, †fSZ bv i v̄m̄q̄bK? t̄Z̄gvi D̄Ēt̄i i c̄t̄P̄ h̄ȳ³ `vI |
 4. c̄w̄b P̄t̄μi _ i "Zj Av̄t̄j vPbv Ki |
 5. Av̄t̄M̄ w̄k̄j v, c̄uj vj K̄w̄k̄j v I i f̄c̄v̄š̄m̄ Z̄w̄k̄j vi ēw̄k̄ō Kx Kx?

eúmbePib cke

1. wbtPi tKvbU iwmqibK cwi eZB?

- | | |
|---------------|-------------|
| K. Mj b | L. ev úxfeb |
| M. mvj vKmskH | N. cí-^ b |

2. P I Q Gi tPÍt cíhvR n̄j v-

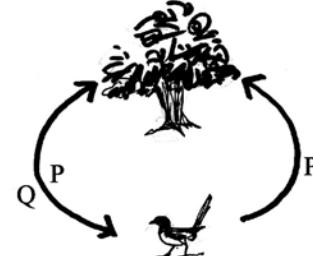
- i. cíYx kmtbi mgq P ZvM Kti
- ii. DvM I cíYxi kmtbi cívb Dcv`vb Q
- iii. mvj vK msfkHbi cívb Dcv`vb P

wbtPi tKvbU mwVK?

- | | |
|-------------|----------------|
| K. i | L. ii |
| M. ii I iii | N. i, ii I iii |

wbtPi DÍxctKi AvtjvK 3 I 4 b̄i cíki DÉi `vl :

Awbom mwne GKRb wbgY wKvvi | wZib wevi stqi tm̄ h̄evotZ mwavi YZ Pbvcv_tii i fcvšvi Z wkjv eenvi Ktib | Zte KLbI KLbI M̄vBU cv_i I eenvi Ktib hv ḡMgv t_k Drcbø



3. DÍxctK Dtj oLZ ievši Z wkjwUfZ GimW cíqM Kitj tKvb M̄vmU Drcbøte?

- | | | | |
|-------------------|--------------------|-------------------|-------------------|
| K. O ₂ | L. CO ₂ | M. N ₂ | N. H ₂ |
|-------------------|--------------------|-------------------|-------------------|

4. DÍxctK Dtj oLZ M̄vBU tKvb ai tbi wkjv?

- | | | | |
|----------|-------------|-------------|-----------|
| K. AvtMq | L. cvj wj K | M. i evši Z | N. RxevkY |
|----------|-------------|-------------|-----------|

mRbkxj cke

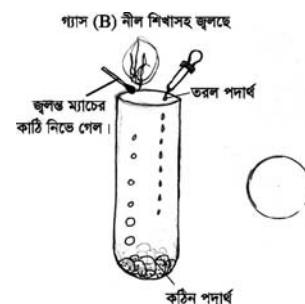
1.

K. gwí Pví msfkZ Kx?

L. t÷Bbtj m w÷tj i ^Zwi wRbtm gwí Pv cto bv tKb? evlv Ki |

M. wPÍt msNvUZ iwmqibK cwi eZB bi mvf_ kw³ I Drcbønq- kwák mgxKi Ymn eYv Ki |

N. tfsZ cwi eZB Zvtci tkvI Y I wMgb `juB NtU- DvI ctKi Avtj vK metkH Ki |



2.

K. M̄vj fvBvBtRkb Kx?

L. tm̄bv `xNp b PKPtK _vK wKs' Zvgv PKPtK _vK bv Kvi Y evlv Ki |

M. B M̄vmUj Dcv`b tKskj eYv Ki |

N. KveB I Aif tRb Ptm B M̄vfm AbcvwZ RxeRMfZi Rb Kj vYKi - h̄m mn metkH Ki |

Øv` k Aa"vq

tmši RMZ | Avgv‡` i c‡_ex

Avgv‡` i evmf‡g c‡_ex, Ab" m‡Z‡J M‡ Ges Avi | mKQ‡‡R‡‡Z< mh‡K tK‡` K‡i memgq Nj‡Q| mh‡
Ges G‡K tK‡` K‡i NY‡qgb mKj tR‡‡Z< I d‡Kv RvqMv w‡‡q Avgv‡` i tmši RMZ M‡Z| tmši RM‡Z
tevki f‡M RvqMvqB d‡Kv| Avgv‡` i GB c‡_ex `‡f‡‡e Nj‡Q| c‡_ex Zvi w‡R At¶i Dci cvK Lv‡Q
Avevi mh‡K tK‡` K‡i GKeQ‡i GKevi N‡i AvmtQ| c‡_exi G tNvivi dt‡jB w` b-ivZ nq, FZ‡
c‡i ew‡Z nq|



GB Aa"vq c‡W tk‡l Avgv

- tmši RM‡Zi MVb e‡L‡v Ki‡Z c‡ie|
- tmši RM‡Zi m`m‡‡` i t‡‡‡Z ^e‡k‡` Zj bv Ki‡Z c‡ie|
- tmši RM‡Zi MVb Kv‡‡gvi wP‡ A‡‡b Ki‡Z c‡ie|
- c‡_ex NY‡bi c‡‡e Ges Gi dt‡j m‡d dj‡d e‡L‡v Ki‡Z c‡ie|
- RxerM‡Z c‡_exi NY‡bi c‡‡e Dc‡j w‡ä Kie|

cW 1: mh̄cq c̄w_ex tNv̄ti

I ô tk̄YtZ tZigiv c̄w_ex, mh̄cI P̄t`i w̄KQUv c̄wi Pq tc̄qQ | t̄fvi t̄ejvq mh̄fK cēw M̄t̄S-DVtZ t̄ Lv
hvq | ax̄i ax̄i Gw̄ Avgut` i gv̄_vi Dct̄ii w̄ t̄K D̄t̄V Av̄t̄m | m̄Üvq t̄ L mh̄c̄w̄D̄g w̄ M̄t̄S-W̄te hvq | ivZ
tk̄l ciw̄ b t̄fvi mh̄fK Avevi cēw M̄t̄S-DVtZ t̄ L | c̄w_ex t̄ t̄K ḡt̄b nq mh̄cēt̄K c̄w̄D̄g c̄w_exi
Pvi c̄t̄k Nj̄t̄Q | Av̄t̄Mi w̄ t̄bi gv̄b̄l tm̄UvB ḡt̄b Kit̄Zb | Zte wēAvbxv GLb c̄yY Kit̄Z t̄ct̄t̄Qb th
Av̄t̄j mh̄c̄w̄ext̄K t̄K̄` K̄ti t̄Nv̄ti bv̄ | eis c̄w_exB mh̄fK t̄K̄` K̄ti t̄Nv̄ti |

mh̄B c̄w_exi Pvi w̄ t̄K Nj̄t̄Q GUv t̄Kb Avgut` i ḡt̄b nq? t̄Zigiv w̄b̄D̄qB ev̄m, j̄A ev̄ t̄i j̄M̄oxt̄Z K̄ti ` t̄i
teoxt̄Z M̄t̄qQ? t̄Zigiv w̄K GKUv w̄elq t̄Lqyj K̄tiQ? G, t̄jv hLb L̄e ` Z hvq ZLb c̄t̄ki M̄Qcujv t̄jv
tc̄Qt̄bi w̄ t̄K QUt̄Q et̄j ḡt̄b nq | Av̄t̄j t̄i j̄M̄ox, j̄A ev̄ ev̄m mḡt̄bi w̄ t̄K Pj̄t̄Q w̄K Šygt̄b nq Gw̄ ` w̄ot̄q
Av̄t̄Q | Avi c̄t̄ki M̄Qcujv Av̄t̄j w̄ i w̄K Šygt̄b nq G, t̄jv tc̄Qt̄bi w̄ t̄K QUt̄Q | c̄w_ex Avi m̄fh̄P ēvcv̄i w̄
t̄Zgib | c̄w_ex mh̄fK t̄K̄` K̄ti Nj̄t̄Q w̄K ŠyC̄w̄ex t̄ t̄K Avgut` i ḡt̄b nq mh̄c̄w̄exi Pvi c̄t̄k Nj̄t̄Q |

gv̄b̄l c̄P̄b Kyj t̄ t̄KB mh̄c P̄` i Zv̄v w̄b̄t̄q Av̄t̄b̄x w̄Qj | Zte t̄m mḡq gn̄iKv̄t̄ki Gme t̄R̄w̄Z̄ <
ch̄fēt̄Yi h̄šc̄w̄Z w̄Qj bv̄ | Zv̄B Lw̄j t̄P̄t̄L thgbw̄U tevSv thZ t̄Zgbw̄B Zv̄v wek̄jm Kit̄Zb | t̄Zigiv
nq̄t̄Zv t̄R̄t̄b̄t̄Qv̄ th, Āw̄i ÷ Uj̄ ` B n̄Rvi ēQ̄t̄i i t̄ek̄ mḡq Av̄t̄M eo wēAvbx I ` w̄k̄t̄K w̄Q̄t̄j b | w̄Zw̄b̄l
ḡt̄b Kit̄Zb c̄w_exi Pvi c̄t̄k mh̄c̄t̄Nv̄ti | GLb t̄ t̄K c̄q ` B n̄Rvi ēQ̄i c̄t̄ēw̄eL̄v̄Z M̄Yw̄e` |
t̄R̄w̄Z̄ēAvbx Ut̄j gx t̄Rvi t̄jv t̄fvi et̄j b th, c̄w_ext̄K t̄K̄` K̄tiB mēKQz Nj̄t̄Q | Zvi GB gZer̄ ` xN̄P b
gv̄b̄l wek̄jm K̄tiQ | w̄KQz w̄KQz t̄R̄w̄Z̄ē Ut̄j gx i gZer̄ ` wek̄jm Kit̄Zb bv̄ | w̄K ŠyZvi GB gZer̄ t̄K t̄KD
fj̄ c̄yw̄Y Kit̄Z c̄t̄i b w̄b̄ |

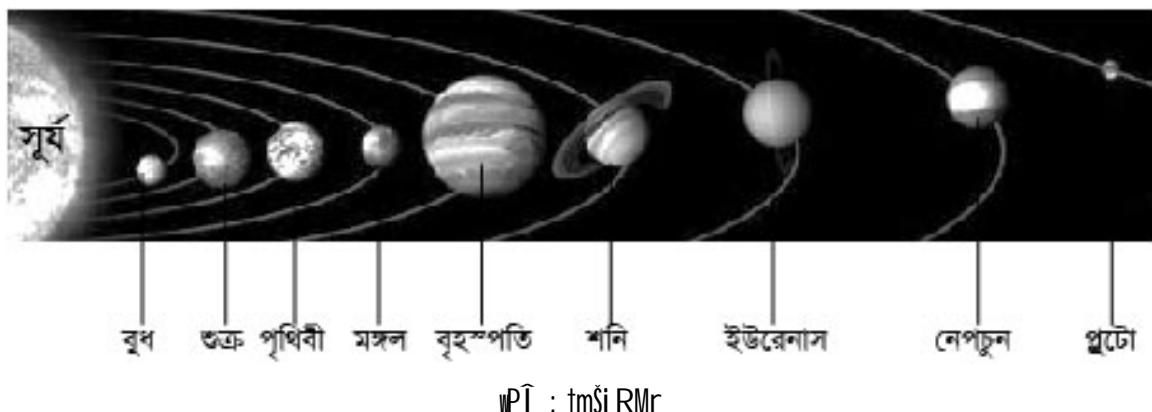
Gici t̄Kv̄ci w̄b̄Kv̄m (1473-1543) b̄t̄g GKRb t̄R̄w̄Z̄ē ch̄fēt̄Yi ḡv̄āt̄g m̄s̄ūv̄ bZb gZer̄ w̄b̄t̄q
Av̄t̄mb | w̄Zw̄b c̄w_ext̄K̄` K̄ti ḡt̄W̄t̄j i ēt̄j mh̄fKw̄` K̄ti ḡt̄W̄t̄j i c̄t̄ve K̄t̄i b | Zvi ḡt̄W̄t̄j i gj̄ K̄v n̄t̄j v
c̄w_ex mh̄fK t̄K̄` K̄ti t̄Nv̄ti | w̄Zw̄b Avi I GKUv K̄v bZb K̄v ēt̄j b | tm̄U n̄t̄j v c̄w_ex Zvi w̄b̄t̄Ri
Āt̄P̄i Ici AveZ̄t̄ K̄tiQ | cieZ̄t̄Z wēAvbx M̄w̄j w̄j I I t̄Kc̄j vi t̄Kv̄ci w̄b̄Kv̄mi GB gZer̄ i c̄t̄P̄
c̄yv̄b n̄w̄Ri K̄ti b | eZ̄t̄b mh̄fKw̄` K̄ti GB ḡt̄W̄j c̄yv̄b Z Ges wēAvbx I mv̄avi Y gv̄b̄l Zv̄ M̄b̄ K̄tiQ |

cW 2-4 : tmši RM̄t̄Zi M̄v̄b | c̄wi Pq

t̄Zigiv t̄R̄t̄b̄Q mh̄cGKUv b̄t̄t̄ | mh̄fK t̄K̄` K̄ti c̄w_ex Avi I m̄Zw̄U M̄b̄ I Ab̄v̄b̄ t̄R̄w̄Z̄ < Nj̄t̄Q | mh̄c
Ges Ḡt̄K t̄K̄` K̄ti NȲqgv̄b m̄Kj t̄R̄w̄Z̄ < I dw̄Kv Rv̄qM̄v̄ w̄b̄t̄q Avgut` i tmši RMZ M̄w̄Z | tmši RM̄t̄Zi
t̄ek̄i f̄w̄M̄v̄ Rv̄qM̄v̄B dw̄Kv |

mh̄fK t̄K̄` K̄ti Av̄Uv̄U M̄b̄ wēfbā` i t̄Zi t̄ t̄K Nj̄t̄Q | w̄b̄t̄P NȲqgv̄b M̄b̄, t̄jvi K̄t̄c̄_ t̄ Lw̄t̄bv nj̄ Ges
tmši RM̄t̄Zi m̄` m̄` t̄ i c̄wi Pq t̄ l̄q̄ n̄t̄j v |

mh̄c Avgut` i tmši RM̄t̄Zi t̄K̄` i t̄q̄t̄Q mh̄c Ab̄v̄b̄ b̄t̄t̄i ḡt̄Zv Rj̄ Š-GKUv M̄v̄m̄c̄U | GB Rj̄ Š-
M̄v̄m̄c̄t̄U i t̄q̄t̄Q gj̄ Zt̄ n̄B̄t̄W̄t̄Rb I w̄w̄j qvg M̄v̄m̄ | n̄B̄t̄W̄t̄Rb M̄v̄m̄i c̄i ḡv̄Ycī ūt̄i i m̄t̄ msh̄B n̄t̄q
w̄w̄j qvg c̄i ḡv̄Yt̄Z c̄wi YZ nq | G c̄yqv̄q c̄P̄i k̄w̄³ Drcbænq | G k̄w̄³ Zv̄c I Av̄j w̄Kk̄w̄³ w̄t̄m̄te
tmši RM̄t̄Z Qw̄t̄q c̄t̄o | Gf̄t̄eB m̄fh̄P K̄t̄Q t̄ t̄K Avgut` Zv̄c I Av̄j v t̄c̄t̄q _w̄K |



mb^hguSwi AvKv*t*i i GKwU b*q*^h | Zvi ci I GwU c*w*_exi Zj b*vq* j*q* j*q* ,Y eo | mb^hc*w*_ex t^hK c*q* 15
tKwU wK*t*jwgUvi `i Ae*w*^hZ | ZvB c*w*_ex t^hK Avgiv mh^hK GZ tQu t*wL* |

Mö, tj vi cwiPq: mhPK tK> Kti Nj tQ AvUJU Mö| cw_ex Ggb GKU Mö| Mömgyn mwaviYZT
tMvj vKvKvZi | Mö, tj vZ newfbœM'vmxq c`v[©]i tqtQ| wKšy Mö, tj v wbRiv kV³ Drcv` b Kti bv| ZvB
tKvb Mö wbR Avtj v ev Zvc wbmtm iY Kti bv| cw_ex t_kT mthP Abvb MötK D^{3/4}j t Lvtj I G, tj v
Avmtj mthP Avtj vZ Avtj wKZ| Mö, tj vi msuPß cwiPq ntj v

ea: ea mth[¶] metP[¶] q KtQi M[¶] | GtZ tKib evaqÜj tbB| GuJ 88 w tb mh[¶]K GKeri cÖnTY Kti Avdm|

ī μ: cῆ ex t_‡K mÜvq cῆōg AvKütk mÜvZvi v Ges tfvi tej vq ī KZvi v if‡c th Zvi wU † Lv hvq tmwU
tKvb b¶† bø| GwU Avmtj m‡hP GKwU Mø hví bøg ī μ| m‡hP Avtj v G Møni Dcti cto| ZvB Avgiv
G‡K Avtj wKZ †`wL| GwU 59 w ‡b GKevi mh‡K cō w¶Y Kti |

cw_ex: †Zvgiv nq‡Zv Rvb th, †Kej cw_ex‡ZB Rxetbi Rb” Dc‡hMx DcKiY | cwi tek i †q‡Q| cw_ex
mh‡_‡K †‡Zi w K w †q ZZxq Mh|

g½j: g½j †K KLbI KLbI jvj Mh ejv nq Kvi Y Gi cō jvj i†0i | Gi cō aijgq Ges Gi LpB
ciZjv evaqÜj i†q†0| q½†j i qmUi wb†P cwb vKvi m†tebv Avt0 etj weÁvbxjv GLb qtib K†ib|

en-úZ : en-úZ mth[©] metPtq eo Mö | GuñtZ i ayM^{um}B i tøtø. tKyb Kwb cō tbB |

kib: kib Möui tKei M'üm w̄ tq ^Zwi | GiutK M̄ti KZ t̄i wi s ev AysUy i tqtQ|

BD†ibvm: BD†ibvm M̄vm | e i d w̄ tq M̄vZ |

†bcPb : †bcPbI A†bKUv BD†i b†mi q†Zv GKwU M† |

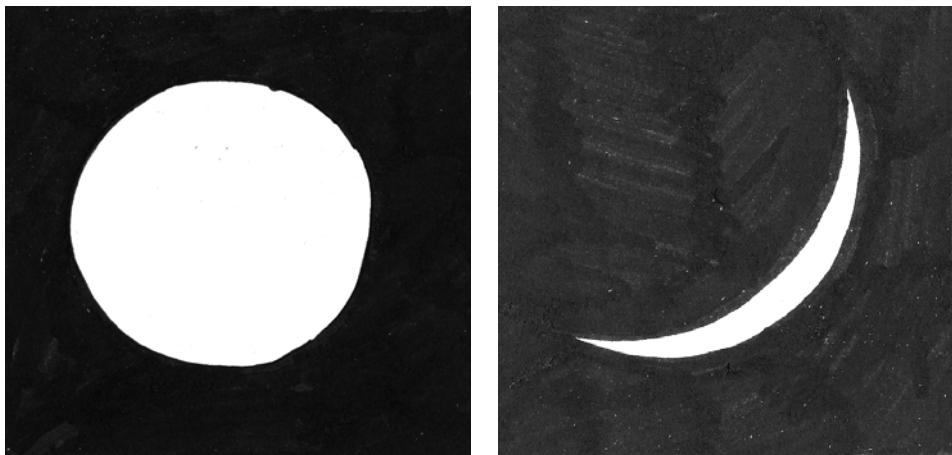
AvtM c^hlv bvgK GKU tR^hmZ- <#K Mh ej v n^hZv| wKšy2009 mvtj weÁvbxi v m^hxvš-tbb th, G^hU GKU
¶z^h Am^huY^hM^h |

DcMö:

†Zgiv †Rtbo Mši RM‡zi Mši, tj v mh‡K †K>^a K‡i †Nv‡i | †Zgib Mši, tj v‡K †K>^a K‡i Nj †Q †QwU †QwU DcMši | c‡w exi GKqv† c‡KwZK DcMši Pvù | GwU c‡w ex‡K †K>^a K‡i Nj †Q | DcMši, tj v AvKv‡i Mši

†P‡q A‡bK tQW nq | Givl w‡tRiv ZvC ev Ar‡j v DrcbœKi‡Z c‡i bv | Giv ZvB m‡hP Ar‡j v Øiv
Ar‡j wKZ nq | m‡hP Ar‡j v P‡t` i c‡ô c‡ô cÖZdij Z nq ejj Avgiv Pv‡tK Ar‡j wKZ †WL |

Pwù 27 w̄ b 8 NsUvq GKevi c̄w̄ ex̄K c̄w̄ Y K̄i | Pwù c̄Px̄bKv̄j t̄_t̄KB gvb̄t̄l̄i Aw̄n̄i ē' | t̄Zgiv̄
t̄ L̄ th Pwù GKiv̄t̄Z nq̄t̄Zv̄ ḠKev̄t̄B t̄ Lv̄ hv̄q bv̄ h̄t̄K Avgiv̄ Agvem̄v̄ ew̄j | Zvi c̄t̄ i īt̄Z miyGK
dw̄j Pwù c̄w̄Avgv̄ AvK̄t̄k Aí mḡt̄qi Rb̄t̄ Lv̄ hv̄q | GB miyGK dw̄j Pwù c̄t̄Z īt̄Z eo n̄t̄Z _v̄t̄K | `B
m̄Bvn̄ ci Pwù t̄K GKw̄U _jv̄i ḡt̄Zv̄ t̄ Lv̄ hv̄q | ḠK Avgiv̄ c̄w̄Avgv̄ ew̄j | c̄w̄Avgv̄i c̄t̄ i īt̄Z t̄_t̄K Pwù w̄U
Averi ev t̄Qw̄ n̄t̄Z _v̄t̄K | Gf̄v̄te t̄Qw̄ n̄t̄Z n̄t̄Z Averi `B m̄Bvn̄ ci Pwù t̄K t̄Kb GK īt̄Z GK ev̄t̄i i
Rb̄t̄i t̄ Lv̄ hv̄qb̄v̄ | Gf̄v̄te 29 ev 30 w̄ b ci ci Avgiv̄ Agvem̄v̄ I c̄w̄Avgv̄ n̄t̄Z t̄ w̄L | t̄Kb Gi Kg nq̄? G
c̄k̄k̄e D̄Ei t̄Zgiv̄ Dc̄t̄ i īt̄Z Rvb̄te |



WPT : bZb Pwù | cWgvi Pwù

Pwì cí_exi GKgvÍ cÍKIZK DcMö nÍj | cí_exi Pvi crÍk Nj tq 2500 Gi tewk gwÍl tcÍi Z DcMö | Gt iÍK KÍg DcMö ejv nq | G KÍg DcMö tÍjv teZvi | tUwj thMthIM, Avenvl qv Ges AbÍb Z msMöni RbÍ tcÍY Kiv nq | cí_exi gtZv AbÍb Möni | cÍKIZK DcMö iÍqtq |

tmši RM‡Z Ab"wb" †R"wbZ" <

Avgv̄t̄ i tm̄ši RM̄t̄Z mh̄c M̄n̄ I DcM̄n̄ Qvorl̄ i tq̄t̄Q Ab̄v̄b̄ t̄R̄w̄Z̄ < | Giv n̄t̄j̄v̄ aḡt̄KZ̄l̄ Dév̄ I M̄n̄Ȳȳ
mh̄k̄K̄ t̄K̄ ^ K̄t̄i Giv N̄j̄t̄Q̄ M̄n̄i t̄P̄t̄q̄ Av̄K̄t̄i t̄ek̄ t̄Q̄Ū K̄W̄b̄ w̄k̄v̄ḡq̄ ev̄ av̄Ze ē' - h̄t̄ i b̄v̄ M̄n̄Ȳȳ
Giv P̄z̄ ^ M̄n̄i ḡt̄Z̄v̄ | aḡt̄KZ̄z̄m̄ḡn̄ | Avgv̄t̄ i tm̄ši RM̄t̄Z̄i Ask̄ | Giv K̄W̄b̄ (M̄v̄m̄, ēid̄ I āj̄ KȲ) c̄v̄ ^
w̄t̄q̄ ^ Z̄w̄i | Z̄t̄e Z̄v̄ Z̄v̄c t̄c t̄j̄ w̄K̄Q̄ Ask̄ mn̄t̄RB̄ M̄v̄t̄m̄ c̄w̄i YZ̄ n̄t̄Z̄ c̄t̄i | h̄L̄b̄ aḡt̄KZ̄m̄ḡn̄ m̄t̄h̄P̄ Kv̄Q̄K̄w̄Q̄
hw̄q̄ Z̄L̄b̄ m̄t̄h̄P̄ Z̄t̄c M̄v̄m̄x̄q̄ | K̄W̄b̄ c̄v̄ ^ b̄M̄Z̄ n̄t̄q̄ Av̄K̄t̄k̄ Q̄w̄t̄q̄ hw̄q̄ | Z̄L̄b̄ ḠŪ S̄v̄Ūi ḡZ̄ ^ k̄b̄x̄q̄ tj̄t̄R̄
c̄w̄i YZ̄ n̄q̄ | c̄w̄_ex̄ t̄t̄K̄ Ḡt̄ i t̄K̄ K̄L̄b̄Ī K̄L̄b̄Ī t̄` Lv̄ hw̄q̄ | t̄K̄b̄ t̄K̄b̄ aḡt̄KZ̄z̄Āt̄b̄K̄ ēQ̄i ci ci c̄w̄_ex̄i
Av̄K̄t̄k̄ t̄` Lv̄ hw̄q̄ | thgb̄, n̄w̄j̄ i aḡt̄KZ̄ȳM̄t̄o 75 ēQ̄i cici c̄w̄_ex̄ t̄t̄K̄ t̄` Lv̄ hw̄q̄ | ḠŪt̄K̄ 1911 m̄t̄j̄
Ges 1986 m̄t̄j̄ t̄` Lv̄ t̄M̄t̄Q̄ | Ḡt̄K̄ Āv̄ēv̄i 2062 m̄t̄j̄ t̄` Lv̄ h̄v̄l̄ q̄v̄i K̄v̄ |



WP̄ : agtKZi Qme |

tZvgiv wK KLbI iñZi tejvq nVvr AvKvfk AwM̄bi tMj K QdU th̄Z t̄ tLQ? Giv DémcÜ| m̄hP Pvi c̄k NYqgib tR̄wZ < mḡni ḡta" meP̄q tQvU ntj v DémcÜ| GB P̄i a Kwb wC̄ c̄_exi evqgĒtj tc̄SQtj evqj ms̄útkḠm c̄to hvq| G Rb" Ḡ iñK AwM̄etMj tKi ḡZv QdU ev c̄to th̄Z t̄ Lv hvq| KLbI KLbI eo Dév wC̄ Avatc̄ov Ae"vq c̄_ex c̄o eo M̄ZP m̄jó K̄i |

cW 5: Avgyt` i evmfug c̄_ex

Avgiv c̄_extZ evm Kvi | Avgyt` i GB c̄_exi AvKvi tKgb? Avgiv Pvi w̄tK ZvKv̄tj wK Gi AvKvi eS̄tZ c̄wi? ḠtK wK tMj vKvi PvKwZ ev _yj vi ḡtZv ḡtb nq? AvcvZ `wótZ c̄_extK GKwU _yj vi ḡtZv ḡtb nq| ḡtb nq Avgiv Avgyt` i Niewo H _yj v ev PvKwZi Dcti AwQ| Avi AvKvk GB _yj v̄tK tX̄tK Av̄Q| wKšyc̄_ex _yj v ev PvKwZi ḡtZv bq| GwU tMj vKvi Zte c̄tivc̄y tMj vKvi bq| c̄_ex Kgj v̄tjej ḡtZv D̄i `wqY w̄tK wKQdU Pvcv|

tMj KvKvi c̄_ex c̄o Pvi fv̄Mi wZb fM c̄mb Avi GKfM gwU w̄tq AveZ| Avi GB tMj KvKvi c̄_extK wN̄ti iñq̄tQ M̄vmxq evqgÜj | tZvgiv wB̄dqB f̄-tMj K ev tM̄e t̄ tL̄tQ? GwU t̄ L̄tj c̄_ex th̄tMj tKi ḡtZv Zv terSv hvq| Avgiv f̄-tMj tKi ḡtZv GKwU tMj tKi c̄o Ae"v b KiwQ| c̄kentj v Avgiv Zntj c̄_ex t̄tK `t̄i wQUtK ev c̄to hvB bv tKb ?



WP̄ : c̄_ex c̄o wewfbøAstk gwbtli Ae"v b

Gi Kvi Y AveZD^o | c̄_ex Zvi ct̄oi me wKOtK c̄_exi tK̄`i w̄ tK tUtb ati GB et̄j i mnvfh` |
Gi dt̄j c̄_ex ct̄o Ae`vbKvi x tKvb wKOtK c̄o t̄tK wQUtK ct̄o bv|

c̄W 6, 7 : c̄_exi wbR At̄P AveZD Ges mh̄tK tK̄`a K̄ti NYD

tZgiv t̄ L mKv̄j mh̄cew̄ tK DfV | mÜ tejvq c̄oog
w̄ M̄t̄S-W̄je hvq | ciw̄ b mKv̄j tZgiv t̄ L th mh̄Avevi
ceP K t̄tK DVtQ | G t̄tK ḡb nq c̄_exi tK̄`a K̄ti
cēt̄tK c̄oog w̄ tK NjtQ | Av̄Mi w̄ tb gvbly iv ZvB
avi Yv Ki tZv th c̄_exi w̄`i Ges mh̄c̄_exi tK̄`a K̄ti
tNt̄i | c̄KZct̄P, c̄_exB m̄thP Pviw̄ tK tNt̄i Ges
c̄_exi wbR At̄Pli Dci I AveZD K̄ti ev cvK Lvq |
tZgiv wb̄qB jw̄Ug wb̄tq tL̄tj tQv? jw̄Ug Kxfv̄te
tNt̄i? jw̄Ug Zvi miy Avj - Gi Dci `wo tq wb̄tR wb̄tR
cvK Lvq ev AveZD K̄ti | GKB m̄t_ gw̄Ui Dci eEv̄Kvi
ev DceEv̄Kvi ct̄_ GK `vb t̄tK Ab` `vb nt̄q Nt̄i
Av̄tm |



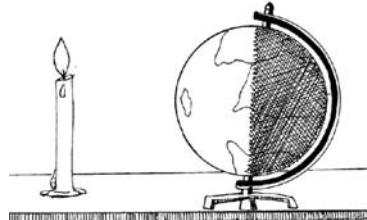
ଚିତ୍ର : ଲାଟିମେର ଦୁଆ ଧରନେର ସୂର୍ଣ୍ଣ/ଗତି

Gf̄te jw̄Ugwi `øai tbi MwZ i tqtQ | GKwU nt̄j v wbR At̄Pi Dci AveZD | Av̄ti KwU nt̄j v gw̄Ui Dci
w̄ t̄q Nt̄i Aivm | jw̄Ugi ḡtZv c̄_exi | `øai tbi NYD i tqtQ | GKwU nt̄j v c̄_exi wbR At̄Pi Dci tK̄`a
K̄ti 24 NwUq GKvi c̄oog t̄tK c̄eAveZD K̄ti | Gw̄tK ejv nq c̄_exi Aw̄yK MwZ | w̄ZxqwU nt̄j v
c̄_ex c̄q 365 w̄ b 6 NwU mḡtq GKvi m̄thP Pvi c̄tK Nt̄i Av̄tm | Gt̄K c̄_exi ewl R MwZ ejv nq |
c̄_exi Aw̄yK MwZi A_w̄P wbR At̄P AveZD bi Kvi tY w̄ b ivZ nq | w̄ b ivZ Kxfv̄te nq Zv wb̄tP
cixPwUi gva`tg fv̄te teiSw hvq |

cixPY : c̄_exi Aw̄yK MwZi cixPv - w̄ bi vZ Kxfv̄te nq?

DCKiY : GKwU f̄-tMvj K, GKwU tḡgewwZ A_ev KicewZ
A_ev PvRc vBU |

cixPY c̄Vj x: c̄oog f̄-tMvj KwU fv̄te jP Ki | Gi ḡs
eivei GKwU kjvKv GK c̄oog t̄tK Ab` c̄oog t̄tK Ab` tMtQ |
Gw̄tK c̄_exi A_Pt̄i Lv w̄nt̄mte Kibv Ki h̄tK tK̄`a K̄ti
c̄_ex AveZD K̄ti |



ଚିତ୍ର : ପୃଥିବୀର ଆହିବ ଗତିର ପରୀକ୍ଷା

GKwU tUej ev mgZj tḡSi Dci ewZwU Rwyj tq ivL | Gevi GKuz`i f̄-tMvj KwUtK ivL | Kp̄wUi
Av̄tj v wb̄ftq ev `i Rv Rwyj v eÜ K̄ti NiwU AÜKvi Ki | ewZwUtK mh̄Ges f̄-tMvj KwUtK c̄_ex
w̄nt̄mte wētePbv Ki | Gevi f̄-tMvj KwUj v tK ZvKvI | f̄-tMvj KwUj mew` K w̄K mḡb Av̄tj w̄KZ? bv
tKvb w̄ K Av̄tj w̄KZ Avi Zvi Df̄ev w̄ K AÜKvi v Qb̄t L̄tZ cv̄tQv wb̄qB th f̄-tMvj KwUj AtaR Ask
Av̄tj w̄KZ Avi Ab` AtaR AÜKvi v Qb̄t tKvb AtaR Av̄tj w̄KZ? th AtaR ewZwUj v tK Av̄tQ | Avgiv
Av̄tj w̄KZ Ask tK w̄ b Avi AÜKvi v Qb̄t Ask w̄tK ivZ ḡb Ki tZ c̄mi | Gevi f̄-tMvj KwU Av̄t`i Av̄t`i

tNvi l Ges j ¶ Kti t`L Kx n‡Q | t`Lv hv‡Q AÜKvi Ask Av‡_í Av‡_í Av‡j wKZ n‡Q Ges Av‡j wKZ Ask ax‡i ax‡i AÜKvi n‡Q | wKšmemgqB f-‡Mvj Kwi Ask Av‡j v cv‡Q Ges ewK AtaR Ask Av‡j v cv‡Q bv | Gfvte c‡_exi Ges AtaRistk w b Ges evKx AtaR ivZ Pj ‡Z _v‡K | f-‡Mvj Kwi Gwv` S -`vb ewZwi mg‡b ti ‡L ax‡i ax‡i GKv‡K tNvi Z _vKtj H Av‡j wKZ Ask (w b) ax‡i ax‡i AÜKvi n‡Z n‡Z GKmgq c‡ivci AÜKvi (ivZ) n‡q hv‡e | GKB w ‡K Avi I tNvi Z _vKtj Avevi H wv` S -`vbwU Av‡j wKZ n‡Z i iyKtj Ges GKmgq c‡ivci Av‡j wKZ n‡q hv‡e | A_íP H -`vb Avevi w b wd‡i Av‡m |

GB ci¶wui g‡Zv c‡_exi Zvi wR At¶l AveZ® Kti , dtj Avgiv w b, Zvi ci ivZ, Avevi w b, Avevi ivZ, Avevi w b GB i Kg c‡ieZ® n‡Z t`wL | Ab`K_vq, w b-iwZ-w b-iwZ-w b GB c‡ieZ® Avgiv t`wL Kvi Y c‡_exi Zvi wR At¶l AveZ® Kti etj |

cW 8, 9 : m‡h® Pwi w ‡K c‡_exi Ny® - c‡_exi ewl R MwZ

B‡Zigta tZigiv c‡_exi AwYK MwZ ev wR At¶i Dci AveZ® m‡utK®R‡b0v| c‡_exi Ab MwZwU n‡Q ewl R MwZ | c‡_ex m‡h®K tK `‡Kti c‡q 365 w b 6 NÈv mg‡q GKevi N‡i Av‡m | GB mg‡qK GK tmši eQi ev GK eQi ej v nq | c‡_exi ewl R MwZi dtj w b ivZ tQu ev eo nq Ges FZi c‡ieZ® nq | tZigiv Kx eQ‡i i memgq GKB i Ktgi AvevI qv t`L‡Z cvl ? Rvbgix gv‡m ev tcSI -gvN gv‡m kxZ bv Mig _v‡K? Avl vp ev fv` gv‡m AvevI qv wK tcSI gv‡mi g‡ZvB bv wfb‡ Avgiv t`wL evsj v‡K eQ‡i i wewfbomgtq wewfbae Kg AvevI qv _v‡K | tcSI ev gvN gv‡m tek kxZ c‡o Avevi ^ekvL ev %R®o gv‡m tek Mig c‡o | tKb, Zv fv‡ev tZv? GBme c‡k‡ DËi Rvbu hv‡e c‡_ex m‡h® Pvi c‡k Kxfvte tNv‡i Zv Rvbtj | c‡_ex m‡h® Pvi c‡k wKQv tn‡j m‡h®K c‡wY Kti | Zte c‡_ex eQ‡i i wewfbomgtq Zvi tnj v‡bv Ae -`vb c‡ieZ® Kti | ZvB c‡_exi GKv wv` S Ask GKv wv` S mgq m‡h® w ‡K gl Kti _v‡K | c‡_exi GKv wv` S Ask hLb m‡h® w ‡K gl Kti _v‡K ZLb tmB AskvU teik¶Y a‡i Ges Lvovfite m‡h® Zvc cvq | c‡_exi tmB As‡k ZLb M®Kv | tZigiv n‡Zv Rv th, c‡_exi weley ti Lvi `B c‡k®K `vU tMvj v‡a®em Kv‡i nq | DËi Ask‡K DËi tMvj va®Ges `w¶Y Ask‡K `w¶Y tMvj va®ai nq | Avgiv DËi tMvj v‡a®em Kv‡i | 21 Rb Zwi tL evsj v‡K m‡h® wKQv Kv‡Q P‡j Av‡m | ZvB Gmg‡q Avgiv m‡h®K Avgit` i gv vi Dci t`L‡Z cvB | GB mg‡q Avgiv metP‡q j †v w b | tQu ivZ t`L‡Z cvB | Lvovfite Ges j †v mgq m‡h® Zvc cvl qv Kv‡i tY GB mgq wZ Ges Gi Kv‡QKwQ mg‡q evsj v‡K tek Mig c‡o | Zte tgšmgx evqj c‡vte GB mg‡q evsj v‡K Avl vp -k‡eY gv‡m c‡p i evócvZ nq etj Avgiv GB mgq wZ Ges Gi Kv‡QKwQ mg‡q evsj v‡K etj _wK |

21 Rb c‡_exi `w¶Y tMvj va®m‡h®_‡K `‡i Ae -`vb Kti | ZvB `w¶Y tMvj v‡a®ZLb ivZ eo nq, w b tQu nq Ges | Lv‡b m‡h® Zvc wZhR ev tnj v‡bv fv‡e c‡o | dtj `w¶Y tMvj va®G mgq m‡h® Zvc Kg cvq | | Lv‡b ZLb kxZKv | thgb At‡vij qvq Rb, RjvB | A‡M‡ GB wZb g‡m kxZKv |

c‡_ex 21 Rvbi c‡i Zvi tnj v‡bv Ae -`vb c‡ieZ® Ki ‡Z _v‡K | evsj v‡K kmn DËi tMvj va®wKQv `‡i m‡i th‡Z _v‡K, GKB m‡t_ `w¶Y tMvj va®wKQv m‡h® w ‡K G‡M‡Z _v‡K | GBfvte tm‡P‡v‡i 23 Zwi tL c‡_exi weley A‡j m‡h® w ‡K gl Kti _v‡K Ges DËi | `w¶Y tgjyH mg‡q m‡h®_‡K mgv‡ †‡Zj _v‡K | tm‡P‡v‡i 23 Zwi tL ZvB c‡_exi Dfq tMvj v‡a®w b ivZ mgv‡ nq | weleyq A‡j ZLb m‡h®gv vi

Dcti Ae-'vb Kti Lvovfute wKiY t`q, ZLb w̄l̄exq AĀtj tek Mi g c̄to| evsj v̄t̄k ZLb w̄ b-iVZ mgvb ej ZLb kxZI bq Aevi L̄e Migl bq| `w̄l̄Y tMyj v̄taP ZLb kxZ P̄tj w̄l̄tq M̄P̄SKyj AvmtZ _v̄K A_ P̄ tmL̄t̄b ZLb emš̄

w̄P̄t̄ thgb t`L̄t̄Z cr̄Q, 21 w̄l̄m̄x^i `w̄l̄Y tMyj v̄taP GKU Ask m̄hP w̄t̄K gl̄ Kti _v̄K| Avi ZLb evsj v̄t̄k m̄hP̄t̄_t̄K ^i Ae-'vb Kti| ZVB ZLb evsj v̄t̄k w̄b tQuU nq Ges iVZ eo nq| m̄hP̄K t`L̄ `w̄l̄Y w̄t̄K tn̄tj w̄KiY w̄t̄Z| Kg mgq Ges w̄ZhRfute w̄KiY c̄vq ej evsj v̄t̄k ZLb kxZ c̄to| c̄P̄v̄S̄t̄i, `w̄l̄Y tMyj v̄taP At̄d̄ij q̄q ZLb w̄b eo Ges iVZ tQuU nq| m̄hP̄ZLb `w̄l̄Y tMyj v̄taC̄Lvov fute w̄KiY t`q| ZVB `w̄l̄Y tMyj v̄taC̄ZLb M̄P̄SKyj |

Aevi c̄_ex 21 ḡP̄m̄hP w̄t̄K gl̄ Kti tn̄tj _v̄K| ZLb Aevi c̄_exi m̄Kj ^'v̄b w̄biVZ mgvb nq| GRB̄ GB mḡt̄q Avgit` i t`tkl w̄biVZ mgvb nq| GB mḡt̄q kxZI teik _v̄K bv Aevi Migl teik c̄to bv| GB mḡt̄q Avgit` i t`tk emš̄-Kyj| 21 ḡP̄P̄ c̄ti c̄_ex Aevi Nj t̄Z Nj t̄Z 21 R̄p Zwi t̄L Av̄Mi e0t̄i i Ae-'v̄b wd̄ti Av̄m| Gfute m̄hP w̄t̄K c̄_exi Ae-'v̄bi Zvi Zt̄ḡi Kyi t̄Y w̄b iVZ tQuU ev eo nq| Ges Gi dj ^i fc FZc̄wi eWZQ nq|

c̄_ex h̄r m̄hP Pvi w̄t̄K bv Nj t̄Zv Zvn̄tj Kx n̄t̄Zv futev t̄Zv? c̄_ex m̄hP Pvi w̄t̄K bv Nj t̄j c̄_exi t̄Kvb GKU RvqM̄q memgq GKU FZB _vKt̄Zv| tm̄P̄t̄i evsj v̄t̄k mviv eQi nq̄t̄Zv Mi g _vKt̄Zv| t̄Kvb kxZ AvmtZv bv| D̄t̄eūv̄l n̄t̄Z cvi t̄Zv| A_ P̄ memgq kxZ _vKt̄Zv| evsj v̄t̄k w̄r̄fb̄eFZi Av̄Q ej̄ w̄fb̄edmj dt̄j| GKU FZi _vKt̄j GKi Kg dm̄j B n̄t̄Zv| Avgit` i Rxeb avi Y KōKi nt̄q thZ|

i w̄kq̄ ev Ab̄vb kxZc̄vb t`tk FZic̄wi eZB̄ bv n̄t̄j ḡb̄l evP̄t̄ZB cvi t̄Zv bv| tmL̄t̄b e0t̄i i teiki f̄M̄ mgq ei d XvKy _vKt̄i tmmgq dm̄j dt̄j bv| Aí mgq M̄P̄SKyj Gt̄j ei d M̄t̄j hvq| ḡb̄l ZLb dm̄j dj vq| M̄P̄SKyj bv Gt̄j ḡb̄l dm̄j dj v̄t̄Z cvi t̄Zv bv|

G Aa''v̄t̄q Avgi v hv w̄kLj vg

- c̄_ex m̄hP̄t̄_t̄K ^i Kti t̄N̄t̄i |
- m̄hP̄Ges Gt̄K t̄K ^i Kti NȲq̄gb m̄Kj t̄R̄w̄Z̄ < I d̄Kv RvqM̄v̄b̄t̄q Avgit` i tm̄ši RM̄t̄Zi teiki f̄M̄ RvqM̄qB d̄Kv |
- m̄hP̄Ab̄vb b̄P̄t̄i ḡt̄Zv Rj ŠGKU M̄v̄m̄c̄U| GB Rj Š-M̄v̄m̄c̄t̄U i t̄q̄t̄0 gj Zt n̄B̄t̄W̄t̄Rb I w̄v̄j q̄g M̄v̄m̄| n̄B̄t̄W̄t̄Rb M̄v̄m̄i c̄gvYci ^ūt̄i m̄v̄t̄_msh̄b n̄t̄q w̄v̄j q̄g c̄gvYt̄Z c̄wi YZ nq| G c̄ūq̄q̄ c̄Pi Zvc I Av̄j vKkw̄3 Dr̄cb̄et̄q tm̄ši RM̄t̄Z Q̄ōt̄q c̄to| GfuteB m̄hP K̄Q t̄_t̄K Avgi v Zvc I Av̄j v t̄ct̄q _w̄K |
- M̄t̄j v̄t̄K t̄K ^i Kti Nj t̄Q tQuU DcM̄t̄| c̄_exi GKḡt̄ c̄KuZK DcM̄t̄ Pv̄ | DcM̄t̄, t̄j v AvKt̄i M̄n̄i t̄P̄t̄q Āt̄bK t̄QuU nq| Givl w̄t̄Riv Zvc ev Av̄j v Dr̄cb̄Kt̄Z c̄ti bv| Giv ZvB m̄hP Av̄j v 0iv Av̄j w̄KZ nq| m̄hP Av̄j v Pv̄ i c̄t̄o c̄to c̄Zd̄j Z nq ej̄ Avgi v Pv̄ t̄K Av̄j w̄KZ t̄w̄L |
- Avgit` i tm̄ši RM̄t̄Z m̄hP̄ M̄t̄ | DcM̄t̄ Q̄ōvI i t̄q̄t̄0 Ab̄vb t̄R̄w̄Z̄ < | Giv n̄t̄j v, aḡt̄KZi D̄v̄ I M̄v̄Yj m̄hP̄t̄_t̄K ^i Kti Giv Nj t̄Q |

- cɯ_ex _v̥j v̥ ev PvKwZi g̥tZv bq | GwU tMvj KvKvi Z̥e c̥i v̥c̥i tMvj KvKvi bq | cɯ_ex Kgj v̥j ej g̥tZv D̥Ei `v̥P̥Y w̥ t̥K w̥KQd̥v Pvcv | Avgiv cɯ_exi c̥t̥ô Ae̥'v̥b Kv̥Q |
- cɯ_exi `v̥p̥it̥bi NY̥t̥ i̥t̥q̥t̥Q | GKwU nt̥j v̥ cɯ_exi w̥R Ḁt̥P̥i Dci t̥K̥`v̥K̥t̥i 24 N̥Uv̥q GK̥v̥i c̥w̥D̥g̥ t̥_t̥K c̥t̥e̥Ḁv̥e̥Z̥ K̥t̥i | GwU t̥K ej v̥ nq cɯ_exi Aw̥y̥K M̥w̥Z | w̥Zxq̥wU nt̥j v̥ cɯ_ex c̥t̥q̥ 365 w̥ b 6 N̥Uv̥ mg̥t̥q GK̥v̥i m̥t̥h̥P Pvic̥t̥k N̥t̥i Ar̥t̥m | G̥t̥K cɯ_exi ew̥l̥R M̥w̥Z ej v̥ nq |
- cɯ_exi Aw̥y̥K M̥w̥Zi Rb̥ w̥ b i̥w̥l̥ nq | cɯ_exi ew̥l̥R M̥w̥Zi d̥t̥j w̥ b i̥v̥Z t̥QwU ev eo nq Ges FZi c̥w̥i e̥Z̥ nq |

Abkxj bx

Kb̥`v̥b c̥t̥Y Ki

1. mh̥c̥gySwi AvKv̥t̥i i̥ GKwU N̥N̥N̥N̥N̥N̥N̥N̥N̥ |
2. mh̥t̥K t̥K̥`v̥K̥t̥i N̥N̥N̥N̥N̥N̥N̥N̥N̥ M̥b N̥j t̥Q |
3. Pv̥ cɯ_exi GKgv̥t̥ N̥N̥N̥N̥N̥N̥N̥N̥N̥ DcM̥b |
4. Avgiv cɯ_exi N̥N̥N̥N̥N̥N̥N̥N̥N̥N̥N̥N̥N̥N̥N̥N̥Ae̥'v̥b Kv̥i |
5. -----e̥t̥j i̥ c̥f̥v̥t̥e Avgiv cɯ_ex t̥_t̥K w̥Qt̥K c̥t̥o h̥B bv̥ |

mst̥P̥tc D̥Ei `v̥l :

1. t̥Kb Av̥t̥M g̥v̥b g̥t̥b Ki t̥Zv̥ th, mh̥c̥y cɯ_ex t̥K̥`v̥K̥t̥i t̥N̥t̥i ?
2. t̥Kv̥b t̥Kv̥b meÁvb cɯ_ex t̥K̥`v̥K̥ g̥t̥W̥t̥j i̥ K̥v̥ et̥j t̥Qb ?
3. mh̥m̥n Ab̥v̥b b̥P̥t̥i v̥ Kxv̥t̥e Zv̥c | Av̥t̥j v̥ DrcbaK̥t̥i P̥t̥j t̥Q Zv̥ e̥v̥L̥v̥ Ki |
4. ag̥t̥KZiKx? G̥t̥i t̥j R Kxv̥t̥e m̥j̥o nq? GKwU c̥w̥i P̥Z ag̥t̥KZi D̥v̥n̥i Y̥`v̥l |
5. GKwU Dcgv̥ e̥envi K̥t̥i cɯ_exi `v̥p̥i t̥Yi M̥w̥Z e̥v̥L̥v̥ Ki |
6. w̥ b i̥v̥Z Kxv̥t̥e nq Zv̥ GKwU c̥i x̥v̥i g̥v̥t̥g̥ t̥L̥l |
7. g̥b̥t̥i Rxe̥t̥b FZi c̥w̥i e̥Z̥b̥i c̥f̥v̥e Av̥t̥j v̥P̥b̥v̥ Ki |

e̥u̥m̥be̥P̥b c̥k̥e

1. t̥Kv̥b M̥b̥n̥U e̥id | M̥v̥m̥ Øv̥v̥ M̥w̥Z?

- | | |
|------------|----------------|
| K. ep̥-u̥Z | L. g̥½j |
| M. k̥b | N. BD̥t̥i b̥m̥ |

2. mh̥t̥P̥ t̥P̥t̥i th K̥w̥U c̥t̥h̥R̥ Zv̥ nt̥j v̥, GwU-

- i. GKwU b̥P̥t̥
- ii. GKwU Rj ſ̥i M̥v̥m̥ w̥C̥E
- iii. m̥Kj M̥b | b̥P̥t̥t̥K Av̥t̥j v̥t̥q̥

ବୁଦ୍ଧି କବିତା ମନ୍ଦିର?

K. i

M. i + ii

L. ii

N. i, ii + iii

ବୁଦ୍ଧି ମୁଖ୍ୟ ତଥା 3 + 4 ବାର୍ଷିକୀ ଦେଇ ଏହି :

M ₀	m _h ^q _tK `+ Z _i (K. mg.)	m _h ^q K GK _{ei} c ₀ Y _i mgq
t _μ	10.80	225 w b
c _W ex	14.96	365 w b
ep ₋ u _W Z	77.85	c ₀ q 12 eQi
k _w b	142.70	29 $\frac{1}{2}$ eQi
BD _t i b _w m	187.1	-
tbcPb	449.8	165 eQi

3. ମୁଖ୍ୟ ଦିନ କିମ୍ବା ମହୀୟ ତଥା 22.8 ତକ ମନ୍ଦିର ମନ୍ଦିର କିମ୍ବା ମହୀୟ କିମ୍ବା ମନ୍ଦିର ଆହୁତି ମନ୍ଦିର ଆହୁତି କିମ୍ବା ମନ୍ଦିର ?

K. c_Wex Ges i t_μi ga_wL_tb

L. ep₋u_WZ Ges k_wb ga_wL_tb

M. k_wb Ges tbcP_tb ga_wL_tb

N. c_Wex I ep₋u_WZi ga_wL_tb

4. BD_ti b_wm m_h^qK GK_{ei} c₀Y_i K_tZ_i c₀q K_tZ_i eQi mgq j M_te-

K. 10 eQi

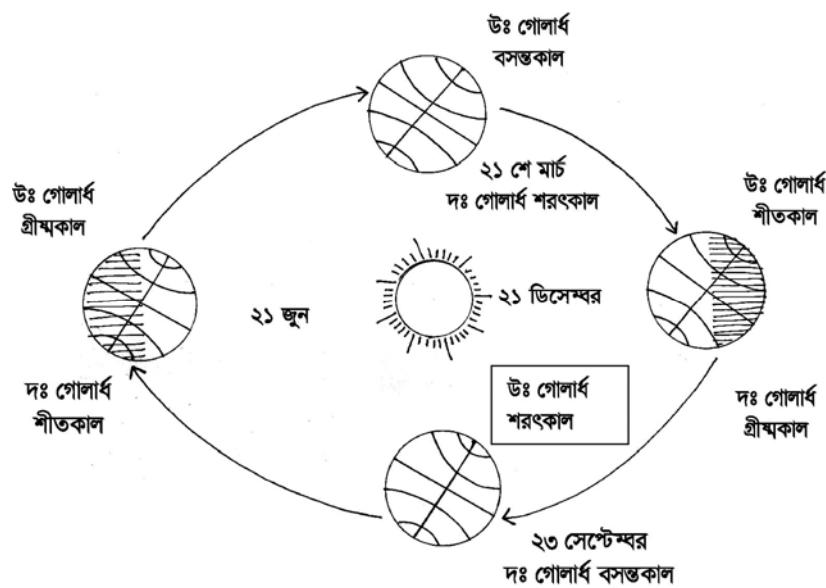
L. 29 eQi

M. 80 eQi

N. 170 w b

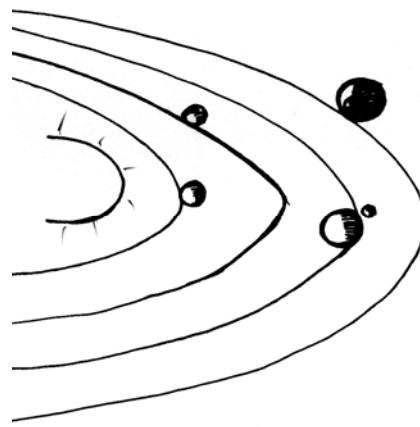
ମର୍ବକ୍ଷୟ କ୍ଲୋ

1.



K. A^WyK M^WZ Kx?

L. R^tbi g^tSig^tS t^tK Rj^tB^tqi g^tSig^tS ch^tesj^t tk d^ti e^to^taZ nq t^tKb?
 M. ^W^tY t^tM^tj^ta^tnetP^tq t^tQ^t i^tZ I metP^tq eo^t b KLb nq P^t t^tK e^tL^t Ki |
 N. D^tEi t^tM^tj^ta^t30 t^tk W^tm^t^t b I i^tZi ^N^tKgb n^te- h^tmn Dc^t'cb Ki |2.



K. T^tμ M^t K^tZv w^t tb m^tHK GKevi c^tW^tY K^ti?

L. c^tH^tK GLb Avi t^tm^ti RM^tZi m^tm^t ai^tnq bv t^tKb?
 M. i^tZi te^tvq 3 Ges 4 b^tx^ti M^tni g^ta^t t^tKbW AÜKvi "Qbœ^tK e^tL^t Ki |
 N. 3 b^tx^ti M^tni m^t_ A^tbK w^tgj _vKv -^tEj 4 b^tx^ti M^tW Rx^t RM^tZi eme^tmi Dc^th^tWx bq- h^tmn e^tL^t Ki |

†‡q` k Aa"vq

cōKwZK cwi tek Ges ` †Y

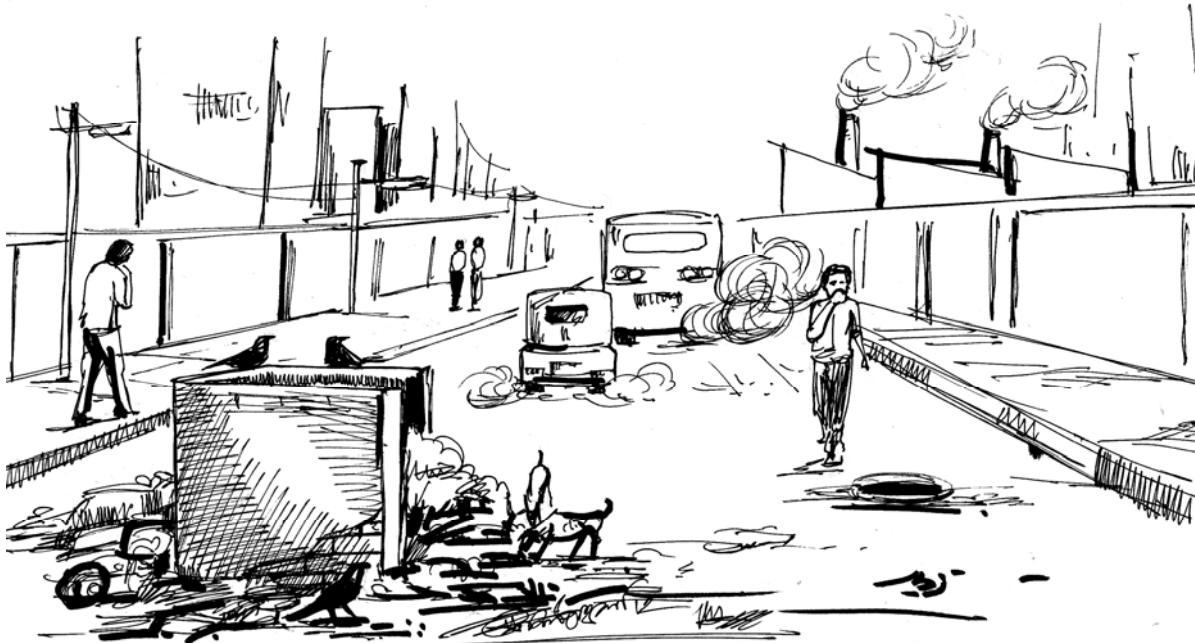
Avgit` i Pvi cirki me Ro | RxetK wb‡q M‡o D‡V‡Q cōKwZK cwi tek | tZigiv Rvb newfbœRo | Rxtei
gta" i tq‡Q m¤úK‡ Awei Rx | cwi tekki gta"l i tq‡Q wbœo m¤úK‡ hvi dtj Avgit` i Pvi cirk
cōZwbqZ N‡U P‡j ‡Q newP† me KgRvÈ | cwi tekki gta"l i tq‡Q wbœo m¤úK‡ hvi dtj Avgit` i Pvi cirk
newfbœDci vb e"envi K‡i | hvi Rb cwi tek tm newfbœKgRvÈ Pvj vq | th tKvb GKwU cwi tek gvbj
hLb G aitbi KgRvÈ Pvj vq ZLb tmLvbKvi Dci newfbœcive c‡o |

G Aa"vq cW tk‡l Avgiv -

- cwi tek ` †Y e"vL"v KitZ cve |
- cwi tekki Dci vbmgtini ` †Yi Kvi Y e"vL"v KitZ cve |
- cwi tekki Dci v‡bi Dci ` †Yi cFve e"vL"v KitZ cve |
- cwi tek ` †Y cōZ‡ivai Dci q e"vL"v KitZ cve |
- cwi tek msip‡Y mg‡R m‡PZbZv m¤ó‡Z D‡` "Mx ne |
- cwi tek ` †Y Ges Gi cFve tcv‡vi Dc"vcb K‡i cKwK KitZ cve |

cW - 1: cwi tek `+Y

mf Zvi AMmZi mvt_ mvt_ Avgit` i Pri cirki cwi tek cwi eWZ nftQ| gvb| Zvi cjqRb tgUrbvi Rb^m
cKmZK cwi tek K wefbefte eenvi KitQ| cKmZK A_ev gvb| i wefbekgkE GB Dfq Kvi tYB
cwi tekki wefbekDci vbi cwi eZD NUtZ cti | hvi Kvi tY A~vweK Ae~vi mjo nq Ges cwi tekki
fvi mg bó nq| dtj gvb| I Dwmc mn Abv bó cMxi Rxeb ugkKi mslx nq| Rxtei Rb^m cwi tek GK
A~vK Ae~vi mjo nq| GtK Avgiv ej cwi tek `+Y|



WPT : `wZ cwi tek WPT nte

KvR: cwi tek `+Y mslK^cRbvr|
cjqRbxq DcKiY: tbvU LvZv, Kj g|
cWZ: tZigvi GjvKv I <+j i cwi tek chfePY Ki | cwi tek tKvfbv cKvi `+Y NftQ wKbv Zv j|
Ki Ges mbv³ Ki | th mKj `+Y Zig mbv³ KtjQ tm mslK^ckYtZ AvtjvPbv Ki |

¶i wZ¶i Rxet_k i "Kti mKj cKvi Rxet_i gvb| i wePiY cWexi GB cwi tek| cwi tekki tKvb
AskB AvR `+Yg^b bq| gvb| i ay Zvi wbtRi cwi tek KB `wZ Ki tQ bv| mKj Rxet_i Zvi cwi tek
GB `+tYi dtj ¶i wZM^b nftQ| cwi tek `+tYi dtj gvb mn mKj Dwmc I cMxi Rxeb avi tY weN
NftQ| `+Y tKb NUtQ? wKQz ¶i wZKvi K Dci v b cZ| ev cti v fte eenvi i dtj Avgit` i cwi tek
`wZ nftQ| htk Avgiv `+K (Pollutant) ej | wefbekvLbvr, Zvc we`jrtKt`i Pgib Ges hvbevb
t_k K wM^b taqv, RngtZ eeuZ KtUbvkK, i vvvqK mvi, wefbekAvRbv, cWb, cW^cK BZ^w nftjv
`+tK D`nviY| G mKj `+K wfbefte cwi tekki wefbekDci vbtK `wZ Ki tQ|

cW - 2 : cwi tekki Dcv` vbmgti ` tYi Kvi Y

cwi tek cayZ ` tUv Dcv` vb wbtq MwZ | G, tji v nj cwi exi mKj Rxo Ges mKj Ro Dcv` vb | tZigiv Rvb mKj Dm` | cayx wbtq cwi tekki Rxo Dcv` vb MwZ Arevi Ro Dcv` vbi gta" i tqtQ gwU, cwb, evqmn cwi exi Abib" mKj Roe" | ` tYi dtj cwi tekki mKj Rxo Dcv` vb Ges Ro Dcv` vb PwZM" nq | hvi dtj gwbl mn mKj Rxo cwi tek ugik i mxyb nq | GLb ckontjv cwi tek ` wZ nI qvi Kvi Y Kx?

KvR: cwi tekki Dcv` vbmgti ` tY mxytK®Rvb
 cayqRbxq DcKi Y: tbvU LvZv, tcv÷vi KmR, gwK® |
 cxDZ: wkpitKi mnwqZvq ` j MvB Ki | ce@Z®cvtV tZigiv th mKj ` tY mbv³ KtiQ tm, tji vi Kvi Y
 Kx Zv ` tji chfeP Y Ki | cwi tekki G mKj Dcv` vb ` wZ nI qvi Drmmgn LjR tei Ki | ` tYi
 Kvi Y Ges Drmmgn tcv÷vi KmR wj tL tkYtz cokD Ki | cDZK ` tji KvR Nji Nji t'L Ges
 tkYx Avtj vPbvq AskM®Y Ki |

cwi exZ hLb newfboretei msLv ` Z tetu hq ZLb Rxeb avi tYi Rb" newfborewv ` vI tetu hq | ZLb
 cwi tek Zv i Aw-Zj wutK ivLvi Rb" Zviv Ggbme KvRKg®Kti hv cwi tekki ` vfwieK wbggtK
 evaM" Kti | eZgytB cwi exZ RbmsLv pgk eyx cvtQ | hvi dtj evowZ gwbtli Rb" cayqRb ntQ
 AwZv³ Lv", evm" vB, hvevnb BZw | Pvli Rvq evotZ | evm" vB Zvi KitZ gwbtli ebRv2j
 tKtU tdj tQ | dtj evqgEtj tetu hq" Q wev³ me Mvimi cwi gvb | Gme Mvimi gta" i tqtQ KveB Wb
 A. vBW, KveB gtbv vBW BZw | dtj cwi exi Zvcgvv tetu hq" Q | ZvQov Gtvimyj | tindRytUti
 t_k K wBMZ CFC (tKtivtduvKveB) tRv " tK PwZM" KitQ | evowZ gwbtli Rb" Lv" |
 evm" vB Qovl cayqRb bvbvb cYmgM" dtj Zviv Mto Zj tQ newfborek Kvi Lvbi | Gme wki Kvi Lvbi
 i vmiqwbK eR® ` wZ KitQ cwi tek | GfvteB cwi exi cwi tek ` wZ ntQ | cieZ®cW, tjtvtZ tZigiv
 cwi tekki cayb wZbU Dcv` vb gwU, cwb | evqy ` tY mxytK®Rvbte |



PT : newfborete cwi tek ` tY

cW-3, 4 : gwU ` tY

Avgiv` i Rxeb avi tYi Rb` gwU AZ`vek`K | gwU tZ meñfbædmj dtj hv Avgiv Lv` intmte MÖY Kwi | i ayLv` B bq Rxebavi tYi meñKQB Avgiv thgb- evm-`vb, e-ż, JIja BZ`w i Rb` Avgiv th Dw`t` i Ici wofPKxj ZvI gwU t_tK cñB | Dw`t` I Ab`vb` cñYxi Rxeb avi tYi Rb` I gwU Acwiñhø eZøt`b gwU tK Avgiv meñfbæte `wl Z KiñQ | hwi dtj gwUi DeñPZv bø nt`Q |

KvR : gwU ` tY I gwU ` tYi Drm m¤útK`Rvbv
 cñqñRbxq DcKiY : tbvU LvZv, tcv÷vi KMR, gwKø |
 cñZ: tZvgvi GjvKvi meñfbæ`vb cñi`kø Ki | Gme -`vb Krfvte gwU `wl Z nt`Q Zv chñeñY Ki | jñ` Ki gwU ` tYi Drm, tñv Kx Kx Ges LvZvq wj tL iL | tZvgvi GjvKvi gwU ` tY tñta meñBtK mtPZb Ki tZ ntj Kx Kx Ki tñt Zv tcv÷vi KmñR wj L | tkññtZ cñkø Ki Ges AvtjvPbvq Ask bv |

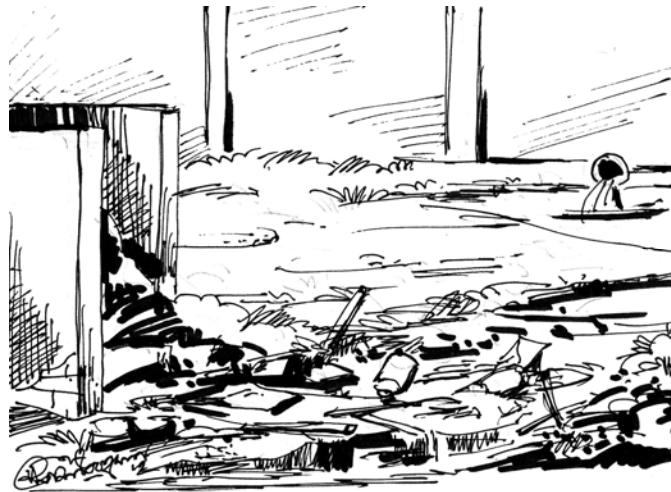
gwU tZ Avgiv th mKj AveRøv I eRø c`v_`tduj G, tñv tK eñKtUv qv cñtZ mnvh` Kti | hwi dtj G, tñv gwUi mñ½ mnñR wgtk hvq | GQvovl AvRKvj Avgiv Ggb me `è`w` eñenvi KiñQ th, tñv gwU tZ cñP bv | thgb KñP, cñj w_b, cñóK BZ`w` | hv Dw`t` i -`vfnñK eñxñtZ cñZeÜKZv mñó Kti |

gwU ` tYi Drm

cñóK, cñj w_b `è` Qvovl gwU tK Avgiv meñfbæte `wl Z KiñQ | Gmtei gta` itqñtQ meñfbæAveRømn KvñKvñR eñeüZ i vñvñbK mvi, KxUbvkK eñenvi Ges mñKvñKvi Lvñv eRø BZ`w` |

gwU ` tYtñta Ki Yxq

gwU ` tY tñta cñóK, cñj w_b BZ`w` th, tñv cñPbkjx bq tm, tñv eñenvi eñKtZ nñt | RngtZ KxUbvkK, i vñvñbK mvi eñenvi eRø KtZ nñt | GQvovl thLvtb tmLvtb gajv AveRøv wbtñc Kiv Pj tñt bv |



ñPñ : gwU ` tñb

cW - 5, 6 : cwb `tY

eZgutb cweZ mfcq cwi bi Afve t` Lv w` tqfQ| cwb Qov Rxeb Pj b| cwb `tY Avgit` i Rb` GkiU eo Pš-vi weIq| eZgutb cwb bwfrte `w Z n"Q| gwbl B cwb `tYi Rb` vqx| G mgm`v i ay Avgit` i t` tk bq| mwiv wetkB Guv Glb AZ`š-cKU|

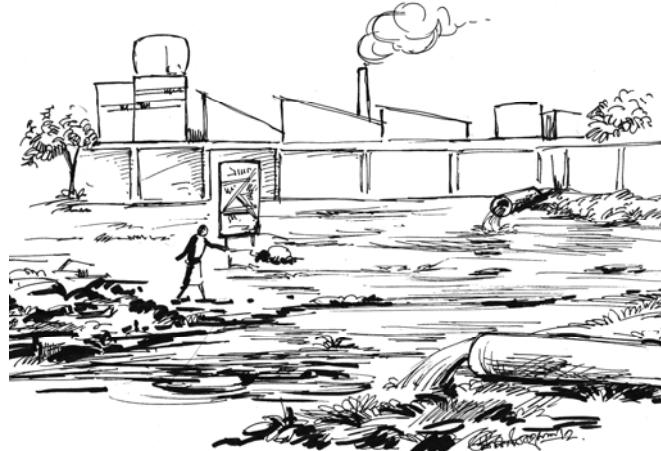
KvR : cwb `tY Ges cwb `tYi KvY Ges Drm mꝝútK`Rvbv

cxwZ : tZvgvi GjvKvi ev GjvKvi wbKti ev Mötgi emotZ hw` tKvb Rjvkq, cKi ev b`x _vK Zv cwi`kD Ki | jP` Kti t`L GLvbKvi cwb Kxfte `w Z n"Q| hw` tZvgvi GjvKvi ev Mötgi emotZ G ai`bi Rjvkq ev cKi A_ev b`x wKQB bv _vK Zte mncwNt` i mv_ AvtjvPbv Kti tRtb bv| Kxfte Zv` i GjvKvi cwb `w Z nq| tbvU LvZvq wj tL iL| cwb `tYi Drm I KvY tRtb tkYtZ AvtjvPbvq Ask bv|

tZvgiv Rvb cwb Avgiv wefbete e`envi KvY | Avgiv cwb cvb KvY, Lv` ^Zv KvY, cwb w` tq tMmj KvY, tavqz tgvQvi KvR KvY | Gme Qovl Ab`v th tKvb KvR thgb- wki KvLvbqI cwb Qov tKvb `eB ^Zv Kv hvq bv| tZvgiv Kx Rvb Gme cwb Avgiv tKv t`K cvB? eÓ, b`x, Si Yv, Lvj -wej, tWev-cKi BZ`w` Drm t`K Avgiv cwb cvB| hvi Mötgi em Kti Zvi v maviYZ Gme Drm t`K cwb msMö Kti | GQovl Lvevi cwi bi Rb` Kc, bj Kc BZ`w` e`envi Kti | tZvgiv Rvb knti evmewotZ eo eo cvBtci gva`tg cwb miei Kv nq| hv Avgiv Uvc ev Kti i gva`tg cvB| Gme cwb b`x ev fMF® t`K msMö Kv nq|

cwb `tYi KvY Ges Drm

wefbete cwb `w Z n`Z cwi`i | G KvY wj i gta` gwbtli KgRvEB cwb `tYi Ab`Zg KvY| GQovl wefbeteOKNOK KvYtYi cwb `w Z n`q _vK| thgb- tZvgiv ebvi K_v i`tbtQv| ebvi dtj gwbl | MpcwZ ci cwi cwbZ wgtk Ges cwb `w Z nq| bMvqb | wki wgtbi dtj cq:wb®<kb | wki eR® AtbK teo MqtQ| Gme eR® wefbeteRjvktq coQ| wefbeteR® Gme Rjvkq t`K b`x t`K Ges b`x t`K mmti coQ| dtj cwb `w Z n`Q| GQovl Kv Drct` b evortbvi Rb` RngtZ wefbete KvUbvkK | ivmjqbk mvi e`envi Kv n`Q| G, tji wefbeteRjvktq t`K b`x Ges b`x t`K mmti coQ| G, tji gwbl wbtPi cwi bi mtz`l wgtk cwbZ KtQ| GQovl tZvgiv jP` Kti _vKte Atbtk cKtii cwbZ euk, teZ, cU BZ`w` wfrtq ivL| Mi, gml, Qmj tMmj Kvq| Atbtk wefbeteRjvktqi Dci KvPv cvqLvbv ^Zv Kv qKtQ`w Z Kti |



MP̄ : cwb `tb

cW - 7, 8 : evqy ` t Y

Avgut` i cW_exi Pvi crtk i tqfQ evqgEj | GB evqj gta" B gvbj mn Ab"b" cWx | Dwmc teP AvtQ |
gvbfl i mō weFbæKvi tY evqj tKt bv tKt bv Dcv` vbi cwi gib teo ev Ktg hñfQ | hv ci tek |
Avgut` i Rb" ¶ZKi | evqj G ai tbi cweZb evqy ` t Y bvtg cwiPZ | AvR cW_exi Pvi crtki evqgEj
weFbæFte ` w Z ntQ |

KvR: evqy ` t Y Ges Gi Drm mꝝúfK®Rvbv |

cWZ: tZvgvi GjvKvi evqy ` t Y Drm, t j v chfe¶Y Ki | j ¶ Kti t` L gvbj Kxfvte evqy ` w Z
Ki tQ | evqy ` t Y Ki Y Ges Drm, t j v mbv³ Kti tcv÷vi KmR wjL | tkYxZ cōkD Ki
Ges Avtj vPbvq AskMøY Ki |

evqy ` t Y Ki Y Ges Drm

gvbfl i Øivv Ges cOKwZKfvte evqy ` w Z ntZ crti | ci tek meÁvbxi evqy ` t Y Rb" KZKMtj v Kvi Y
Dtj t Kti tQb | G, t j vi gta" i tqfQ hvbevn, wkí Kvi LvBv t _t K wbMZ Ktj v taqv | hv gta" i tqfQ
KveB Wb A· vBW Ges KveB gtbvA· vBW M·v | GQvovl Avgut` i t` t k BtUi fvUvq hLb BU ^Zwi Kiv
nq ZLb tmLvB t _t K Ktj v taqv mō nq | tmLvB Kvi tmB Ktj v taqv evqy ` t Y Nuq | dtj evqy
gEjt t Lv t q A· vFweK cweZb | evqy ` t Y Avtiv Kvi t Y gta" i tqfQ TucYgvi Mvov, tij Mvov,
evm, tUfuv BZw i BwAb t _t K tewi tq Avmv taqv | GmKj taqv mft wbMZ nq KveB gtbv. vBW,
KveB KYv Ges KveB Wb A· vBW | th, t j v ci tekki Rb" AZ"š- ¶ZKi | evqy ` t Y Rb" i ay th
hvbevn, wkí Kvi LvBv B· vqz Zv wKš' bq | wMv t Ui taqv, Gmteom, weFba itbi AveRvmm i vov
M·v BZw | evqy ` t Y Nuq | evqy ` t Y Avi | GKwU Ab"Zg Kvi Y ntj v wbnePvfi ebR½j tKtU t dj v |



MP̄ : evqy` + b

cW - 9 : ` + Yi cfve

tZigiv gwU, cwb I evqy` + Y Kxfvte NtU Zv tRtb0| tZigiv Kx Rvb Gme ` + Yi dtj cwi tekki Dci tKib ai tbi cfve cto?

KiR : weifbae` + Yi cfve mꝫutK®Rvbv |

c×Z : ikPitKi mnvqZvq ` j Mvb Ki | ` tj tZigiv` i we` vj q Ges Gj vKvi Aikci tekki cwi tek cwi`kD Ki | t`L Gj vKvi cwi tek tKib ai tbi + Y NUtQ? Gme ` + Yi dtj gvbj mn Abvb` Rxtei Dci tKib ai tbi cfve cofq Zv ` tj Avtj vPbv Kti tbvU LvZvq vj L| tkYtZ ` j t_k Dc`vcb Ki Ges tkYx Avtj vPbv AskMöY Ki |

gwU ` + Yi cfve

tZigiv tRtb0 gwU ` + Yi Ab`Zg Kvi Y ntQ gwUtZ eRq cwi giv tefo hvI qv| gwU ` + Yi Rb` ` vqk weifbaekwb I i vnvqbk eR® Gme eR® thLvb tmLvb tdjvi Kvi tY cwi tek bvbvftte PnZMö` nq| gwUtZ tdj ` lqv Kip, Gj ygbqvg, cwj w_b BZ`w` gwUtZ mntr wgtk bv| dtj gwU Zvi DeY®Zv nvivq| tZigiv tRtb AevK nte Gj ygbqvgi gwUi mvf_wgtk jvtM GKö k eQi | Kipj vtm ` ök eQi Ges cwj w_tbi jvtM cöq mvf Pvi ök eQi | KipRB eSjZ cwi tqv Kx fqven Ae`v| GQrovI G, tji Avgit` i b`v, Rj vktK fiw Kti Ges Rj ve Zvi mjo Kti | cieZ®Z G, tji cKi, b`x, mMi Gme ` vtbI ` vbs-wi Z nq| hvi dtj mKj Rxtei tetP _vKvi Rb` G, tji v ûgKxi Kvi Y nq| Kip RngtZ th KxUbvkK I i vnvqbk mvi eenvi Kiv nq Zv mKj Rxtei Rb` PnZKi | Gme i vnvqbk ` è` Lj` i mvf_wgtk K`vYt i gZv fqven tivMi mjo ntZ cwi |

cwb ` + Yi cfve

Avgiv weifbae` cwb ` w Z KiQ Zv tZigiv tRtb0v| Lvt` i DvQó gqjv AevRbv, RxeRsj gZt`n, Mpt`vxi eenvih®vbw ai tbi cPbkj e` thLvb tmLvb tdjv nq| G, tji cip weifbaeRxevYj mjo nq| evoi cwb cwi mvf_G, tji wgtk cKi, b`x | Rj vktqi cwb tZ wgtk| dtj cwb ` w Z nq| G ` w Z cwb cwb Ktj Avgvkq, Wvqvi qv, Ktj iv, RvEm, UbdtqW BZ`w` tivM nq| cwb ` w Z ntj tm cwb tZ giv| Ab`v Rj R cÖxI ePz cwi bv| dtj cwb cwi tekki fvimug` bō nq|

evqy` † Yi cfve

tZvgiv tR‡btQv mewfbcvte evqy` w Z nq | evqy` w Z ntj tm evq‡Z mewfbcvM v‡mi cwi grY epx cvq | hv gvb‡l i Rb` ¶ZKi | Gme ¶ZKi M v‡mi g‡a` KveB WB A· vBW, KveB g‡bvA· vBW, mvj dvi WB A· vBW BZ`w` i bvg D‡j h‡M | evq‡Z KveB g‡bv vB‡Wi cwi grY te‡o tM‡j gvb‡l i kjmKÓRwbZ tiM t‡K i i“Kti KvYi Gi gtZv grivZK tiM ntZ cvt | GQovl wkí Kvi Lvov t‡K wbM‡ taqy evq‡Z wgtk M‡q GmW epxi m¤ó ntZ cvt | GB GmW epxi i aygb‡l i ¶ZB K‡i bv, Rj R cÖxi v ¶ZM‡’ nq | Gi dtj ebfgl aÝsm nq |

Gme Qovl evqy` † Yi dtj c‡_exi ZvcgvÍv Av‡Mi t‡K A‡bK epx tctq‡Q | meÁvbxi v etj tQb Gfvte ZvcgvÍv epx hv` Ae„nZ _v‡K Z‡e mgj c‡ó Mo D”PZv epx cote | dtj c‡_exi mgj `DcKj eZPbxPz -`j f‡g c‡b‡Z W‡e hvte | Averi tK‡bv tK‡bv A‡Aj ¶i vi Ketj cote | dtj -`vbxq Rj evqj cwi eZ‡ NU‡e | G‡Z i aygb‡l ¶ZM‡’ n‡e bv, AmsL” D‡M‡ | cÖYx c‡_ex t‡K jyB ntq hvte |

cW - 10 : `† Y cÖZ‡iva | cwi tek msi ¶Y

tZvgiv tR‡btQv mewfbcvte cwi tekki gwU, cwb I evqy` † Y NU‡Q | gwU, cwb I evqy Avgv‡` i te‡P _vKvi Rb` Acwi nh‡¶ wKšygb‡l i Kvi tYB eZg‡b G cwi tek ax‡i ax‡i ev‡mi A‡hM ntq cotQ | cwi tek‡K m¤` I -`vfw‡K bv ivL‡Z cv‡j c‡_exi mKj Rx‡ei Aw-ZB ugKxi m¤‡xb n‡e | cwi tek `† Ygj³ ivLvi GKgvÍ Dcvq ntjv `† Y cÖZ‡iva | cwi tek m¤‡KmK‡j i g‡a` m‡PZbZv m¤ó |

KvR : `† Y cÖZ‡iva cwi tek msi ¶Y m‡PZbZv m¤ó Dcvq m¤‡KmK‡v
c‡wZ : wk¶‡Ki mnvqZvq `j MvB Ki cwi tek `† Y t‡K wb‡R I mKj tK we‡Z ivL‡Z Kx Kx Kiv hvq Zv `‡j Av‡j vPbv K‡i tbvU LvZvq wj L cwi tek `† Y t‡ta m‡PZbZv m¤ó j‡¶` tk‡wb ^Zv‡ Ki -`‡j cÖK‡bi e-e-`v Ki

gwU, cwb, evqy Qovl cwi tekki Rx‡ei Aw-Zj K_v fv‡B hvq bv | Avgv‡` i mK‡j i D‡PZ cwi tekki G Dcv‡v‡j v‡K `† Ygj³ I h_vh_fvte msi ¶Y Kiv | eZg‡b RbmsLv te‡o hv‡qvi Kvi tY cwi tekki G mKj Dcv‡v‡bi eenvi A‡bK te‡k nt‡Q | dtj cÖZ‡bqZ mewfbcvte cwi tekki `† Y NU‡Q | cwi tek‡K `† Ygj³ ivL‡Z I msi ¶Y K‡i t‡Z ntj Avgv‡` i mev‡K wb‡Pi we‡q,‡jvi cÖZ tLqy ivL‡Z n‡e |

- m¤` cwi tekki Rb` gwU, cwb I evqy` † Y hv‡Z bv N‡U tmw‡K j¶` ivL‡Z n‡e |
- ewoNi, -`‡j, iv-`vi cv‡k MvQcvjv jMv‡Z n‡e |
- tLvjv RvqMvq thL‡b tmL‡b gjg‡ ZvM Kiv eÜ K‡i t‡Z n‡e |
- wkí Kvi Lvov t‡K taqy tei ntq thb `† Y bv N‡U, tmRb` taqy evq‡Z Qoveli Av‡MB Av‡bK cÖY³ i mnv‡h` G‡K `† Ygj³ K‡i t‡Z n‡e |
- cÖK, cij‡_b BZ`w` i eenvi eÜ K‡i t‡Z n‡e | G‡jvi cwi e‡Z©cvURvZ `‡e`i eenvi Kiv th‡Z cv‡i |
- KxUbvK, i mnv‡bK m‡ii eenvi eÜ K‡i t‡Z n‡e | G‡jvi cwi e‡Z©Re mvi eenvi K‡i t‡Z n‡e | cÖK‡K Dcv‡q tcvKv gwKo `gb K‡i t‡Z n‡e |

- Ni -emoi gaj v AveRØv I Lv` `` `te i DwQó thLvtb tmLvtb bv tdtj tKvtbv wvw Ø -'vtb gwUi MZqt dtj gwU Pvcv w` Z nte|
- mKj RbMYtK `+Yi ¶ZKvi K w` K Ges cwi tek msi ¶Yi Dcvg m¤útK®mPZb Ki tZ nte|
- eb msi ¶Yi Ki tZ nte| gtb ivLtz nte G ,tj v newfbœRxtei Avevm`j | GQvor MwQcij v Avgit` i cwi tek tK `+YgjB ivLtz mnvh` Kti |

G Aa`vq hv wkljvg

- cwi tekki newfbœDc` vbi gta hLb tKvtbv cwi eZ Ø NtU ZLb cwi tekki fvi mg` b6 nq| dtj gibl mn Ab`v b Rxtei Rb cOKj cwi tek m¤ó nq| hvK Avgivewj cwi tek `+Y|
- cOKj Ges gibjI l newfbœKgRjE Dfq KvityB cwi tek `+Y NtU| Zte newfbœ`+Yi Rb` gibl B cÖvbZ `vqx|
- cwi tekki gwU, cwb I evq `+Yi dtj i aygbj B wecbante bv, AmsL` Dwmc I cOKxi Aw-Zi wecbante|
- `+Y tiva Ges cwi tek msi ¶Yi Dcvg m¤útK®mPZbZv m¤ó ntej v cwi tekki fvi mg` i ¶Yi Ab`Zg Dcvg|

Abkjx bx

kb`-`vb ci Y Ki :

1. PvI i Rng evotZ I evm`-`vb ^Zvi Ki tZ gibl ÑÑÑÑÑÑÑÑÑÑÑ tKtU tdtj tQ|
2. wki Kvi Lvvi ÑÑÑÑÑÑÑÑÑÑÑÑ cwb `+Yi Rb` `vqx|
3. newfbœAveRØtK ÑÑÑÑÑÑÑÑÑÑÑÑ cPZ mnvh` Kti |

msw¶B cökæ:

1. `+Y Krfvte NtU Zvi GKU D`vniY `vI |
2. `+Y tiva m¤útK®Zvgvi Gj vKvi mevBtK m¤PZb Ki tZ ntej Zng Kx Kx Ki tZ cvi?
3. Zvgvi emoi cwi tek msi ¶Yi tZvgvi Ki Yq Kx?
4. tZvgvi weavj tq cwi teg msi ¶Yi Zng Krfvte fngKv ivLtz cvi?
5. cwb `+Yi `+Yi cÖvne Dtz EKi |
6. evly `+Y tKb gibjI i Rb `¶ZKi?

eÜbePhb cökæ

1. tKvbwU t_tK knii i evvemoZ cwb mieivn Kiv nq?

K. bj Kc

L. cKj

M. fMtfC

N. Kc

2. ḡwU `t̄Yi Kvi Y n̄t̄j v-

- i. c̄w̄j w̄_b | KxUbvkK
 - ii. Āv̄eR̄v̄ | ḡZR̄x̄t̄` n̄
 - iii. īm̄v̄q̄l̄b̄K m̄v̄i | K̄P̄
- ib̄Pi t̄KvbiU m̄v̄K?

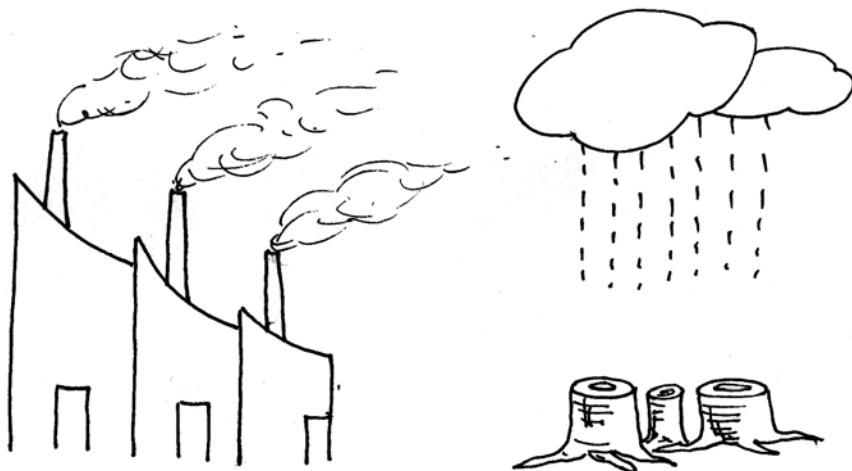
K. i | ii

L. i | iii

M. ii | iii

N. i, ii | iii

`K̄wU j̄P̄ Ki Ges 3 | 4 b̄x̄i c̄k̄e D̄Ei `v̄l :



P̄t̄ : Kvi Lv̄v̄i tāqv̄ | ēP̄ ib̄t̄bi

3. `k̄K̄f̄i i w̄ P̄ȳZ As̄k̄ Ab̄c̄w̄' Z t̄KvbiU?

- K. K̄v̄ēB̄ W̄BA· v̄BW
M. t̄K̄f̄i v̄d̄t̄i v̄ K̄v̄ē

- L. m̄j̄ d̄v̄i W̄BA· v̄BW
N. K̄v̄ē ḡt̄b̄v̄A· v̄BW

4. w̄P̄t̄ c̄w̄k̄Z NUb̄w̄U c̄w̄_ex̄Z ms̄w̄UZ n̄t̄j -

- i. I R̄t̄bi t̄íi b̄o n̄t̄e
 - ii. Āøēø̄i m̄øēb̄v̄ ev̄ø̄t̄e
 - iii. M̄b̄n̄DR c̄Z̄ūq̄v̄i m̄ø̄ n̄t̄e
- ib̄Pi t̄KvbiU m̄v̄K?

K. i | ii

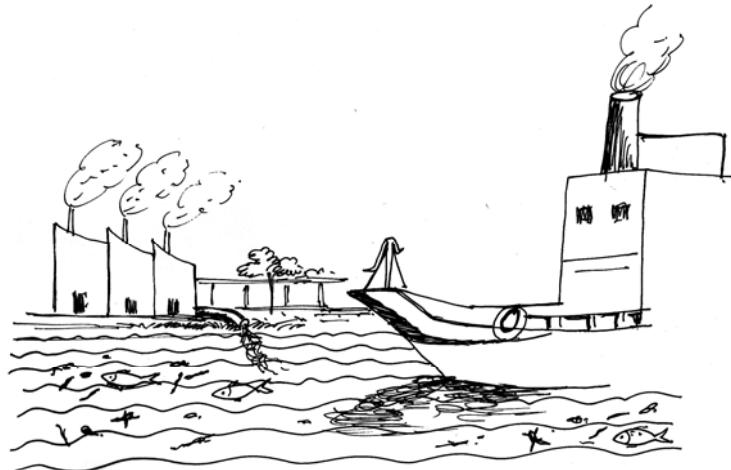
L. i | iii

M. ii | iii

N. i, ii | iii

mRbkxj cke

1.



WPT - b`x

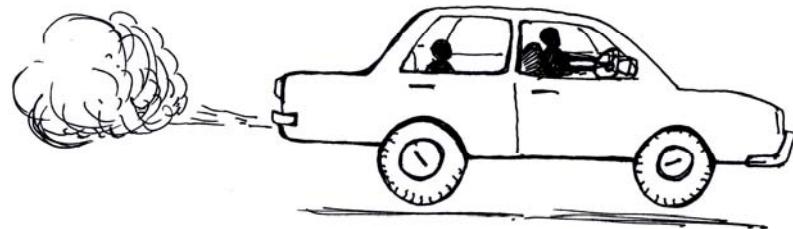
K. GmW ejo Kx?

L. cwoK gwiRb PIZKi tKb? evlv Ki |

M. Dl xc Ki cny, tjv Kx ai tbi mgm vi mjo b nq Q Kvi Ymn evlv Ki |

N. Kx c`tPc Mny Ki tj Dl xc Ki cwi teki fvi mg i yv cte?

2.



WPT

K. `tY Kx?

L. cwb `tY tKb PIZKi?

M. cwi teki Dci opo Kx ai tbi mgm vi mjo Ki te evlv Ki |

N. Dl xc Ki mjo mgm vi mgvai tb Avgiv mevB Kx ai tbi Ae`vb ivLtz cwi Zv h3mn wetkH Ki |

PZPK Aa"vq

Rj evqycwi eZB

cw_ek K wti itq"Q evqqEj | tKib "vbi evqqEj i ^mgqi Zvcgvv, PvC, evqcen, Av`Zv G
Ae"v, tj v ntv Avenl qv | Avi tKib "vbi AtbK eQti i mgvMK Avenl qv ntv Rj evqy Avenl qv |
Rj evqy Avgut` i RxebtK bvbvfe cfwk Kti | ^fweK Avenl qv | Rj evqZ Avgiv ^fweK Rxeb
hvb Kvii | wKSh evqqEj i Zvcgvv eyx Kvii Y wetkji Rj evqycwi ewZQ ntv hv"Q | Rj evqycwi eZbi
dtj evsj v k PwZM" ntv Q |

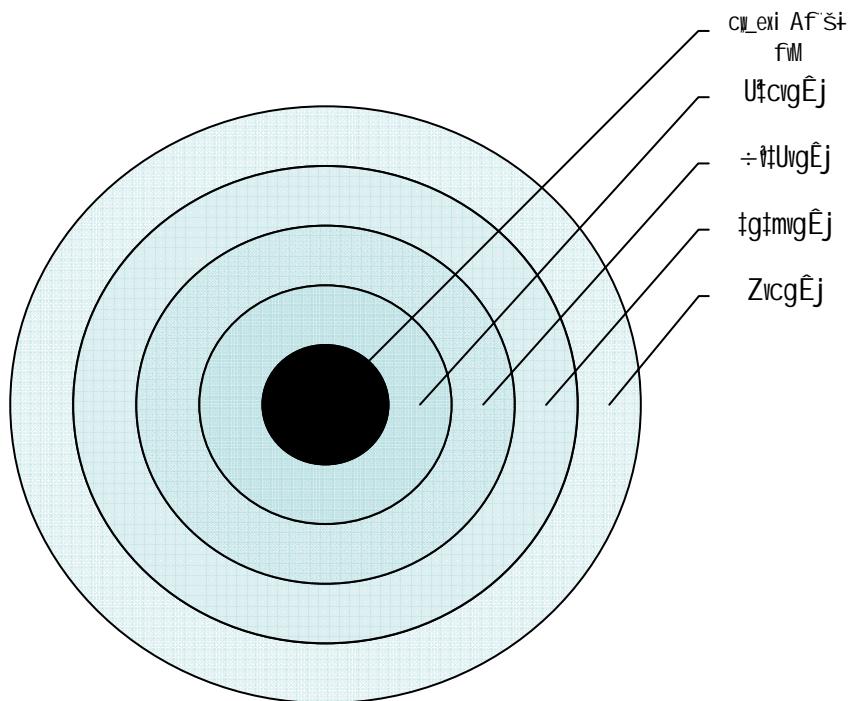
G Aa"vq cw tk"l Avgiv -

- evqqEj i wewfb"i eYDv Ki"Z cve
- cwi te"k cwPmu, Aw" tRb Pmu | Kie" Ptmu , iZi e"vLv Ki"Z cve
- Avenl qv | Rj evqye"vLv Ki"Z cve
- D"Zv eyx | Rj evqycwi eZbi Kvii Y e"vLv Ki"Z cve

cW 1 | 2 : cW_exi evqgEj

‡Zigiv lô tkN‡Z tR‡b0 mñóí cÔgw ‡K cW_ex Lø Mø g wj | Zvici axi axi wÈv n‡q‡Q | G mgq njj Kv c` v_©A_w evqexq c` v_©metP‡q evB‡i i w‡Ki Ask `Zix K‡i |

th evqexq Askij cW_exi cÔ‡K n‡i ti‡L‡Q tmUB evqgEj | ‡Zigiv Rb th, evqgEj gj Zt b‡B‡U‡Rb I Aw ‡Rb w‡q ^Zvi | GQovl Rj xq ev^ú, aij KYr, AwMø, KveØ WwB-A· vBW Ges Avi I wKOz M'vm evqgE‡j i‡q‡Q | cW_ex mKj wK‡K Zvi wb‡Ri w‡K U‡b | tmB U‡bi d‡j evqgE‡j i M'vm, tj v cW_exi ctôi KvQvKwQ _‡K | ZvB f-c‡oi KvQvKwQ evqgEj Nb n‡q _‡K | f-cÔ t‡K ‡Zigiv hZ Dc‡i i w‡K hvte, evqgEj ‡K ZZ njj Kv ev ciZj v ci‡e | ZvB ‡Zigiv hw` ce‡Zi Pøvq DV‡Z PvI Z‡e klm tbI qvi Rb Aw ‡Rb m‡_ wb‡q th‡Z n‡e | evqgEj f-cÔ t‡K K‡qKk wK‡j wqUvi ch‡-‡Z | evqgEj ‡K A‡bK, tj v -‡i f‡M Kv n‡q | cÔg PvijU -‡i n‡j v Ut‡w‡U qvi ev Ut‡cvgEj, ÷‡UvgEj, tg‡mvgEj | Zv‡gEj |



WPT : evqgE‡j i wewfbœ-‡i

Ut‡cvgEj : f-cÔ t‡K GMvi wK‡j wqUvi ch‡-evqgEj ‡K ej v n‡q Ut‡cvgEj | GB -‡i evqj te‡ki fM c‡qvRbxq Dcv` vbmgn thgb Aw ‡Rb, b‡B‡U‡Rb, KveØ WwBA· vBW I Rj xq ev^ú _‡K | GB -‡i gvb‡l I Ab‡v‡ R‡tei R‡eb‡K c‡weZ K‡i Ggb me NUbv N‡U | thgb GB -‡i tgN, e‡O, evqyc‡vn, So, K‡qkv Gme n‡q | ZvB Ut‡cvgEj evqgE‡j i metP‡q , i Z‡cY©-‡i |

÷ #UngEj : UtvgEj i wK IctiB ii "nqQ ÷ #UngEj | GB -i UtvgEj t_ik ii "Kti f-ctoi
cAvk wKtj wgvri chSÍ A_P cIq 39 wKtj wgvri we-Z | GB -i t qQ I Rb bvgi GKwU M'vm | GB
M'vm m#hP ¶wZKvi K i wK t_ik Avgv i i ¶v Kti | GB -i Ges Gi Dcti i w_ik evqgEj i Ab"vb"
M'vm Lp Kg cwi gvtY AvgQ |

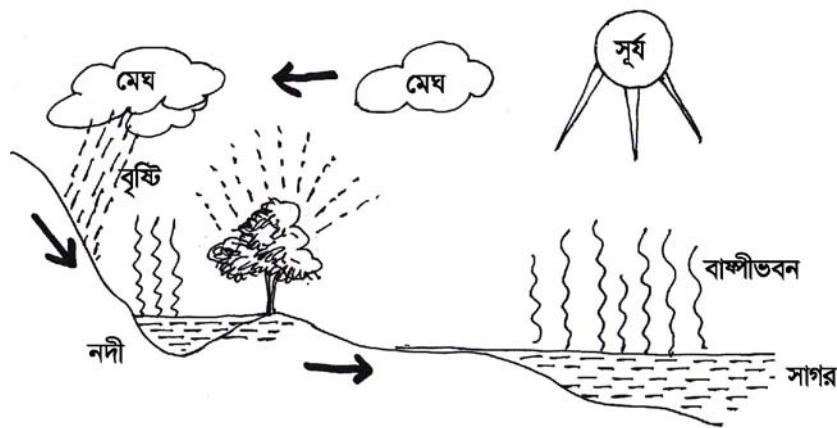
tg‡mvgÊj : ÷†UvgÊj tkI ntq GB -í i i" GB -í‡i i D" PZv evovi mv‡_ mv‡_ evqj ZvcgvÎ v Kg‡Z
_v‡K |

Zv̄cḡej: GB -í i c̄q evqj b̄ | GB -í ti evqj Zv̄cḡv̄v̄ `Z ev̄to Zv̄B Gi b̄ig Zv̄cḡej | GB -í ti teZvi Zi ½ c̄Zd̄w̄j Z n̄q w̄d̄ti Av̄tm̄ |

cW 3 : cwi tek cwb Pu

‡Zigiv Rvb cwb bvb Drm t_‡K cvl qv hvq | thgb, Avgiv eñó t_‡K Avgit` i t_‡k cPi cwb cvB | el‡Ktj t L eb"vi cwb‡Z t_‡ki bvb RvgMv Wte hvq | AvQv ej ‡Zv, eb"vi cwb tKv_v t_‡K Avñm? elP tk‡l Averi Zv tKv_vq Ptj hvq? ctii i eQi Averi el‡Ktj tKv_v t_‡K eb"vi cwb Avñm?

c₁₁_extZ c₁₁b Zvi GK Drm t_#K Drtm P₁₁V₁₁K₁₁i tN₁₁i | e₁₁Ó Krfvte nq Zv tZvgiv Rvb | mh₁₁Z
f₁₁-c₁₁oi A_F c₁₁Ki , Lyj , wej , b`x I mgf` i c₁₁b₁₁tK Rj xq ev[®]ú c₁₁i YZ K₁₁i | Rj xq ev[®]ú evqg₁₁E₁₁tj i
Dc₁₁i i w₁₁tK D₁₁V W₁₁E₁₁ n₁₁q ₁₁P₁₁i[°] c₁₁b₁₁KY₁₁ q c₁₁i YZ nq | ₁₁P₁₁i[°] c₁₁b₁₁KY₁₁ GK₁₁ n₁₁q AvK₁₁i k tgN w₁₁m₁₁t₁₁e N₁₁i
teovq | tg₁₁Ni c₁₁b₁₁KY₁₁,₁₁j v GK₁₁₁₁Z n₁₁q AvK₁₁i eo n₁₁q e₁₁Ó i₁₁c g₁₁U₁₁tZ c₁₁o | tg₁₁Ni c₁₁b₁₁KY₁₁,₁₁j v Ly
temk W₁₁E₁₁ n₁₁q tM₁₁j Zv ei₁₁d c₁₁i YZ nq Ges w₁₁k v₁₁Ó w₁₁m₁₁t₁₁e c₁₁_extZ tb₁₁g Av₁₁m | e₁₁Ó i c₁₁b M₁₁ot₁₁q
M₁₁ot₁₁q b`x c₁₁bi m₁₁t_ tg₁₁k | b`x c₁₁b c₁₁en₁₁Z n₁₁q mgf` i c₁₁b₁₁tZ tg₁₁k | Gfvte f- c₁₁oi c₁₁b t_#K
Rj xq ev[®]ú , Rj xq ev[®]ú t_#K tgN , tgN t_#K e₁₁Ó w₁₁m₁₁t₁₁e c₁₁b Avevi f- c₁₁o w₁₁t₁₁i Av₁₁m | e₁₁Ó i c₁₁b
Avevi M₁₁ot₁₁q M₁₁ot₁₁q b`x Ges met₁₁k₁₁l mgf` ^ w₁₁t₁₁i Av₁₁m | Gfvte c₁₁bi P₁₁V₁₁K₁₁i N₁₁i Av₁₁m₁₁K c₁₁b P₁₁
etj | GL₁₁t₁₁b GK₁₁ w₁₁l q tLqyj Kiv ` i Kvi th, e₁₁Ó i c₁₁b PB₁₁q PB₁₁q g₁₁U₁₁ w₁₁t₁₁P w₁₁t₁₁q m₁₁ÁZ nq | G
c₁₁b₁₁tK Avgiv f- M₁₁F[®] c₁₁b ej | f- M₁₁F[®] c₁₁b Avgiv c₁₁b KitZ , ^ b₁₁ b I tmPK₁₁R e₁₁envi Kivi
Rb₁₁ D₁₁É₁₁yj b K₁₁i _w₁₁K |



ଚିତ୍ର : ପାନିଚକ୍ର

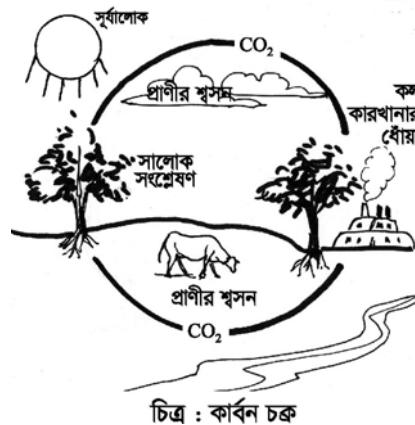
Avevi evqy c̄etni Kri †Y Rj xq ev̄ū tgNi †c Dto M̄tq ce‡Zi Poq M̄tq tc̄SQvq | tmLv̄b tḡNi
cwibKYi V̄Evg ei †d ciwYZ nq| GB ei d M̄SKv̄j m̄th̄ Zv̄c M̄tj cwib n̄q c̄nitoi M̄ te‡q tb̄g
Av̄m| Gfv̄te tQv̄ c̄nvox b̄ xi Drv̄E nq| GB c̄nvox b̄ x ev̄oi cwib i mḡt̄ Zt̄j eo b̄ x̄Z
ciwYZ nq| GB b̄ xi cwib metk̄l mḡt̄ M̄tq tḡt̄k| cwib t̄t̄K tgN, tgN t̄t̄K ce‡Zi Poq ei d,
ei d M̄tj b̄ x Gfv̄tel cwib P̄uvKv̄i N̄ti Av̄m| wb̄Pi w̄P̄t̄ M̄t̄K cwib P̄uvKv̄i N̄ti Av̄mUv
fv̄t̄j fv̄t̄e eS̄t̄Z ciw̄te|

ciw̄te k̄t̄k cwib P̄u ciw̄te k̄t̄k Rb AZ̄š-, iZcȲ a‡iv mḡj mn f-c̄t̄oi cwib h̄ el̄ū bv n̄q f-c̄t̄ob
t̄t̄K thZ, Zv̄t̄j Kx n̄t̄Zv̄? wb̄DqB ev̄o n̄t̄Zv̄ bv| b̄ x̄Z cwib _vKt̄Zv̄ bv| Avgiv Kx Zv̄t̄j dmj dj̄t̄Z
ciw̄Zv̄? ev̄oi cwib t̄c̄Zv̄ bv, b̄ xi cwib t̄t̄K tmP w̄t̄Z ciw̄Zv̄ bv| ev̄o bv n̄t̄j f-M̄t̄f̄p̄ cwib _vKt̄Zv̄
bv| Avevi ce‡Zi Poq ev̄tgi "AĀt̄j ei d Rgv̄ bv t̄t̄K M̄tj t̄M̄t̄j Kx n̄t̄Zv̄| mḡt̄ cwib ciw̄giY te‡o thZ|
Zv̄t̄Z mḡt̄ 1 K̄Qv̄Kw̄Q wb̄PzGj v̄Kv̄ thgb ev̄j v̄t̄ki `M̄t̄Yv̄Aj mḡt̄ 1 cwib t̄Z o‡e thZ|

cwibP̄t̄mu gva‡g ciw̄te k̄t̄k cwib P̄m̄v I thM̄t̄bi ḡta" GKv̄ fv̄i mv̄g" eRv̄q _vK| t̄Zv̄giv j¶ K̄t̄i Q
th, cwibP̄t̄mu Dci mh̄Zv̄t̄ci GKv̄ eo c̄f̄ve i‡q‡Q| KLbI cwibP̄t̄mu ēv̄wZ Nv̄t̄j ḡb̄j I Ab̄v̄b̄
Rx̄tei mgm̄v n̄t̄j _vK| thgb ĀwZ ev̄o n̄t̄j ev̄oi cwib `Z m̄ti th̄t̄Z bv ciw̄t̄j eb̄v nq| Avgv̄` i
t̄t̄k eb̄v c̄lq c̄lZeQib t̄Lv̄ h̄v̄| Avevi ciw̄exi Zv̄gv̄i te‡o t̄M̄t̄j cwibP̄t̄mu ēv̄wZ N̄t̄U| Gm̄u‡K̄
Avgiv G Aāv̄t̄qi cieZr̄Ast̄k Rv̄b̄tev|

ciW 4: ciw̄te k̄t̄k K̄v̄eB I Āw t̄R̄t̄bi fv̄i mv̄g"

t̄Zv̄giv Rv̄bv th, Rx̄e evqḡEj t̄t̄K Āw t̄R̄t̄b K̄t̄i k̄t̄bi K̄v̄R Pv̄j vq| k̄t̄b c̄lq̄v̄ tk̄l evqḡEj
K̄v̄eB W̄B-A. v̄BW Z̄M K̄t̄i | Avevi Dw̄m̄c evqḡEj t̄t̄K K̄v̄eB W̄BA. v̄BW t̄kv̄i Y K̄t̄i Lv̄" ^Zix K̄t̄i
Ges Āw t̄R̄t̄b t̄Q̄to t̄q| Gfv̄te evqḡEj t̄t̄K Āw t̄R̄t̄b I K̄v̄eB W̄BA. v̄BW M̄v̄t̄mi ciw̄giY GKv̄ fv̄i mv̄g"
eRv̄q _vK| ciw̄te k̄t̄k we‡k̄l K̄t̄i evqḡEj t̄t̄K Āw t̄R̄t̄b I K̄v̄eB W̄BA. v̄Bt̄Wi fv̄i mv̄g" Lp̄ , iZcȲ G `M̄U
M̄v̄mB Rx̄etbi Rb ĀwK| evqḡEj G `M̄U M̄v̄t̄mi fv̄i mv̄g" tev̄Sv̄ Rb K̄v̄eB P̄u tev̄Sv̄` i K̄v̄i
mKj Rx̄et`n M̄v̄t̄b K̄v̄eB `i K̄v̄i nq| G K̄v̄eB Av̄m evqḡEj i K̄v̄eB W̄B-A. v̄BW t̄t̄K| cwib I
evqḡEj i K̄v̄eB W̄B-A. v̄BW t̄t̄K Dw̄m̄c m̄t̄j v̄K m̄st̄k̄oI Y c̄lq̄v̄q Āw t̄R̄t̄b I M̄K̄v̄R ^Zv̄i K̄t̄i | GB
M̄K̄v̄R Dw̄m̄c t̄n ^Zv̄i K̄t̄i | c̄lq̄v̄ Dw̄m̄c t̄t̄K Lv̄" M̄t̄Y K̄v̄i gva‡g K̄v̄eB M̄t̄Y K̄t̄i |



Dw^{MC} I cÖYxt`tni KveØ wZbfvte evqgÉtj wdti Avfim| cÖgZ, Dw^{MC} I cÖYx kmb cÖqiq M^{MC}KvR tflo kw³ Drcr`b Kivi mgq evqgÉtj i Aw tRb M^{MC}Y Kti Ges KveØ WBA· vBW evqgÉtj tQto t`q| wZxqZ, Dw^{MC} I cÖYxt`ntK cptj ZtZ KveØ WBA· vBW Drcbmtq evqgÉtj tgk| ZZxqZ, Dw^{MC} I cÖYxt`n gWUtz cPevi mgq eVktUwi qv I Q^{MC}tK KveØ WBA· vBW evqjZ tQto t`q|

Zntj t`Lv tMj, evqgÉj t_#K Dw^{MC} KveØ WBA-A· vBW M^{MC}Y Kti M^{MC}KvR ^Zixi gra^{MC}tg Dw^{MC} I cÖYxt`tn KveØ mÄq Kti | Dw^{MC} I cÖYxt`tni KveØ wZb fvt evqgÉtj KveØ WBA· vBW wntmte wdti Avfim| Gfvte cwi tejk KveØbi A_#K KveØ WBA· vBtWi fvi mg^{MC} eRvq _v^{MC}K|

cW 5: Avenvl qv | Rj evqy

AvgivKvj `yc*j*i ci XvKvi Avtk crki GjvKvq D^{MC}i -c^{MC}og w`K t_#K `gKv nvl qv etq th^{MC}Z c*j*i | w`#bi tekxi fM mgq AvKvk _vKte tgNgj³, Zte we^{MC}Ktj i w`#K D^{MC}i -ce^{MC}Kv^{MC}Y Ktj v tgN RgtZ c*j*i | AvR XvKvi evqj Avfc^{MC}TK Av`Zv wQj 60 kZisk| AvR w`#bi mte^{MC}P Zvcgv^{MC}v wQj 34 wWwM^{MC} tmj wmqm K^{MC}óqiq Ges me^{MC}g^{MC}Zvcgv^{MC}v wQj 24 wWwM^{MC}tmj wmqm|

tZvgiv Kx ti wI ev tUwifk^{MC}b Leti i tk^{MC}I Gi Kg Lei i b^{MC}Z c*j*? GwU wK^{MC}mi Lei? Avgiv Kx Rvb^{MC}Z c*B* G aitYi Lei t_#K? AvgivKvj So ev e^{MC}oi m^{MC}tebv AvfQ wK bv? Avgiv wK Rvb^{MC}Z c*B* Kvj tKgb Mig ev kxZ _vKte? n^{MC}u, mvavi YZ Leti i tk^{MC}I w`#K _v^{MC}K ev So ntZ c*j*i wK bv, Zvcgv^{MC}v tKgb _vKte| A_ev _v^{MC}K tKv^{MC}q KZUKz ej^{MC}o ntqfQ ev w`#bi mte^{MC}P | me^{MC}g^{MC}Zvcgv^{MC}v KZ wQj | G Lei Avenvl qui Lei | Avenvl qui Lei t_#K wK tevSv hq Avenvl qv Kx?

Avenvl qv

Avenvl qv ej tZ ^mg^{MC}qi Rb^{MC} tKvb w^{MC}o w`# -'v^{MC}bi evqgÉtj i Ae^{MC}-v^{MC}K tevSv| evqj Zvcgv^{MC}v, Pv, evqy tKvb w`K t_#K KZ tRv^{MC}i eq, evqj Av`Zv ev evqjZ Rj xqe^{MC}ui cwi g^{MC}Y, tgN, Kqkv I e^{MC}óciZ GB Ae^{MC}-v^{MC}, t^{MC}j v w^{MC}g^{MC}j Avenvl qv|

thgb tKvb w`#bi mte^{MC}P Zvcgv^{MC}v wQj 35 wWwM^{MC}tmj wmqm - G t_#K tevSv hq tmw`#bi Avenvl qv tek Mig wQj | Averi tKvb w`#bi mte^{MC}P Zvcgv^{MC}v wQj 13 wWwM^{MC}tmj wmqm- G t_#K tevSv h^{MC}e tmw`#bi tek VvEv wQj | Averi AvKvk wQj tgNj v A_ev w`b^{MC}U KqkvQb^{MC}Oj Gi Kg Ae^{MC}-v^{MC}I ^mg^{MC}qi Avenvl qv w^{MC}t`#Kti|

Rj evqy

Avgiv ej^{MC} _wK AvR mKv^{MC}j Avenvl qv VvEv wQj wK^{MC}s^{MC}j^{MC}i Avenvl qv tek Mig| Aí mg^{MC}q Avenvl qv e^{MC}tj th^{MC}Z c*j*i | c^{MC}V^{MC}S^{MC}i, Rj evqymnnv e^{MC}j vq bv| Rj evqyntj v tKvb ^v^{MC}bi AtbK eQ^{MC}ii Avenvl qvi GKvU mg^{MC}W^{MC} ev Mo dj | thgb Avgiv ej^{MC} _wK evsj v^{MC}tki Rj evqy D^{MC} | Av`^{MC}G t_#K tevSv hq evsj v^{MC}tk tek Mig c*j*o | evqytRv ev Av`^{MC}-v^{MC}K| Averi i w^{MC}kqvi Rj evqy kxZc^{MC}nb; GK_v ej tZ Avgiv ej^{MC}S th i w^{MC}kqiq mvavi YZt L^{MC}e kxZ c*j*o |

Avenvl qv | Rj evqj c v_R

Avenvl qv | Rj evqj Dcī`vb gj_Z GKB| evqgÈtj i Zvcgvñv, evqPrc, evqcëvn, Av`Zv (Rj xq evt®ui
Avtçm¶K cñi gñY), evóciZ GMtj v Avenvl qv | Rj evqj Dcī`vb| Dcī`vbmgñ GKB ntj Avenvl qv |
Rj evqj gta" cv_K" Kx? BtZvgta" Avenvl qv | Rj evqj gta" m¤útkp K_v tRtbtQv| Rj evqjgj Zt tKvb
- 'vtbi Avenvl qvi `xN¶W` tbi Mo Ae- 'v ev dj | meB t` Lv hñK Avenvl qv | Rj evqj gta" cv_K" Kx?

1 | tKv b -'vbi evqgE tji -'v Kvj xb Ae -'vB Avenl qv| Avi tKv b -'vbi AfbK e0t i Avenl qv ev
evqgE tji Mo Ae -'vB Rj evqy

2| tKvb -'vbi Avenvl qv ÁÍ mḡtqi ḡta" cwi eZØ ntZ ct̄i | wKšytKvb -'vbi Rj evqy mnvw
cwi eZØ nq bv| cwi eZØ ntj tmUv ntZ AtbK eQi tj tM hvq |

3 | KūQūKūQ AĀtj i Avenvl qv GKB mḡtq wfbən̄tZ c̄t̄i | thgb tKib wbow̄S w̄tb dwi`c̄t̄i ēwō n̄tZ
c̄t̄i wKš̄yewi kvt̄j ēwō bvl n̄tZ c̄t̄i | wKš̄yKūQūKūQ AĀtj i Rj evqymravi YZ GKB i Kg | thgb,
eisj v̄`k, _vBj ūGes fvi tZi c̄lōget½i Rj evqyGKB i Kg |

cW-6, 7 : Avenl qvi cwi eZ⁶

tKv b mKv j nqZv Ng t_k Dv t_Lj th evBti D^{3/4}j tiv, Zte ZZUv Mig jM²Q bv| tejv
 evoi m² Mi g evoZj M²jv, M²q Ng n²Z i iyKi jv| AvKv k ax²i ax²i tgN RgZ i iyKi jv
 Ges GK mqq Kv j v tgN m²Q tXk tMj | GKuz c²i gmj av²i e²O i iyntjv| e²O tk²I AvKv Aveni
 cwi -<vi n²jv Ges Mi gUv K²g Gtjv| GKuz P²Sv K²iv Zv Aveni qv KZUv cwi eZ² n²jv GK w²bB|
 Aveni qv cwi eZ² AZ"Š-^fweK e²vcv | tKb Gf²e Aveni qv cwi eZ² nq ?

Avenvl qv cweZtbi gj fngKv Avmtj mhZtci | Avgiv GLb t` Ltev mhZvc Avenvl qui Dcv`vbmgm
cweZtbi Kxfvte fngKv ivtL |

mhΩtci Dci Zvcgv̄vi wfPZv : mh@t_ K AmZ AvjvK iwk̄i mv_ ZvcI c̄_exZ Gtm tcšQ |
mhΩvc hLb c̄_ex ct̄o ct̄o ZLb c̄_ex c̄o DËB nq| c̄_ex ct̄oi mv_ wgtk _vKv evqgÉtj i wfPi
-t̄i (Ufcw-qui) GtZ DËB nq| dtj w̄tbi tejvq mvavi YZ Avgiv teuk Mig Abfe Kwi | ivZ hLb
mh@A-Í hvq ZLtbv c̄_ex c̄o I evqgÉtj i wfPi -í Mig _vK| Kvi Y w̄tbi tejvq c̄_ex c̄o th Zvc
cvq Zv ivZi tejvq meUKzPjt thtZ cvtibv| c̄_ex c̄o th Zvc w̄KiY Kt̄i Zv evqgÉtj i Rjxq evú,
KveØ Wb A· vBW, BZw` tmB Zvc tkvIY Kt̄i ati ivL| ZvB ivZi tejvI Avgiv Mig Abfe Kwi |
M@SKvtj mh@Avgit` i gv_vl Dci t_ K Lvorfvté I teuk mgq ati w̄KiY t` q ZvB Avgiv teuk Mig Abfe
Kwi | cPvSf t̄i, kxZKvtj mh@AfbKv` + t_ K w̄ZhRfvté Ges Kg mgq ati w̄KiY t` q ZvB Avgiv kxZ
Kvtj Kg Mig Abfe Kwi |

Zvçgv̄vi Dci evqyPvc I evqyç̄t̄ni wbfPZv : evqyPvt̄ci cv_‡K'i Kvi †Y evqyç̄t̄ni m̄o nq | Avgiv thgb †_L cwb D'PZv thLvb tewk tmLvb †_‡K cwb Kg D'PZvi w`‡K hvq | †Zgib evqyD'PPvt̄ci Gj vKv †_‡K wbgPvt̄ci Gj vKvi w`‡K cewnZ nq |

Zv̄cḡv̄i c̄wi eZ̄bi d̄tj evq̄P̄ci c̄wi eZ̄B nq|

t̄Kb R̄qM̄i Zv̄cḡv̄i tēk nt̄j t̄mL̄bK̄i evq̄D̄B nt̄q Dc̄ti i w̄ t̄K D̄tV h̄q| d̄tj H̄ -'v̄t̄b evq̄ciZ̄j v̄ ev d̄Kv̄ nt̄q h̄q| A_ P̄ evq̄P̄c K̄t̄g h̄q| Gi Kg Aē -'v̄t̄K ēt̄j w̄b ḡP̄c| ZL̄b Av̄t̄Kc̄t̄k thL̄t̄b evq̄P̄c tēk t̄mL̄b t̄_t̄K evq̄Ḡt̄m d̄Kv̄ -'v̄b c̄t̄Y K̄t̄i| Gf̄t̄e evq̄c̄t̄ni m̄o nq| t̄h̄ -'v̄t̄b Zv̄cḡv̄i Kg t̄mL̄t̄b evq̄Nb _v̄t̄K| d̄t̄j evq̄P̄c tēk _v̄t̄K| evq̄P̄c tēk _v̄Kt̄K D̄PP̄c ej̄ nq|

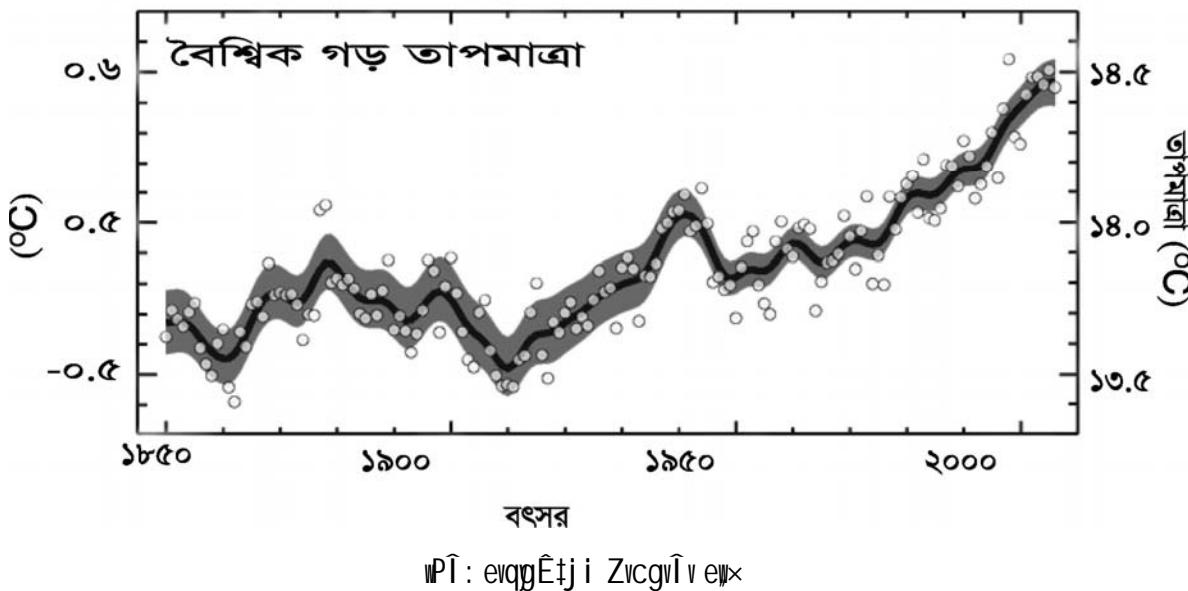
Avḡt̄ i t̄_t̄K Avḡiv t̄_w̄L k̄ZK̄t̄j evq̄D̄i w̄ K t̄_t̄K `w̄t̄Y w̄ t̄K c̄ew̄nZ nq| M̄S̄M̄S̄K̄t̄j D̄t̄eūv̄ t̄_w̄L| t̄Kb evq̄Ḡt̄KKm̄q Ḡt̄KK w̄ K t̄_t̄K c̄ew̄nZ nq? k̄ZK̄t̄j mh̄eis̄j v̄t̄ki `w̄t̄Y Lv̄orv̄te w̄Ki Y t̄_q| Zv̄B t̄mL̄t̄b evq̄P̄c Kg _v̄t̄K| Ab̄ w̄t̄K eis̄j v̄t̄ki D̄t̄i tek k̄Z Ges evq̄P̄c tēk| Zv̄B k̄ZK̄t̄j eis̄j v̄t̄ki D̄t̄i w̄ K t̄_t̄K evq̄ `w̄t̄Y w̄ t̄K c̄ew̄nZ nq| GB evq̄ -'j f̄M̄ t̄_t̄K Av̄t̄m ēt̄j Ḡt̄Z R̄j x̄q ev̄u Kg _v̄t̄K| GR̄b̄ k̄ZK̄t̄j evq̄i -< Ges Zv̄B ev̄o Kg nq|

Avevi M̄S̄S̄ I el̄R̄K̄t̄j mh̄eis̄j v̄t̄ki Dc̄i Lv̄orv̄te w̄Ki Y t̄_q| Zv̄B ZL̄b eis̄j v̄t̄ki ZL̄b tek M̄i g Ges evq̄P̄c Kg _v̄t̄K| eis̄j v̄t̄ki `w̄t̄Y ēt̄v̄cm̄Mi Āt̄j ZL̄b Kg M̄i g, Zv̄B evq̄P̄c tēk| Zv̄B ZL̄b evq̄ ēt̄v̄cm̄Mi Gj̄v̄K̄i t̄_t̄K eis̄j v̄t̄ki w̄ t̄K c̄ew̄nZ nq| `w̄t̄Y w̄ K t̄_t̄K GB evq̄ ēt̄v̄cm̄Mi t̄_t̄K c̄P̄i R̄j x̄q ev̄u w̄b̄t̄q Av̄t̄m| GB R̄j x̄q ev̄u V̄Ēv̄ nt̄q ev̄o nq| GR̄b̄ M̄S̄S̄ I el̄R̄K̄t̄j evq̄Av̄ -'v̄t̄K Ges c̄P̄i ev̄o nq|

c̄W 8- 10 : R̄j evq̄i c̄wi eZ̄B

B̄t̄Zv̄ḡtāB t̄R̄t̄b̄t̄Q̄i th, R̄j evq̄ nt̄j v̄ t̄Kb -'v̄t̄bi ēw̄t̄bi Aven̄l q̄i Mo ev m̄ḡM̄K Aē -'v̄ evs̄j v̄t̄ki R̄j evq̄D̄o I Av̄ -'t̄Zv̄ḡiv R̄b̄ th, eis̄j v̄t̄ki tek M̄i g c̄t̄o I t̄Zgb k̄Z c̄t̄o b̄| k̄ZK̄v̄j tek t̄Q̄U, m̄w̄i YZt̄ tc̄S̄l̄ I ḡN GB `ȳḡm̄ k̄Z c̄t̄o| Zv̄ici k̄Z K̄t̄g M̄t̄q āt̄i āt̄i Aven̄l q̄i D̄o nt̄Z _v̄t̄K| %ek̄v̄L %R̄o tek M̄i g c̄t̄o| GB `ȳḡm̄t̄K Avḡiv M̄S̄K̄j̄ ev̄j| `ek̄v̄L ḡt̄m̄ c̄iZ ēQ̄iB K̄j̄ %ek̄v̄Lx̄ t̄_L v̄h̄q| Av̄v̄t̄pi īȳt̄_t̄K ev̄o īȳn̄q A_ v̄p̄ ēl̄R̄j̄ īȳn̄q| k̄eY| f̄v̄ -'ḡt̄m̄ tek M̄i g| ev̄o c̄t̄o| Zv̄ici Avevi Aven̄l q̄i V̄Ēv̄ nt̄Z _v̄t̄K Ges tc̄S̄l̄ ḡt̄m̄ k̄Z w̄d̄t̄i Av̄t̄m| GŪB nt̄j v̄ eis̄j v̄t̄ki R̄j evq̄i -'v̄f̄w̄eK īc̄| Gi Kg Aven̄l q̄i t̄Zv̄ḡi ēev̄-gv̄ h̄Lb t̄Q̄U w̄Q̄t̄j b ZL̄bI t̄_L v̄ thZ| w̄ek ev̄i k̄eQ̄i āt̄i eis̄j v̄t̄ki m̄ḡM̄K Aven̄l q̄i A_ P̄ R̄j evq̄GKB īKg|

t̄Kb -'v̄t̄bi R̄j evq̄mn̄m̄ c̄wi eZ̄B nq b̄| Z̄te meĀvbiv c̄wi ḡc̄ K̄t̄i t̄_L̄t̄Z t̄c̄t̄q̄t̄Q̄b th, c̄w̄exi Mo Zv̄cḡv̄i āt̄i āt̄i evōt̄Q̄| c̄w̄exi Zv̄cḡv̄i Gf̄t̄e tēto h̄l q̄t̄K %ek̄K̄ D̄ōqb (Global warming) ēt̄j| c̄w̄exi Zv̄cḡv̄i ēw̄x̄i d̄t̄j cēP̄z̄i P̄ovi I t̄giy Āt̄j̄ īēd M̄t̄j h̄t̄"Q̄| Zv̄cḡv̄i tēto mḡt̄i c̄w̄b c̄h̄wi Z nt̄Q̄| d̄t̄j mḡt̄i c̄t̄oi D̄P̄Zv̄ tēto h̄t̄"Q̄| Gf̄t̄e Zv̄cḡv̄i evōt̄Z _v̄K̄t̄j -'īc̄ mḡt̄i c̄w̄b ī D̄P̄Zv̄ evōt̄Z _v̄K̄t̄e| dj̄ -'īc̄, eis̄j v̄t̄ki Dc̄K̄j̄ x̄q Āj̄ mn̄ w̄t̄k̄j̄ w̄b̄ḡĀj̄ c̄w̄Z nt̄q h̄t̄e| GQ̄ov̄ Zv̄cḡv̄i tēto t̄M̄t̄j w̄ēc̄ Aven̄l q̄i thgb L̄v̄, Āw̄Z̄ō Ges c̄K̄iZK̄ -'h̄t̄b̄ tēk tēk NŪt̄Z t̄_L v̄ h̄t̄e|



‘e \hat{k} K D \hat{o} rq \hat{t} bi Kvi Y

‘e \hat{k} K D \hat{o} rq \hat{t} bi gj Kvi Y evqgE \hat{t} j Kve \hat{B} WB-A· vB \hat{t} Wi cwi gyY evx | G Aa \hat{t} qB tZvgiv tR \hat{t} bQ th, Kve \hat{B} I A \hat{w} tRb P \hat{u} vKv \hat{t} i w \hat{t} i Av \hat{t} m etj evqgE \hat{t} j Kve \hat{B} WB-A· vBW M \hat{v} mi fvi mvg” eRvq _ \hat{t} K | wK \hat{S} -BD \hat{t} i v \hat{t} c w \hat{t} kive*tei* ci c \hat{w} exi w \hat{t} fbet` \hat{t} k w \hat{t} kI K \hat{t} i w \hat{t} k \hat{t} vbZ t`k \hat{t} j \hat{t} Z Kj Kvi Lv \hat{b} v I h \hat{b} evn \hat{t} b Kajv, tctU \hat{w} j qvg I c \hat{w} K \hat{w} ZK M \hat{v} m tcvo \hat{t} bv n \hat{t} ”Q | Gme Rj \hat{w} b tcvo \hat{t} bv t \hat{t} K DrcbeKve \hat{B} WB-A· vBW tKvbv \hat{t} e e \hat{q} ev tkw \hat{t} Z n \hat{t} ”Q bv| eis gubj evovi dtj w \hat{t} fbekvi t \hat{t} Y M \hat{v} Qcvj v K \hat{t} g h \hat{t} ”Q | dtj evqgE \hat{t} j Kve \hat{B} WB-A· vBW te \hat{t} o h \hat{t} ”Q | GLb c \hat{w} on \hat{t} ”Q Kve \hat{B} WB-A· vBW te \hat{t} o tM \hat{t} j tKb Zrcgv \hat{t} v evotQ?

KvR : M \hat{b} nvDR c \hat{w} fe

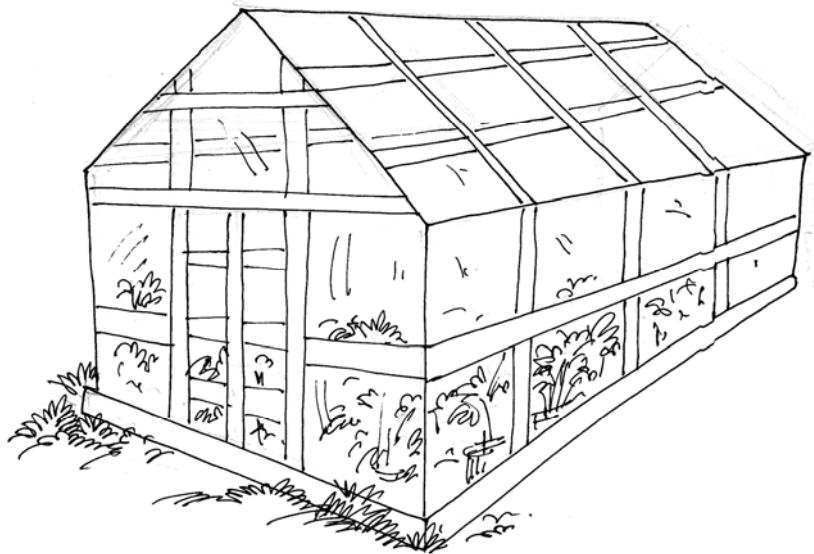
c \hat{w} qRbxq DcKiY: `ju mgvb gvtci cwbci M \hat{m} , gvc \hat{t} PvO, cwb, GK \hat{w} cwi \hat{w} vi ~”Q c \hat{w} w \hat{t} ” \hat{t} Ki e \hat{v} M, `ju _ \hat{t} g \hat{w} Uvi |

Cx \hat{w} Z:

1. `ju M \hat{m} gvc \hat{t} PvO w \hat{t} q tg \hat{t} c mgvb cwi gyY cwb bv |
2. c \hat{w} Zu M \hat{m} GK \hat{w} K \hat{t} i _ \hat{t} g \hat{w} Uvi ivL| _ \hat{t} g \hat{w} Uvi t`L cwbci Zrcgv \hat{t} v KZ| tZvg \hat{t} i LvZvq wj tL bv |
3. GK \hat{w} M \hat{m} c \hat{w} \hat{t} Ki e \hat{v} ”Mi tfZi ti \hat{t} L e \hat{v} ”Mi g \hat{w} U Aw \hat{t} K `v |
4. `ju M \hat{m} Gevi t \hat{t} v \hat{t} t \hat{t} L `v | Abgvb Ki tZv tKvbvUi cwb te \hat{w} Mi g n \hat{t} e | tZvg \hat{t} i DE \hat{t} ii c \hat{w} h \hat{v} ³ `v |
5. GKN>Uv c \hat{t} i _ \hat{t} g \hat{w} Uvi t`L M \hat{m} `ju Zrcgv \hat{t} v KZ| tKvbvUi Zrcgv \hat{t} v te \hat{w} te \hat{t} o \hat{t} Q? tZvg \hat{t} i Abgvb mi \hat{t} wgtj tQ wK?

†` Lv h̄tē, th M̄mU c̄w̄t̄ Ki ēv̄Mi t̄fZi w̄Qj Zvi Zvcgv̄v tēk tētōQ | t̄Kb Zv ej̄t̄Z cv̄t̄i? m̄h̄P Zvc `m̄U M̄m̄i c̄w̄bi Dci mḡvb f̄v̄te cōt̄Q | th M̄mU c̄w̄t̄ Ki ēv̄Mi t̄fZt̄i Āt̄Q t̄m̄Ūt̄Z Zvc c̄lek Kīt̄Z cv̄t̄i | m̄K̄S̄y c̄w̄t̄ Ki ēv̄M̄ t̄f` K̄t̄i t̄fZt̄i i Zvc tei n̄t̄Z cv̄t̄i bv̄ | dt̄j c̄w̄t̄ Ki ēv̄Mi t̄fZt̄i ZvōZmō Mi g nq A_ P̄ Zvcgv̄v `Z et̄ō |

KxZc̄wb †` tk Zxēkx̄t̄Z M̄Qcv̄v w̄t̄K _K̄t̄Z cv̄t̄i bv̄ | Zxēkx̄t̄Z k̄v̄K-m̄ēw̄R dj̄v̄bvi Rb̄ K̄t̄Pi Ni ^Zix Kiv nq h̄t̄K M̄b nvDR ej̄v nq (IP̄ -) | kxZKv̄j Āmḡq hLb t̄iv̄ ` _v̄K, ZLb t̄iv̄t̄ i Zvc K̄P t̄f` K̄t̄i N̄t̄i t̄fZt̄i c̄lek K̄t̄i Ges N̄t̄i ev̄q̄ M̄Q I gw̄Ūt̄K D̄ĒB K̄t̄i | N̄t̄i i D̄Ēv̄ ^v̄f̄w̄ēK f̄v̄te m̄ēw̄Kvi Z n̄t̄q ev̄B̄ti P̄t̄j th̄t̄Z Pv̄q | m̄K̄S̄y Zvcgv̄v tētō h̄v̄l q̄v̄ Zv K̄P t̄f` K̄t̄i ev̄B̄ti th̄t̄Z cv̄t̄i bv̄ | dt̄j K̄t̄Pi Ni i v̄t̄Zi tējv̄q̄l Mi g _v̄K̄t̄ Ges t̄fZt̄i i k̄v̄K-m̄ēw̄R tēt̄P _v̄K̄ | K̄t̄Pi N̄t̄i t̄fZt̄i Gf̄v̄te Zvc t̄_t̄K h̄v̄l q̄v̄i w̄l q̄v̄Ūt̄K M̄b nvDR c̄f̄v̄e et̄j |

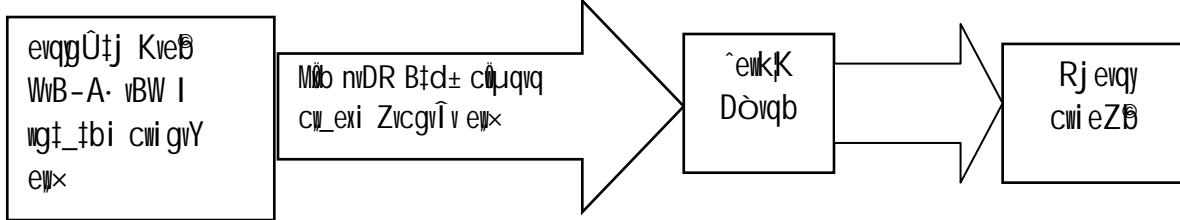


IP̄ : M̄b nvDR

c̄w̄exŪt̄K ḠKŪ M̄b nvD̄t̄Ri ḡt̄Zv aiv h̄v̄q | c̄w̄xi Priw̄ K m̄t̄i Āt̄Q ev̄q̄ḡĒt̄j | G ev̄q̄ḡĒt̄j Āt̄Q KvēB W̄B-A· v̄BW, w̄gt̄_b Avi Rj xq ev̄ū th̄t̄j v M̄b nvD̄t̄Ri K̄t̄Pi ḡt̄Zv K̄v̄R K̄t̄i | Giv m̄h̄P Zvc c̄w̄ex̄t̄Z Āv̄m̄t̄Z t̄Kb ev̄av t̄` q bv̄ dt̄j m̄h̄P Z̄t̄c c̄w̄ex D̄ĒB n̄q | m̄K̄S̄y Giv D̄ĒB c̄w̄ex t̄_t̄K Zvc t̄K m̄ēw̄Kvi Z n̄t̄q P̄t̄j th̄t̄Z ev̄av t̄` q | dt̄j c̄w̄ex i v̄t̄Zi tējv̄q̄l Mi g _v̄K̄t̄Z cv̄t̄i | Gme M̄v̄m̄t̄K M̄b nvDm M̄v̄m̄ et̄j | KvēB W̄BA· v̄BW, w̄gt̄_b Avi Rj xq ev̄ū ev̄q̄ḡĒt̄j i t̄qt̄Q- ḠW̄U ḡv̄be m̄f̄ Zvi Rb̄ Āvk̄x̄ēP | Kvi Y Gme M̄v̄m̄ bv̄ _v̄K̄t̄j c̄w̄ex t̄_t̄K Zvc m̄ēw̄Kvi Z n̄t̄q gn̄v̄i t̄b̄ P̄t̄j th̄Z Avi c̄w̄ex f̄x̄Y V̄v̄Ēv n̄t̄q cōt̄Zv̄ | GLb c̄k̄ent̄j v Āvk̄x̄ēP Āv̄ev̄i K̄xv̄t̄e mḡm̄v̄ n̄t̄j v̄? mḡm̄v̄ n̄t̄j v̄ ev̄q̄ḡĒt̄j KvēB W̄B-A· v̄B̄t̄Wi c̄w̄gi Y tētō h̄v̄l q̄v̄ | ev̄q̄ḡĒt̄j KvēB W̄BA· v̄BW tēk̄ _v̄K̄q Giv tēk̄ tēk̄ Zvc āt̄ i v̄L̄t̄Z cv̄t̄Q | ZvB c̄w̄exi Zvcgv̄v w̄b w̄b tētō h̄v̄t̄Q | Gf̄v̄te ^ēw̄k̄K D̄òv̄q̄t̄bi Rb̄ gj̄ Kvi Y ev̄q̄ḡĒt̄j KvēB W̄BA· v̄B̄t̄Wi c̄w̄gi v̄b tētō h̄v̄l q̄v̄ |

Rj evaqcwi eZØ I ^eikk Dòvqb tivta Kx Ki Yxq?

Rj evaqcwi eZØ I ^eikk Dòvqb tivta Kx Ki Yxq? | Dctii Avtj vPbv t_#K Avgiv wotPi cénv
wotPi AukZ cwi |



Dctii cénv wotPi t_#K cwi -<vi teiSv hñ"Q th, Rj evaqcwi eZØbi Kvi Y ^eikk Dòvqb Avi ^eikk Dòvqb tivta Kx Ki Yxq? | KveØ WwB-A· vBW I wgt_b Mñm i cwi giv eyx | Zñtj Kxfvte Avgiv ^eikk Dòvqb Avi Rj evaqcwi eZØ tivta Kx Ki Yxq? | mnR DÉi ntj v KveØ WwB-A· vBW I wgt_b Mñm i wotmi Y Kgvtbv | A_ev tKvbfté Gf` i_#K evqqÜj t_#K mñtq tbI qv | wgt_b Mñm tK evqqÜj t_#K mñtq hvq bv | Gi Drcv` b ev wotmi YI eÜ Kiv Kñb Kvi Y GñU Drcw` Z nq Kñl KñR t_#K | eZØvib %eikk Dòvqb tgvKtej vq cñv mçwi k ntj v KveØ WwB-A· vBW wotmi Y Kgvtbv | Kqj v, tctUñj qvg I cñKñZK Mñm tcvoribv Kngtq Zvi e`tj bevqb thñb Rj vbx (thgb, tmñi kñ3, evqcén t_#K we`r BZññ) eenvi Kitj KveØ WwB-A· vBW Mñm wotmi Y Ktj | evqqÜj i KveØ WwB-A· vBW Kgvtbv Rb Avtj KñU Dctiqi K_v ejv nq | Zvi ntj v teik Kti MñQ jñtibv | Kvi Y MñQ KveØ WwB A· vBW MñY Kti Lv`^Zvi Kti | dtj evqqÜj KveØ WwB-A· vBW Ktj Avtj |

G Aañtq Avgiv hv wklj vg

- evqqÜj f-cô t_#K Ktj wglvñ chs-wé-Z | evqqÜj tK AtbK, tj v -tj fñM Kiv nq | cñg Pvi wU -tj i ntj v Uñcmñi qvi ev UñcvgÜj, ÷tUñgÜj, tgñmvgÜj | ZvcgÜj |
- f-cô t_#K GMñi Ktj wglvñ chs-evqqÜj tK ejv nq Uñcmñi qvi | GB -tj i evqj tekxi fñM cñgvRbxq Dcr` vbmgn thgb Aw tRb, bvBtUñtRb | KveØ WwB-A· vBW _ñK | GB -tj i gvbj | Ab vñb Rxtei RxebtK cñvmeZ Kti Ggb me NUbv NñU | thgb GB -tj i tgN, evqj cénv, So, Kqjkv Gme nq | ZvB UñcvgÜj evqqÜj i metPtq , iZçYø tñj |
- ÷tUñgÜj i qtqo | Rb bñgi GKñU Mñm | GB Mñm mñhñp yñZKvi K iñkñt_#K Avgit` i iñtñ Kti |
- f-cô tñj cñb t_#K Rj xq evñú, Rj xq evñú t_#K tgN, tgN t_#K evñó wñtñtñ cñb Avevi f-cô tñj wñtñ tñj | evñó cñb Avevi Mñotq Mñotq b`x Ges metkñl mgñtñ wñtñ tñj | Gfvte cñbi Pñvñtñ Kñtj | Avevi Mñotq Mñotq b`x Ges metkñl mgñtñ wñtñ tñj | Gfvte cñbi Pñvñtñ Kñtj | Avevi Mñotq Mñotq b`x Ges metkñl mgñtñ wñtñ tñj | Gfvte cñbi Pñvñtñ Kñtj |
- Rxe evqqÜj t_#K Aw tRb Möö Kti kñtbi KñR Pyjvq | kñb cñuq tkñl evqqÜj KveØ WwB-A· vBW Zññ Kti | Avevi Dññc evqqÜj t_#K KveØ WwB-A· vBW tñvñ Y Kti Lv`^Zix Kti Ges Aw tRb tQñtñ tñq | Gfvte evqqÜj Aw tRb | KveØ WwB-A· vBW Mñm i cwi giv eyx GKñU fñvñmñ eRvq _ñK | cwi tñk wñtñ Kti evqqÜj Aw tRb | KveØ WwB-A· vBñWi fñvñmñ Lp , iZçYø G `ñññ MñmB Rxetbi Rb Aw Z AvekñK |

- tKvb -'vib i evqqÜtj i -^ímḡtqi Zvcgv̄v, PvC, evqçévn, Av`Zv G Ae-'v, t̄j v nt̄j v Avenvl qv| Avi tKvb -'vib AtbK eQ̄ti i mḡm̄K Avenvl qv nt̄j v Rj evqj
- Avenvl qv c̄wi eZ̄bi gj̄ f̄ngKv Amtj mh̄Z̄tci | Zvcgv̄v c̄wi eZ̄bi dt̄j evqP̄tci c̄wi eZ̄nq|
- tKvb -'vib Rj evqy mnmv c̄wi eZ̄nq bv| Z̄te weÁvbxi v c̄wi ḡvC K̄ti t̄ L̄tZ t̄ctq̄tQb th, c̄wi_exi Mo Zvcgv̄v ax̄ti ax̄ti evotQ| c̄wi_exi Zvcgv̄v Gf̄vte tēto hv̄l q̄tK %eikK D̄ovqb (Global warming) et̄j | c̄wi_exi Zvcgv̄v evx̄i dt̄j cēP̄zi P̄ovi | tgiyAÄtj i eid M̄tj h̄t̄Q| Zvcgv̄v tēto mḡt̄i c̄wb c̄h̄wi Z nt̄Q| dt̄j mḡt̄i c̄t̄oi D̄PZv tēto h̄t̄Q| Gf̄vte Zvcgv̄v evotZ _vK̄tj -^ifc mḡt̄i c̄wb c̄wi bi D̄PZv evotZ _vK̄t̄e| dj -^iε, evsj v̄t̄i ki Dc̄kj xq AÄj mn wētki wbḡwA j c̄weZ nt̄q hv̄te| GQvor Zvcgv̄v tēto t̄M̄tj wēi e Avenvl qv thgb Lv, AvZ̄pÓ Ges c̄K̄wZK `thw̄ tenk tenk NUtZ t̄ Lv hv̄te|
- %eikK D̄ovqb̄bi dt̄j Rj evqy c̄wi eZ̄nQ nt̄Q| %eikK D̄ovqb̄bi gj̄ Kv̄Y evqqĒtj KveB Wb A· vB̄t̄Wi c̄wi ḡvY evx̄| ZvB KveB Wb A· vB̄t̄Wi vB̄t̄mi Y Kgr̄b̄vB Rj evqy c̄wi eZ̄nQ t̄v̄tai gj̄ Dc̄iq|

Abkxj bx

i b̄ -'vib c̄t̄Y Ki

- 1| f-c̄p̄ t̄t̄K GMi wK̄t̄j mḡUvI ch̄s-evqqÜj t̄K ēt̄j -----
- 2| -----b̄t̄gi GK̄U M̄v m̄t̄hP̄ P̄wZKi i wK̄t̄t̄K Avḡt̄i i P̄v K̄ti |
- 3| tKvb -'vib xN̄P̄ t̄bi Avenvl qui Mo dj̄t̄K ēt̄j -----|
- 4| Avenvl qv c̄wi eZ̄bi gj̄ f̄ngKv nt̄j v -----|
- 5| Zvcgv̄v evotj mḡt̄i c̄wb -----nq|

mst̄P̄t̄c D̄Ēi `vI :

- 1| evqqĒtj i vB̄t̄Pi -'t̄i A·P̄ c̄wi_exi Kv̄QvKwQ evqqÜtj evqj NbZ̄t̄ekx _vK̄t̄K t̄Kb Zv ēvL̄v Ki |
- 2| Ūtc̄gĒj t̄Kb met̄P̄t̄q , i p̄Y?
- 3| wP̄mn c̄wbP̄mu ēvL̄v Ki |
- 4| Kxf̄vte evqqĒtj A·R̄ t̄Rb | KveB Wb A· vB̄t̄Wi f̄vi mḡ eR̄vq _vK̄?
- 5| M̄b n̄DR c̄f̄vte Kv̄? %eikK D̄ovqb̄t̄K Kxf̄vte Gi mv̄nvt̄h̄ ēvL̄v Ki v hv̄q?

ēv̄beP̄vB c̄k̄e:

1. evqqĒtj i tKvb -'i vI c̄q evqyk̄b̄?
- K. Ūtc̄gĒj
- M. tḡtm̄gĒj
- L. ÷t̄ŪgĒj
- N. ZvcgĒj

2. Avenvl qv | Rj evqj t[¶]t[†] -

- i. GKB t` tk i wwfba`'t b GKB w` t b Avenvl qv wfba ntZ c*ti*
- ii. evsj v` k | c*ti*g et*ti* Rj evqyc*ti* GKB
- iii. Avenvl qv | Rj evqj Dcv` vb wfba

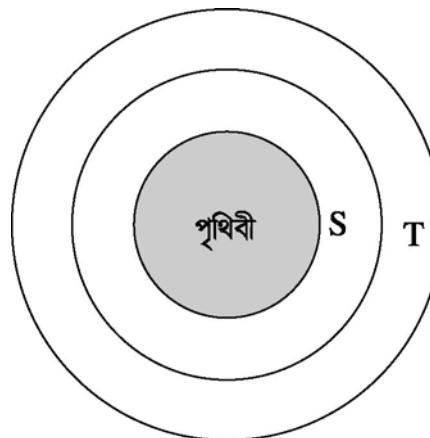
wbPi tKvbU mVK?

K. i

L. ii

M. i | ii

N. ii | iii

D[†] xcKi j[¶] Ki Ges 3 | 4 b*ti* c*ti* D[†]i `v| :3. D[†] xc*ti* T -'t*ti* _v*ti* -

- i. Aw tRb | bvBtU tRb
- ii. Kve[†] WBA- vBW | awj KYv
- iii. Rj xq ev[®]u | tRvb M'vm

wbPi tKvbU mVK?

K. i | ii

L. i | iii

M. ii | iii

N. i, ii | iii

4. S -'t b Zicg[†]v evx tctj H -'t bi -

- i. evqj PvC evote
- ii. evqynj Kv nte
- iii. evqj PvC Kgte

wbPi tKvbU mVK?

K. i | ii

L. i | iii

M. ii | iii

N. i, ii | iii

mRbkxj ckæ

1.



11

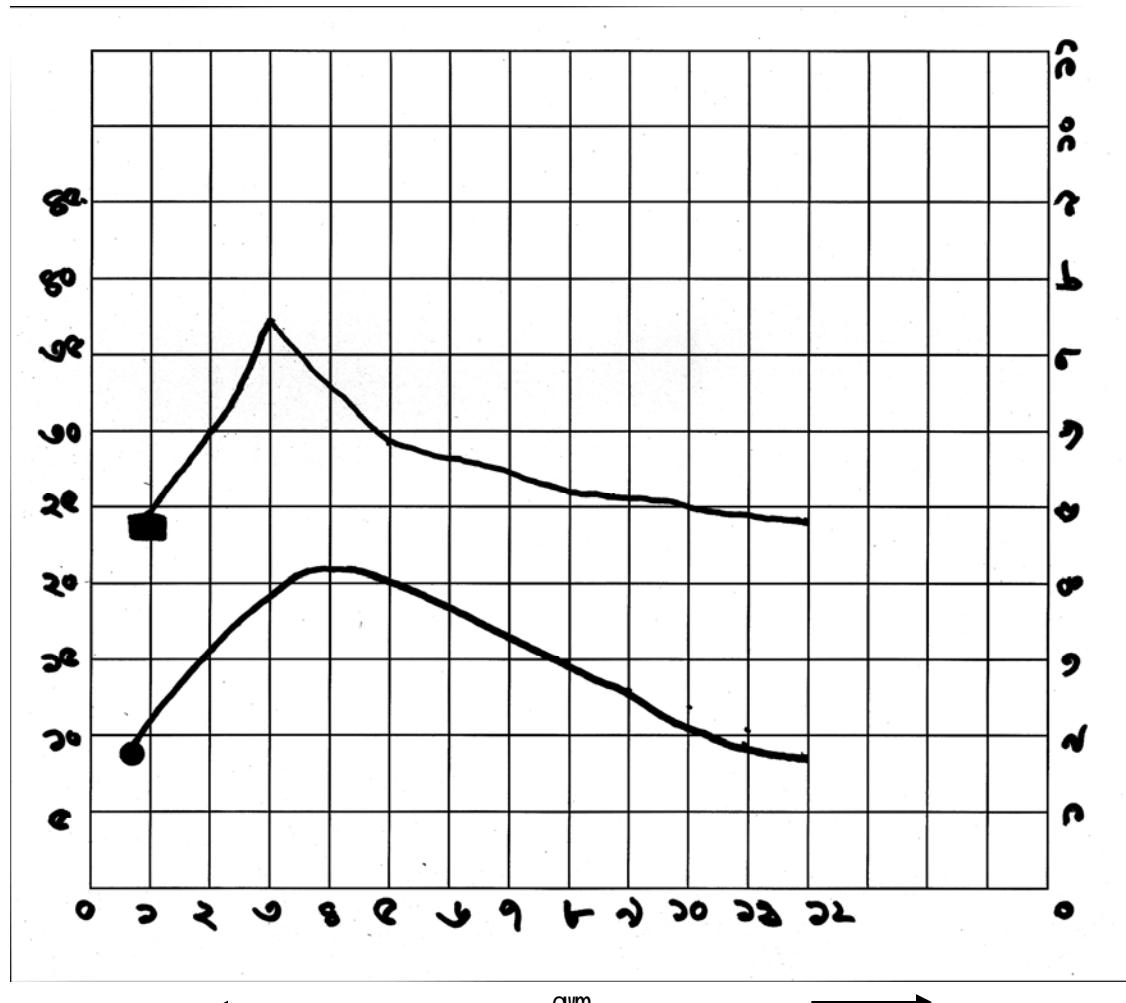
K. f-Mf[©], cwb Kx?

L. ÷ #UgjEj tKb RxR MZi Rb „ i æ ZcY? eYv Ki |

M. Y | Z **K**fite cwi tēt̄k Kve^o WBA. vBW | Aw̄ tR̄bi fvi mvḡ **W**bqš̄y Kti | ēvL Ki |

N. Z t_k K wMZ M'vwU i cwi givY AwAK te_to tMj cwi te_k Kx wechq NUte Zv hy³mn e_vL v Ki |

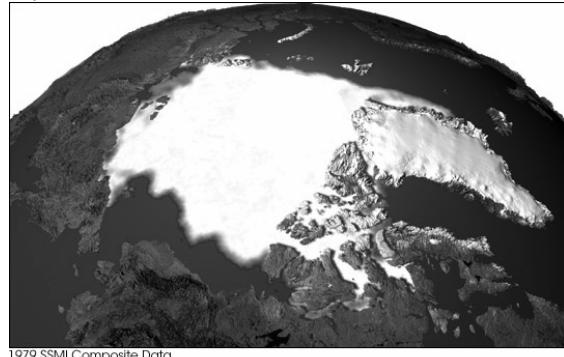
2. የብቃዕስ ስርዓት አገልግሎት ተከተለዋል (የብቃውን ተካሶች መሆኑን) መቻቃዕስ ስርዓት የብቃዕስ ስርዓት



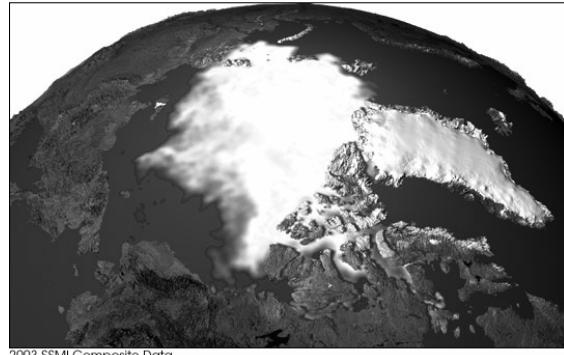
- ◀ ➡
- መቻቃዕስ የብቃዕስ
 ● የብቃዕስ መቻቃዕስ
- K. ማረጋገጫ የሚያሳይበት ደርሱ ነው ነው?
 L. ገዢዎች እና ማረጋገጫ የሚያሳይበት ደርሱ ነው ነው?
 M. ተያያዘ ተከተለዋል የብቃዕስ መቻቃዕስ የሚያሳይበት ደርሱ ነው
 N. የብቃዕስ መቻቃዕስ የሚያሳይበት ደርሱ ነው ነው?

mRbkxj c̄kœ

mbPi wP†i c̄gWtZ 1979 mvtj DĒi tgiætZ ei‡di c̄wigvb I wZxqWtZ 2003 mvtj i
ei‡di c̄wigvb † Lv hvt"Q |



1979 SSMI Composite Data



2003 SSMI Composite Data

- 1 | %ewK Dòvqtbj Rb" †Kvb M"vm `vqx?
- 2 | DĒi tgiætZ ei d †Kb Ktg hv"Q?
- 3 | Mö nWDR c̄fvetK Kxfvte Kv†R j Mvtbv hvq Zv e"vL"v Ki |
- 4 | evqgÛtj KveØ WB A· vBW eWx Kgvtbv Dcvq, tj vi gta" †KvbU metPtq fuj Zv mbYq Ki |



সমৃদ্ধ বাংলাদেশ গড়ে তোলার জন্য যোগ্যতা অর্জন কর
- মাননীয় প্রধানমন্ত্রী শেখ হাসিনা

বিনয়ীকে সবাই পছন্দ করে



২০১০ শিক্ষাবর্ষ থেকে সরকার কর্তৃক বিনামূল্যে বিতরণের জন্য

মুদ্রণে: