



Rj evqy

figKv

c0Yxi k/mKvthP Rb" Aw tRb AcwivnhP evqgUj GB Aw tRb itqtQ| cL_exi
Avenl qv Ges Rj evqyevqgUj 0viv wbausZ nq| weAvbx` i cixqIvq Rvbr tMtQ f-
cô ntZ DtaYevqgUj i cyZ; cũq 10,000 wKtj vngUvi | evqgUj i eqm 35 tKwU
ermi | cL_exi gva`vKI P kw³ i Rb" evqgUj cL_ex ctdi mvt_ tj tM AvtQ| evqgUj
m²útk⁹ewfbæZ_ GB BD1bU Avtj vPbv Kiv ntqtQ|

cW 3.1

evqgUj

Dt`ik`

GB cW tk`l Av`ib

- 1 evqgUj ej tZ wK eSvq Zv ej tZ cvi`teb,
- 1 evqgUj i Dcv`vb, t`j vi bvg ej tZ cvi`teb,
- 1 evqgZ tKv`bv Dcv`vb wK cwi gv`Y me`g vb Zv D`j L Ki tZ cvi`teb |

3.1.1 : evqgUj

f-cp n`Z D`aY`th weifb`M`v`mi msugw`kZ Avei Y cW`extK w`N`ti Av`Q Zv`K evqgUj etj | evqgUj tK B`st`i w`R`Z Atmosphere etj | cW`exi gva`v`Kl`P`k`i`i dtj evqgUj cW`exi M`t`qi m`t`_ t`j t`M Av`Q | evqgUj t`i t`i m`w`4Z | GB t`li, w`j w`b`P`i w`K t`_t`K Dc`ti i w`t`K m`t`g n`ij K`v | evqgUj i kZKiv 97 f`w`M f-cp n`Z D`aY`29 w`K`j w`g`U`v`i i g`a` Aew`Z | e`A`mb`K`i i w`m`ve g`Z evqgUj i DaY`mgq`m`x`v f-cp n`Z 10,000 (k` n`v`R`vi) w`K`j w`g`U`v`i ch`S`l`e`Z |

Dcv`vb kZKiv w`m`v`te KZf`w`M evqgUj i weifb`Dcv`v`bi cwi gv`Y

| bvg | kZKiv nvi |
|--------------------------------|------------------|
| bvB`U`R`b (N) | 78.08 |
| Aw` t`R`b (o) | 20.95 |
| Av`M`B` (Ar) | 0.93 |
| Kve`W`B-A· v`B`W (Co2) | .03 |
| Ab`v`b` aw`j KYv I D`w`m`c KYv | .02 |

Kve`W`B-A· v`B`W Qvov evqgZ me`g vb Ab`v`b` M`v`m, t`j vi cwi gv`Y v`b t`f`t` w`e`k`l t`K`v`bv cv`R` t`L`v h`v`q b`v | w`e`k`l K`i aw`j I D`w`m`c KYv, t`av`q Ges R`j`x`q ev`t`u`i cwi gv`Y weifb`e`v`b w`f`b`Z`i n`q | Gme Dcv`v`b m`p`Z`v`c, e`p`o`cv`Z c`f`w`Z`i Dci h`t`_o c`f`ve me`l`i K`i | evqgUj i Aw` t`R`b c`w`Y`i k`l`m M`h`t`Y`i R`b` Ac`w`i`v`h`Dcv`v`b | evqgUj i h`v`e`Z`x`q Dcv`v`b c`a`v`b` w`j t`i w`e`i`v`R` K`i | t`i t`j`v`n`j : 1 t`n`t`g`w`c`u`q`v`i I 2. w`n`U`v`i`w`c`u`q`v`i | t`n`t`g`w`c`u`q`v`i A`w`a`K cwi gv`Y me`g vb Dcv`v`b, t`j v`n`j i` t`l` w`e`i`x` M`v`m, R`j`x`q ev`t`u`i, Ges aw`j KYv | w`n`U`v`i`w`c`u`q`v`i A`w`a`K cwi gv`Y th me Dcv`v`b i`t`q`Q Zv`n`j bvB`U`R`b, Aw` t`R`b, w`n`ij q`v`g Ges n`v`B`W`t`R`b |

mvi`sk

f₇-cô n₇Z D₇af⁹h weifbM⁷v₇mi msug⁷ukZ Avei Y c₇ll₇ext₇K w₇N₇i Av₇tQ Zv₇tK evqg⁷Ûj etj | evqg⁷Ûj i D₇af⁹m₇gv f₇-cô n₇Z 10,000 w₇K₇tj w₇gl₇vi ch₇S₇ie⁻Z | evqg⁷Ûj i c₇ãvb Dcv[`]vb bvB₇t₇U₇t₇Rb M⁷vm | evqg⁷Ûj Gi c₇wi₇gvY kZKiv 78.08 f₇vM | evqg⁷Z kZKiv 20.94 f₇vM Av[#] tRb ₇v₇tK | Av[#] tRb c₇ÛYi k₇l₇m K₇v₇h⁹ Rb⁷ AZ₇ie c₇ÛqvRb | c₇ãV₇Ëi gj⁻vqb 3.1

m₇w₇K D₇Ë₇i c₇ãk w₇K (v) iP₇y⁷ i₇b₇

1. tK₇v₇ k₇i³ i c₇f₇ite evqg⁷Ûj c₇ll₇exi M₇v₇tq t₇j t₇M Av₇tQ?
 (K) Z₇w₇r k₇i³ (L) g₇n₇vKI⁹ k₇i³
 (M) g₇v⁷iKI⁹ k₇i³ (N) h₇v₇š₇K k₇i³
2. evqg⁷Ûj i kZKiv KZ f₇vM f₇-cô n₇Z D₇af⁹29 w₇K₇tj w₇gl₇vi i g₇ã⁷ Aev⁻Z?
 (K) 97 (L) 87
 (M) 77 (N) 67
3. evqg⁷Ûj i c₇ãvb Dcv[`]vb tK₇v₇U?
 (K) R₇j xq ev⁹ú (L) Av₇M⁹
 (M) Av[#] tRb (N) bvB₇t₇U₇t₇Rb
4. evqg⁷Ûj i tK₇v₇bv Dcv[`]vb c₇ÛYi k₇l₇m K₇v₇h⁹ Rb⁷ Ac₇w₇i n₇v⁹
 (K) Av₇M₇b (L) Av[#] tRb
 (M) a₇y₇ KY₇ (N) D₇w⁹c KY₇

D₇Ë₇ i : 1 | M 2 | L 3 | N 4 | L

ms₇v₇t₇B c₇ãk₇e

1 | evqg⁷Ûj i Dcv[`]vbm₇g₇r w₇K w₇K?

iP₇b₇g₇j-K c₇ãk₇e

1. evqg⁷Ûj w₇K? Gi M₇V₇b Dcv[`]vb ₇t₇j vi bvg I c₇wi₇gvY i₇j L₇g?

cW 3.2

evqyU'tj i`fi

D'tik`

GB cW tktl Avcib

- 1 evqyU'tj i wefbae`ftii biv RvtZ cvi teb |
- 1 evqyU'tj i wefbae`ftii eYDv w`tZ cvi teb |

3.2.1 : evqyU'tj i`fi

ceZP civtV evqyU'tj i wefbae`ftii biv D'tj L Kiv n'tqtQ | evqyU'tj i`fi mgr#K c'avbZ` wj fvtM wef³ Kiv nq | GKw nj Dcv`vtbi wfiEtZ Av Aciv w nj evqyU'tj i Mfvi Zv ev D'PZvi wfiEtZ |

Dcv`vtbi wfiEtZ evqyU'tj i c'avb` wj`fi nj tnv'tgmU'qvi Ges tn'tU'tivU'qvi |

tnv'tgmU'qvi : tnv'tgmU'qvi c'avbZ KZ, t'jv M'vtmi msugk'fY MwZ, (1) i`k`wei x evZim, (2) Rj xq ev`u Ges (3) avj KYv w'tq MwZ | tgN Ges K'AvUKv evqy'tii i`wbae Astk c`w`exe`mc t'f'tm teorq |

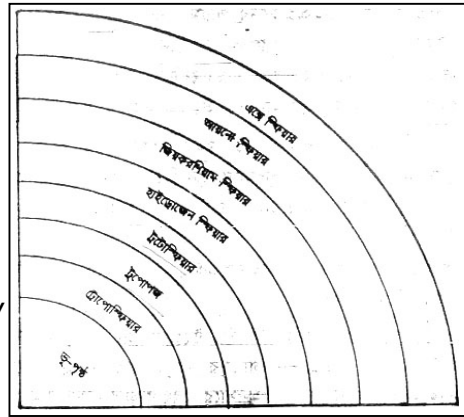
tn'tU'tivU'qvi : tnv'tgmU'qvtii D'taY©A` f; c`p n'tZ c'q 100 wK'tj w'gl'vi D'taY© evqyU'tj i th Ask i'tqtQ Zv'tKB tn'tU'tivU'qvi etj | GuU wefbaeDcv`vb Ges PriwU c'avb`fi w'tq MwZ | me'qbt`e`fi wU c'avbZ bvB'tU'tRb Oviv MwZ etj G'tK AvbweK bvB'tU'tRb ej v nq | GuU D'taY©c'q 200 wK'tj w'gl'vi ch'st`we`Z | GB`ftii D'taY© 200-1,100 wK'tj w'gl'vi ch'st`we`Z |`fi wU c'avbZ Av' t'Rb Oviv MwZ etj GuU civ'gvbweK Av' t'Rb`fi biv'tq c'w'w'PZ | GB`ftii D'taY©1,100-3,500 wK'tj w'gl'vi ch'st`fi wU c'avbZ w'w'w'w'q'g M'vm Oviv MwZ etj G'tK w'w'w'q'g`fi ej v nq | Gici nj n'vB'tw'tRb`fi |

3.2.2 : Mfvi Zv ev D'PZvi wfiEtZ evqyU'tj i`fi

EvqyU'tj`fti`fti m'w'Z | G, t'jv w'bae`K n'tZ Dctii w`tk μgk j Ny evqyU'tj th mg'í Dcv`vtb MwZ Zv`i`emk'to'i (thgb Pic, NbZ; DòZv) wfiEtZ we'Avb'w'w'w' evqyU'tj t'K c'avb PriwU fvtM f'vM K'ti'tQb | h_v- h_v U'tc'igU'tj, ÷'t'U'vgU'tj, tg'tm'vgU'tj I Zv'cgU'tj |

1. U'tc'vU'qvi ev U'tc'igU'tj : GuU evqyU'tj i me'w'bae`fi, f; c'toi m'½ t'j t'M AvQ | RxeRM'tZi Rb` evqyU'tj i G`li met'Ptq, i'z'c'Y'q U'tc'v`ftii m'x'gvb l'ctii w`tk n'Vr K'ti t'kl biv n'tq ax'ti ax'ti Gi, Yve'w'j c'w'w'w'Z n'tq cieZr`fi ÷'t'U'vgU'tj i, Yve'w'j i m'½ w'g'tk t'M'tQ | U'tc'igU'tj i t'kl c'at'st`i Astki biv U'tc'w'eiw'Z (Tropopause) | G`ftii Mfvi Zv tg'iy'Gj v'Kv'q 8 wK'tj w'gl'v Ges w'bi q'ix'q G'j v'Kv'q 16 t`tk 19 wK'tj w'gl'v | GB`ftii evqyU'tj w'bae'v tbB ej t'j B'Ptj |

2. ÷#Uu0qvi ev UtcvgUj : UtcvgUj
 -#i Dctii -liU nj ÷#Uu0qvi ev
 ÷#UvgUj hv Dctii w#K c0q 50
 ukTj wglvi chS me-Z | G -#i evqj
 Zvc I P#ci cv_R c0q tbB etj evqj
 DaY0I w#MwZ tbB | Zte evqj mgvšivj
 MwZ cwi j w#Z nq | GB -#i B DaY0Kvk |
 KviY Gi Dci tMvajx tc0Q bv | evqj
 gUj xq I Rb M'v#mi tenki fivM G -#i B
 AvtQ | ÷#UvgUj Rj xq ei0u tbB | GB
 -#i i tkl c0ŠK etj ÷#UvcR ev ÷#UmeiWZ |



3. tgm0qvi ev tgmUj : ÷#UvgUj i Dci 50 t_#K 80 uk. wq. chS |
 evqj #K tgm0qvi ev tgmUj ejv nq | GB -#i evqj Pvc L#B Kg | GiU gj-Z
 tgNxb I Rj xqev0nxb _v#K | GB -#i i
 DaY0mxgt#K tgmvcR etj | tgmvcRi
 Dci t_#K Zvc ewx tctZ _v#K |

पट 3.2.1 : evqUj i -li mgn

4. _vq0qvi ev ZvcgUj : tgmmeiWZi ci t_#K DaY0 #K c0q 60,000 uk. wq.
 chS me-Z | G -#i evqj D0Zv `Z ewx ciq Ges evqj L#B nij Kv _v#K |
 evqUj i GB PviW c0vb -#i i gta'B Avil KtqKuW #Z0KuZi -li itqtQ | thgb:
 I Rb -#i | wuj qvg -#i | nvBtW#Rb -#i, RiqKiwbqvg -#i, G tKmm0qvi BZ'w |

mvisk

evqj wwfbaDcv`vb -li tft` wwfbaDcv gvtY _v#K | GB Dcv`vb w#e#i Atc#vKZ.
 tenk Ges hZB DtaY0Dv hvq ZZB evqj Dcv`vb Pvc I NbZ; Kg#Z _v#K | evqjZ th
 Dcv`vb AvtQ Zv Avgt` i tetP _vKvi Rb` AZ`vek`Kxq | f-cp n#Z DaY0Kvk chS |
 me-Z GjvKvB evqUj etj AvfinZ Kiv nq | mteDvi ejv hvq th, evqjZ -li
 w#k#l hw` mWkfi#te Dcv`vb bv _vKZ Zte RieRŠ# emevm m0Y#vte Am#e n#q
 coZ |

cuVvEi gj`vqb 3.2

mWk DEİi cuK WK (v) wPy w b|

1. Dcv`vbMZ w K t_#K evqgÜj #K cAvbZ KIW `#i wef³ Kiv hvq?
(K) 2 wJ (L) 3 wJ
(M) 4 wJ (N) 5 wJ|
2. evqj Mfxi Zv ev D`PZvi wFwE#Z weAvbxiv evqgÜj #K KIW `#i wef³ Kti#Qb?
(K) 5wJ (L) 6wJ
(M) 7wJ (N) 4wJ|
3. F;c#öi wKueZ®evqgÜj i tKvb `#i i#q#Q|
(K) Av#qv#bwwüqvi (L) nvB#W#Rb wüqvi
(M) RiqKi wbaqg wüqvi (N) U#tcwwüqvi
4. evqgÜj xq I Rb Miv#mi tenki FwM tKvb `#i _v#K?
(K) U#tcwwüqvi (L) ÷#Uwwüqvi
(M) tg#mwwüqvi (N) _vi tgwwüqvi

DEİ : 1| K 2| N 3| N 4| L

msw#B c#æ

1| evqgÜj i KqIW `#i we`gvb|

iPbigj-K c#æ

1. evqgÜj i weifbæ`#i ,tj vi eYØv w`b|

cW 3.3

Avenl qv I Rj evqy

Dt'ik

GB cwtktl Avrb

- 1 Avenl qv I Rj evqy msAv ej tZ cvi teb,
- 1 Avenl qv I Rj evqy cv_R" wbfcy KitZ cvi teb|

3.3.1 : Avenl qv

Avgiv f;ctoi GKB vtb eQti i wbfbrangtq KLbl KLbl Mig Abfe Kwi | Aveni GKB vtb GKB w tb mKvtj wKsev wtkTj VuUv ev Mitgi ZxeZv GKB iKg nq br| tKvtbv vtb KLbl ewo nq| Aveni KLtbr ewo nq br| f;ctoi Gifc Ae-v Rvbri Rb" Avgvt' i Rj evqymu#K"avi Yv vKv i Kvi | f#Mvj kv#j th kvLv GB welaqeb wbtq AvtjvPbv Kti ZvtK Rj evqyme`v (Climatology) etj | Rj evqyZtEji GKUl , iZc#welaq Avenl qv| tKvtbv vtb evqy Zvc, Pvc, DòZv, Av`Zv, ewocvZ I evqycvtn wK Ae-vtk Avenl qv (Weather) etj | Ab`K_vq tKvtbv vtb evqy DòZv, VuUv, Pvc, MwZ, w K evqjZ Rj xq evt'úi cwigrY (Av`Zv I i`Zv) Ges ewocvZi cwigrY cfwZ. mgwMZ wK ev KtqK w tb Mo Ae-vtk Avenl qv (Weather) etj |

Avenl qvi me`v cwieZB NtU| evqy DòZv, Pvc, I ewocvZi ZvZtg'i Rb" Avenl qvi cwieZB nq| wbfbrv`vb t`tk msMwZ Avenl qv Zt`i ceffvm, teZvi, tUvj wfk b Leti i KvM#Ri gva`tg cPvi Kiv nq| evqyÚtj th mKj wbfbr#cKwZK cUqv me mgq msMwZ nt`Q Zvi wAvb wfwEK cvtK Avenl qme`v (Meteorology) etj |

3.3.2 : Rj evqy

cw_exi tKvtbv vtb ev t`tk eQti i me w tb Avenl qv GKikg_vtk br| tKvtbv w b Mig, tKvtbv w b kxZ, tKvtbv w b evZvm i`, Aveni tKvtbv w b Av`vtk| tKvtbv ermi cPj ewocvZ nq, Aveni tKvtbv ermi ewocvZi cwigrY Lp Kg| GB cwieZB ,tjv GKÍ Kitj tKvtbv vtb Avenl qvi GKUl mgwMZ Ae-v cvl qv hvq| Gifc Avenl qvi KtqK eQti i mgwMZ Ae-vtkB tmB vtb Rj evqy(Climate) etj | Avenl qv wfvMi gtZ, Omvavi YZ tKvtbv t`tki AšZ 35 erm#i i Avenl qvi Mo Ae-vi Dci wbfP Kti tmB t`tki Rj evqybYq Kiv nq0| f;ctoi AÅj tft` Rj evqyl cv_R" j`T` Kiv hvq|

3.3.3 : Avenıl qv I Rjevqygřa` cv_R`

| cv_R`i vřvř | Avenıl qv | Rjevqy |
|---------------------------|---|--|
| 1. msÁvMZ | tKvřb `řřbi evqy Zřc, Přc, Av`Zřv I evqy cčvř BZ`řři `bř`b Ae`řřK Avenıl qv etj | Avenıl qvı KřqK ermři i Mo dj řK Rjevqy etj |
| 2. mgqMZ | tKvřbv `řřbi `řř mgřqi A_řř 24 NĚv ev `bř`b Ae`řř | tKvřbv `řřbi `řřN [©] mgřqi A_řř 35-40 ermři i Ae`řř |
| 3. Gj vKvMZ | Gj vKv tQvU nq | Gj vKv eo nq |
| 4. cřievZřbi `k`gřvZřv | Ař mgřqi e`eavřb cřievZřb mřřřó řřře cřievZřv nq | `řřN [©] mgřqi e`eavřb I cřievZřb mřřřře cřievZřv nq bv |
| 5. cřievZřbi KřvY | Avenıl qvı cřievZřb nq řřb i řřřři cřievZřbi dtj | Rjevqy cřievZřb nq `řřb cřievZřbi dtj |

mřřřk

tKvřbv řřřř mgřq tKvřbv řřřř `řřbi evqygřřři KZ řřřř Dcřvřřbi Ae`řřK
Avenıl qv etj | tKvřbv řřřř Gj vKřv `řřN[©]mgřqi Avenıl qvı Mo dj řK Rjevqy etj |
mřřřřřřř 35-40 ermři i Avenıl qvı Mo dj řK Rjevqy etj | Rjevqy me`řřK
Břřřřřřř (Climatology) etj | Avenıl qv me`řřK Břřřřřřř (Meteorology) etj |

civvEi gj-vqb 3.3

mWK DEti i civk WK (v) iPy i b |

1. maviYZ evqyUti i KZ mgtqi Ae`vK Avenil qv ej v nta`vK?
 (K) GKir`b (L) `B ev KtaKgvm
 (M) wZb ev KtaK eQi (N) 35 t`K 40 eQi
2. Rj evqyej tZ weAvbri v KZ mgtqi Avenil qvi Mo dj tK evStq`vKb?
 (K) 5-10 ermi (L) 15-20 ermi
 (M) 35-40 ermi (N) 40-45 ermi
3. f-cô Rj evqy weirfbzv t`Lv hvq tKvbiUi wvEtiZ?
 (K) evqyitci (L) AAti i
 (M) evqyitci (N) evqyitzi

DEi : 1 | K 2 | M 3 | N

msvB cke

1. Rj evqyKvK etj ?
2. Avenil qv I Rj evqy gta`cv`R`WK?

iPbigj-K cke

- 1 | Avenil qv I Rj evqyK? Gt`i gta`cv`R`mgn`WK WK?

cW 3.4

Rj evqj`ibqvgK

Dt`ik`

GB cW tk`l Avcib

- 1 Rj evqj`ibqvgK, tj vi bvg ej tZ cri`teb,
- 1 Rj evqj`ibqvgK, tj vi eY`v w` tZ cri`teb|

3.4.1 : Rj evqj`ibqvgK

Rj evqj` Dcv`vb mgr` th me` ibqvgK (Factor) Øviv` ibqvsZ` nq` tm, tj vi g`ta`, A`qisk, D`PZv, mgj`i c`fve, evqyc`v n ep`ocvZ, mgj`tmZ, ce`fzi Ae`vb, evqj` Pvc, gu`li Dcv`vb, Ai`tY`i Ae`vb, evqg`U`tj i Mfxi`Zv, w`vfv`Mi` N°, mh`P`k`fi cZb BZ`w` B c`v`b|

Rj evqj`ibqvgK mgj`ni eY`v : ibqvgK, tj v f-c`to`i w`vfb`e`v`tb Rj evqj` e`w`ko` w`ba`f`Y` K`ti | w`b`P` Rj evqj` w`vfb`e`v`tb qv`g`k`i w`e`i`Y` t`q`v`nj` :

1. A`qisk (Latitude) ev`w`v`f`i`Lv`t`K`j`z`;

A`qisk Øviv` f-c`to`i w`vfb`e`v`tb i evqj` Zv`tc`i cv`R` ter`Sv` hvq` | w`b`i`q`i`Lv`i` Dci` mh`j` v`f`v`te` cW`Z` nq` etj` tm`Lv`tb` mh`Z`vc` Awa`K` | w`K`š`z`bi` q`i`Lv`t`K` tgi`y` c`Ø` t`ki` w` t`K` mh`P`k`f` µ`g`v`b`t`q` Z`h`R`f`v`te` cW`Z` nq` | dtj` w`b`i`q`i`Lv`t`K` D`E`i`-`w`q`i`Y` Z`vc`g`v`i`v` µ`g`k` nwm` cv`q` | c`Ø` 1 w`v`w`v`M`A`š`fi` t`Z`j` 1 w`v`w`v`M`Ø` d`v`t`i`b`v`BU` K`ti` Z`vc`g`v`i`v` K`tg` | tm`Rb` tgi`y`A`A`tj` erm`ti` Q`gg`v`m` mh`Z`vc` cv`q` Ges` Q`gg`v`m` G`t`K`ev`ti`B` cv`q` b`v`|

2. mgj`mgZj` t`K` D`PZv (Altitude)

D`E`B` f-c`to`i` ms`u`tk` evqy`D`Ø` nq` etj` f-c`to`i` w`b`KU` evqy`Awa`K` D`E`B`_v`t`K` | D`Ø` evqy`Da`v`f`v`g`v` n`t`q` c`h`w`i`Z` I` nuj` Kv` nq` | D`c`ti` i` evqy`n`v`j` Kv` etj` Gu`U` kv`N`Z`vc` w`e`i`Ki`Y` K`ti` kv`Z`j` n`t`q` c`to` | Da`v`Av`K`v`t`ki` evqj`Z` an`j` KY`vi` c`w`i`g`v`Y` Kg`_v`K`v`q` D`c`ti` i` evqj` Z`vc` M`h`Y` I` avi`Y` Kivi` q`g`Z`v`l` Kg` | i` evqg`U`tj` m`v`avi`YZ` c`Ø`Z` 100` w`g`U`vi` D`PZ`v`q` c`Ø`q` 1 w`v`w`v`M`Ø` t`m`j` w`m`q`v`m` Z`vc` Kg` Ab`f`Z` nq` | t`K`v`t`b`v` vb` mgj` c`Ø` t`K` h`Z`B` D`c`ti` Aew`Z` tm` v`tb` Z`Z`B` Vw`U`v` Ab`f`Z` nq` | f-c`Ø` D`E`B` n`t`q` evqg`U`j` t`K`i` Av`t`Av`t`D`E`B` K`ti` etj` h`Z`B` D`c`ti` D`V`v` hvq` Z`v`tc`i` c`Ø`i`Z`v` Z`Z`B` Kg` nq` | G` K`vi`t`Y` G`K`B` A`q`i`v`t`k` Aew`Z` n`t`j` I` w`v`fb`e`v`fb`e`D`PZ`vi` v`v` v`tb`i` Z`vc`g`v`i`v`i` cv`R` nq` | w`b`v`R`c`j` Ges` w`k`j`s` c`Ø`q` G`K`B` A`q`i`v`t`k` Aew`Z` | w`K`š`z`465` w`g`U`vi` D`PZ`v` w`e`i`k`Ø` w`k`j`s` w`b`v`R`c`j` A`t`c`q`v` Awa`K`Z`i` kv`Z`j` | Ø`w`k`t`U`v`Ø` kni` h`w` I` w`b`i`q`i`Lv`i` D`c`ti` Aew`Z` Z`e`y` Gu`U` D`t`P` Aew`Z` etj` Pxi` em`t`š`fi` t`k` etj` L`v`Z`|

3. mgj`i` c`f`ve (Influence ocean)

mgj`i` w`b`KU`e`Z`P` A`A`j` mgr` m`v`g`v`K` Av`en`v`l`q`v` Øviv` c`f`ve`w`b`Z` nq` | G` K`vi`t`Y` m`v`g`v`K` evqj` c`f`v`te` D`c`K`j`-`ms`j` M`e`G`j`v`K`v`q` kv`Z` I` M`Ø`š` Ges` w`b` I` i`w`i`i`

Zivgrivi cv_R" Lg tenk nq bv| wKšzmgý²Dckj ntZ `ieZPAĀtj gnvt`tki Af`šġi fivM kxZ I Mġš Dfqb Pig nq| Zvi KviY `j fivM Rj fivM Atcŋlv Lg ZivovZmo Dò I kxZj nq| GRb" MġšKvtj thgb `j fivMi Dcti evqyAZ"šġ DĒB _vtK, kxZKvtj tZgub ZZ `š kxZj nq| Gifc Rj evqyK Pigfivcbræ Rj evqyctj |

4. evqyēin (Wind movement)

evqyēin t`tki DĒvc ubqšy Kti| evqymgy² t`tk Avmvi dtj cŋy Rj xqer⁰ú _vtK| dtj H evqyth AĀtj i w`tk cēvnZ nq tmlvrb Zvtci nwm Ges epōcvZ NUvq| wKšzevqyēivU `j fivMi Dci w`tq Avmtj ZvtZ Rj xqer⁰ú _vtK bv| i⁰ evZvm Zvtci nwm KitZ civi bv| dtj i⁰ evqycēvnZ AĀtj Mġš DĒvc Ges kxZ cŋU kxZ AbfZ nq|

5. epōcvZ (Rain fall)

evqyēvtni mvf_ Rj xqer⁰ú _vKtj epōcvZ nq| epōcvZ Avenl qv I Dv"ċ AĀtj i Dci cŋve wēli Kti| epōcvZi dtj tKvrbv `vbi DĒvc Ktg hvq| evsj vt`tk RjvB gvtm epōcvZ nq etj G mgq cešZP Rly gym Atcŋlv Kg Dò _vtK| wbi ŋxq AĀtj mviv ermi cŋy mh⁰KiY cto wKšzevqyēivU Rb" tmlvrb Mig AtcŋlvKZ.Kg AbfZ nq|

6. mgý²tmīZ (Ocean Current)

mgý²tmīZ ctivŋfvite t`tki Avenl qvi Dci cŋve wēli Kti| kxZj tmīZi Dci w`tq cēvnZ evqy kxZj Ges Dò tmīZi Dci w`tq cēvnZ evqyDò nq| GB evqycēvnZ ntq t`tki Af`šġi Avenl qvi Dci cŋve wēli Kti|

7. ceŋZi Ae`vb (Position of Mountain)

ceŋZi Ae`vb evqy MvZ ubqšz Kti| evqyēvtni gyl ceŋ _vKtj evqyMvZ cvieZB Kti Ab`w`tk cēvnZ nq| mgý² wKueZP ceŋ Aew`Z ntj GuU cŋvxi i b'vq eZgub t`tk mgý² cŋvteK t`tki Af`šġi cŋetki ct_ erav mjo Kti| hv` mgý² t`tk `j fivMi w`tk evZvm cēvnZ nq Zvntj tKej ceŋZi GK cvtk⁰epōcvZ NUvq| Avevi ceŋZi wKueZP `vrb `ieZx `vb Atcŋlv Avak epō nq|

ceŋ tKvrbv `vbi Zvtci Dci I cŋve wēli Kti| fvi Zxq Dcgnvt`tki DĒti wngyj q ceŋ Aew`Z _vKvq Mġšġi `wŋY-cwōg tgsmsx evqyZvtZ erav cŋB nq| Avevi kxZKvtj DĒi w`K t`tk kxZj evZvm cēvnZ ntq wngyj tq evavcŋB nq| dtj wngyj tqi `wŋYi fvi Zxq Dcgnvt`k cēj kxZj cēYZv t`tk iŋlv tctqtQ|

8. fvgi Xvj (Slope of the Land)

fvg mfhP w`tk Xvj y_vKtj mh⁰KiY j²fvite cvZZ nq Ges fvg Avak DĒB nq| mfhP wecixZ w`tk Xvj yRvgtZ mh⁰KvY tntj cto| dtj tmlvrb DĒvc I epōcvZ Avak etj DrKó.tkYxi eŋ I Dv"ċ Rtbz, DòZv Kg _vtK| Avim I wngyj tqi `wŋY tKvrb G ceŋZtqi DĒi cvtk⁰AtcŋlvKZ.Kg mh⁰KiY cvq etj tmlvrb

ewócvZ I Dwi`c DfqB Kg| mibteiwqvi fig DEti Xij yetj GuU Kg mhZvc
cvq|

9. gũĖKvi Dcv`vb (Elements of the soil)

gwUli Dcv`vbi Dci Avenl qv ubfP Kti | cŕli fig Atcŕlv tKvgj gwĖKv Kg
Dò I Kg kxZj nq| cj j hŕ I R½j gq gwĖKv AwaK cwb aviY I Zvc msi ŕŕY
KiŕZ cvti etj G`v`tb MŕŕKvŕj ev w`evfvŕM AwaK DEB nq bv Ges ivŕĪ
kxZKvŕj I AwaK kxZ AbyZ nq bv| wKšzi`e ej Kvgq ev cŕli gq fig cwb I
Zvc aŕi ivLŕZ cvti bv| tmRb` H me `v`tb Mŕŕŕ I w`tbi tejv AZ`šl Dò nq
Ges ivŕĪ I kxZKvŕj AZ`šl kxZj nq|

10. AiŕY`i Ae`vb (Presence of Forest)

figi Dci Mfxi R½j ev AiY`_vKŕj tmLv`tb Zvc weuKiY Kg nq etj fig
Av`_v`K| GRb` tmB AĀj teuk Dò ev teuk kxZj nq bv| ebfug AĀj
ev`úxfetbi mrvvth` evqyAwaK Rjxqev`ú msMŕ Kti | G Rjxqev`ú NbrfZ
ntq ewócvZ NUvq| mgq mgq ebfug NYevZ ev SoSĀvi MvZ cŕZnZ Kti |
ebfig ŕviv Av`Qv`Z AĀj mntR mhŕŕkŕ tčŕvq bv etj ebfug AĀj ebnxb
AĀj Atcŕlv kxZj nq|

11. Rjxqev`ú (Humidity)

Rjxqev`ú evqgŪj i Zvc avitYi mrvqZv Kti | AwaK Rjxqev`ú cŕ`evqy
cŕ`_ex t`_K Zvc weuKiŕY evav mŕŕ Kti | tmRb` tgNv`Qbei wŕŕŕZ wbgŕ tgNgŕ
i wŕĪ Atcŕlv AwaK Mig AbyZ nq| tgiyAĀj i evZv`tm Rjxqev`ú Kg etj
tmLv`tb w`tbi Lŕ Mig I ivŕĪ Lŕ kxZ AbyZ nq|

12. evqgŪj i Mfxi Zv (Depth of Atmosphere)

AwaK evqŕli tŕ` Kti Avmvi mgq mhZv`tci cwi gvY Ktg hvq| mKvj I weKvŕj
mhŕŕkŕ AwaK evqŕli tŕ` Kti cŕ`_extZ Av`tm etj Zvi Zvc Kg AbyZ nq|
wKšzga`ty AtcŕlvKZ.Aí evqŕli tŕ` Kti Av`tm etj ZLb Zv`tci cwi gvY
AwaK _v`K|

13. w`ev fvŕMi Zvi Zg` (Length of the day)

w`evfvŕM mŕŕŕ Zv`tc f`_cŕ I evqgŪj DEB nq| ivŕZ Zvc weuKiY Kti cŕ`_ex
kxZj nq| w`b eo ntj f`_cŕ AwaK DEB nq| tŕvU ivŕĪ Zvc weuKiŕYi cwi gvY
Kg _vKv evqgŪj ŕgvbŕq DEB ntZ _v`K| wKšz b tŕvU ntj w`tbi cŕ`_ex th
cwi gvY Zvc MŕY Kti DEB nq ivŕĪ Zv weuKiY Kti cŕ`_ex Vvŕv ntq cŕo|
MŕŕKvŕj w`b eo I i wŕĪ tŕvU n l qvq AwaK Mig Ges kxZKvŕj w`b tŕvU Ges
ivZ eo n l qvq AwaK kxZ AbyZ nq|

14. mhŕŕkŕ cZb (Sun Shine)

mhŕŕkŕ j`fvŕte I wZhŕfvŕte cŕZZ n l qvi Rb` evqgŪj I f`_cŕŕi DòZvi
Zvi Zg` ntq _v`K| mhŕŕkŕ hZ tntj ev wZhŕfvŕte cŕte evqgŪj ZZ Kg Dò
ntj| wZhŕfvŕte cŕZZ mhŕŕkŕ AwaK`v`tb Qvotq cŕo Ges AwaK evqŕli tŕ`
Kti Av`tm| j`fvŕte cŕZZ mhŕŕkŕ AtcŕlvKZ.Aí`v`tb Qvotq cŕo Ges Kg
evqŕli tŕ` Kti Av`tm| dtj teuk Zv`tc f`_cŕ DEB nq|

mvisk

Rj evqj cãvb ubqvgK 14uU, ubqvgK_ wj nj A¶vsk, mgÿZj t_#K D"PZv, mgÿ 1
cFve, evqgèvn, ewócvZ, mgÿ#mZ, ce#Zi Ae`vb, figi Xvj, gvuUj Dcv`vb,
Ai#Y`i Aem`vb, Rj xq ev®ú| evqgU#j i Mfxi Zv, w` evfv#Mi Zvi Zg` Ges mhPvk#
Zvc|

cvVvEi gj`vqb 3.4

mVK DĖti i cvk WK (v) vPy v b|

1. 1 vVvMvA v vstki cv_KK Rb` ZvcgvIvi cv_R` KZ nq?
 (K) 1 tm. tM0 (L) 1 dvti bnvBU
 (M) 10 tm. tM0 (N) 10 dvti bnvBU

2. cĖZ 100 vgvvi D`PZvi cv_KK i Rb` ZvcgvIvi cv_R` KZ nq?
 (K) 1 tm. (L) 10 tm.
 (M) 1 tm. (N) 10 tm.

3. evqvĖvni mv_ tKvbw vKtj cPj ev cvZ nq?
 (K) avj KYv (L) KveĖ-WvB A. vBW
 (M) DvMĉ KYv (N) Rj xqevvú|

4. tgiyAĀtj i evqz tKvbwUi cvigvY ZjYvgj-Kfvte Kg_vK?
 (K) Av tRb (L) bvBtUĀRb
 (M) Rj xqevvú (N) DvMĉ KYv|

DĖi : 1| L 2| K 3| N 4| M

msvB cĖe

1. Rj evqj v bqvgKmgv vK vK?

iPvgj-K cĖe

1. Rj evqj v bqvgKmgv eYĖv Ki v|

cW 3.5

evqj Zvc I mfgvòti Lv

Dt'ik

GB cW tkçl Avçib

- 1 evqj Zvc ej tZ wK ešvq Zv ej tZ cvi teb,
- 1 evqj Zvçci Drm ej tZ cvi teb,
- 1 evqj Zvçci Zvi Ztg'i Kvi Y e'vL'v Ki tZ cvi teb,
- 1 Zvc gUj _tj v mbr³ Ki tZ cvi teb,
- 1 mfgvòti Lvi msAv Dçj L Ki tZ cvi teb |

3.5.1 : evqj Zvc

mhPikçt_çK th Zvc evqgUj çK DEB Kçi ZvçKB evqj Zvc etj |

3.5.2 : Zvçci Drm

mhPikç evqgUj çK DEB Kçi | mhPikçt_çK MpxZ kw³çK tmsi kw³ (Solar energy) etj | evqj Zvçci çvçb Drm nj tmsi kw³ | GB tmsi kw³ bivrçite evqgUj çK DEB Kçi | tmsi kw³ f_çtò Avmvi çç_ evqgUj th avj KYv, Rj xqer^ú I Ab'b" Kwçg Dcv vb AvçQ Zv tmsi kw³çK AvsukKçite tkvY Kçi Ges evqgUj çK DEB Kçi | Avevi f_çtò i _j fçM I Rj fçM Zvc MhY Kivi ci i wçtZ H mKj _vb t_çK Zvc wçKçtYi dtj evqgUj DEB nq | cç_exi me RvçMvq Zvcgçv mçib _vçK bv | mvavi YZ vb çç_ wLZ KviçY Zvcgçv i cv_ç" t`Lv hçq |

3.5.3 : Zvçci Zvi Zg

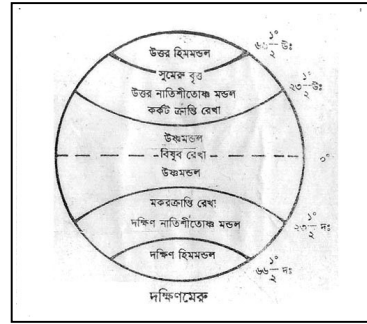
MpxZ tmsi kw³ evqj Zvçci çvçb Drm | hç w`b eo nq Zvçtj f_çp teikçY mhPikç t_çK Zvc MhY Ki tZ cvçi | dtj evqgUj teik DEB nq | ZvB w`b eo nçj Zvcgçv tçto hçq | mhPikç Y tkvçv RvçMvq j ççite (Lvovçite) çtj tmLvçb Aí RvçMv Rçto mçhç Zvc ççto Ges Zv Kg evq_çi tç` Kçi Avçm | ZvB tmLvçb Zvcgçv teik nq | GB KviçY wbi ççq AÇtj evqj Zvc teik nq | Avevi thLvçb wZççite (trj vçvçite) mhPikç ççto tmLvçb teik evqçli tç` Kçi Avçm Ges teik RvçMv Rçto Ae`vb Kçi dtj tmLvçb evqj Zvc Kg nq |

Rj xqer^ú AçbKçY Zvc açi ivLçt cvçi | ZvB evqçZ Rj çq evç^úi çmçvY tçto tMçj Zvcgçv tçto hçq | mççZj t_çK hZ Dçti DVv hçq, evqj Zvc ZZB KçtZ _vçK | mvavi YZ ççite mçççZj t_çK AwçK D"çZvq evqj Zvc Kçg hçq | evqj Zvcgçv _vçgççv i w`çq çmçvç Kiv nq | GB _vçgççv i çç aiçYi nq, h_v : çvçi brvBU _vçgççv i tçmçUçMç _vçgççv |

3.5.4 : ZvcgUj

Avgiv BwZc`e`fRt`bW f`c`to`i me RvqMvq GKB iKg ZvcgUj v`v`K bv| Zv`ci cv`K`i Rb` f`c`p`K cv`W gU`j f`M Kiv nq| Gi GK GKUv f`M`K ZvcgUj etj | GB f`M`j v`n`Q :

1. D`ogUj
2. D`Ei b`wZk`Zv`o` gUj
3. `w`Y b`wZk`Zv`o` gUj
4. D`Ei w`nggUj
5. `w`Y w`nggUj |



ৱ`T 3.5.1 : cv`exi ZvcgUj

wbi`q`i`Lvi Dci mh`erm`ti `Beri j`f`v`te w`Ki`Y

t`q| KK`u`m`S`I g`Ki`u`m`S`ti`Lvi Dci mh`erm`ti GK`evi j`f`v`te w`Ki`Y t`q| G Kvi`Y wbi`q`i`Lvi t`K Df`q w`t`K m`v`S`q ch`S`I A`A`j ZvcgUj Lv`y`tenk`_v`K| G`t`K D`ogUj ev`M`gUj etj |

KK`u`m`S`I t`K m`g`i`y`E ch`S`I Ges g`Ki`u`m`S`I t`K K`g`i`y`E ch`S`I mh`P`k` KL`t`bv j`f`v`te Ave`ri KL`t`bv w`Zh`R`f`v`te c`to| Zi`B GB `y` A`A`j k`x`Z I M`A`t`S`i Zv`ci cv`R` Lv`y`tenk` nq`bv| D`Ei t`M`j`v`ta`GB gU`j`K D`Ei b`wZ`Zv`o` gU`j Ges `w`Y t`M`j`v`ta`GB gU`j`K `w`Y b`wZk`Zv`o` gU`j etj | m`g`i`y`E t`K m`g`i`y`ch`S`I Ges K`g`i`y`E t`K K`g`i`y`ch`S`I mh`Ki`Y Aw`Z w`Zh`R`f`v`te c`to| GQ`v`ov Gme A`A`j eQ`ti Qq g`v`m m`h`P Av`t`j v`t`c`U`Q bv| GR`b` GL`v`t`b k`x`Z AZ`S`I Z`x`e` nq| GB A`A`j`K D`Ei t`M`j`v`ta`D`Ei w`nggUj Ges `w`Y t`M`j`v`ta` w`Y w`nggUj ej`v`nq|

3.5.5 m`g`v`o`ti`Lv (Isotherm)

mg`y` mg`Zj t`K D`t`P th me `v`t`b GKB iKg ZvcgUj v`v`K, tm` m`Kj `v`t`K th Kvi`wb`K ti`Lv w`t`q Ki`t`j th ti`Lv cvl`qv` h`v`te, Zv`K m`g`v`o`ti`Lv etj | m`g`v`o`ti`Lv w`t`q t`Kv`t`bv GK`U`W w`t`bi Zvc ev`g`v`mi ev`erm`ti`i Zvc t`L`v`t`bv nq| m`v`ari`YZ R`j`v`B I R`v`b`g`v`ix g`v`mi m`g`v`o`ti`Lv w`t`q Zvc w`eb`v`t`mi `e`w`k`o` t`L`v`t`bv nq|

m`v`i`sk

ev`q`Z R`j`x`q`e`t`u`i c`w`i`g`v`Y t`e`to t`M`j` ev`q`y` Zvc t`e`to h`v`q| w`b`eo`n`t`j` ev`q`y` Zvc t`e`to h`v`q| mh`Ki`Y L`ov`f`v`te c`o`t`j` ev`q`y` Zvc t`e`to h`v`q| h`Z D`t`P h`v`l`q`v` h`v`q` ev`q`y` Zvc ZZ`B K`g`t`Z`_v`K|

c4VvEi gj`vqb 3.5

mWk DÈti i c4k Wk (v) WPy w b |

1. evqy Zv4ci c4vb Dm Wk?

| | |
|--------------|---------------|
| (K) tmš1 k13 | (L) Rj xqev@ú |
| (M) tc4Eij | (N) KvV |

2. wbi 9xq AÂtj evqy Zvc tenk tKb?

| | |
|----------------------------------|--|
| (K) m#hP Avtj v wZhRfvte cto etj | |
| (L) m#hP Avtj v j #fvte cto etj | |
| (M) i w1 eo ntj | |
| (N) MwQciv v tenk etj | |

3. F;c4ô KqW ZvcgUj Av4Q?

| | |
|--------|--------|
| (K) 4W | (L) 3W |
| (M) 5W | (N) 6W |

4. DÈi bWZwktZvò gU4j i Ae`vb tKv_vq?

| | |
|----------------------------------|--|
| (K) wbi 94i Lv t_4K KK@ μwš1chš1 | |
| (L) m4gi gE t_4K m4giychš1 | |
| (M) wbi 94i Lv t_4K gKi μwš1chš1 | |
| (N) KK@ μwš1t_4K m4gi gE chš1 | |

DÈi : 1 | K 2 | L 3 | K 4 | N

msw7B c4ke

1. evqyZvc Wk?
2. m4gvò4i Lv Wk?
3. evqy Zv4ci Zvi g4g`i 4W KvY Wj L4 |

iPbuj-K c4ke

1. Zv4ci Dm Wk? ZvcgU4j i we`w1 Z e`vL`v Ki4 |

cW 3.6

evqj Pvc ev mgPvc ti Lv

Dt`ik`

GB cW tk`l Avci b

- 1 evqj Pvc msAv ej tZ cvi teb,
- 1 evqj Pvc ci_K`i KviY eY`v Ki tZ cvi teb,
- 1 evqj Pvc ej q e`vL`v Ki tZ cvi teb,
- 1 evqj Zv`ci mrt_ evqj Pvc m`uK`ej tZ cvi teb,
- 1 mgtc`ti Lv eY`v Ki tZ cvi teb,
- 1 mgPvc ti Lvi msAv Dt`j k Ki tZ cvi teb |

3.6.1 : msAv

cW ex`K n`ti th evqj Av`Q Avi me e`k gZ tmB evqj | I Rb Av`Q | GB I Rb t`tk th Pvc m`o nq Zv`KB evqj Pvc etj | GB evqj Pvc mvari YZ mgZ`j 1 eM` tmU`vU`v `v`b 1.03 tK`R nq | evqj Pvc e`v`i mgU`v bvgK hš;w`tq cwi gvc Kiv nq | e`v`i mgU`v `B i K`gi nq | cvi ` e`v`i mgU`v Ges G`bi t`qW e`v`i mgU`v |

3.6.2 : Pvc ci_K`i KviY

evqj Pvc me Rv`qMv`G Ki Kg _v`K bv | tKv`bv `v`b evqj Zvc te to tM`j evqj Av`Z`b te to hv`q | c`hwi Z nq | dtj evqj n`j Kiv nq Ges I Rb K`g hv`q | ZLb tmLubKvi evqj Pvc K`g hv`q | Avevi tKv`v evqj Zvc K`g tM`j tmLubKvi evqj I Rb te to hv`q | dtj evqj PvcI te to hv`q m`Z`i vs t`Lv hv`"Q, evqj Zvc K`g t`j Pvc ev`to Ges evqj Zvc ev`o t`j , Pvc K`g | GQ`vov Rj xqev`u evqj t`P`q n`j Kiv | G Kvi t`Y evqj Z hwi` Rj xq ev`u`i cwi gvY teik nq ZLb tmB evqj I Rb A`bK K`g hv`q | dtj evqj PvcI Kg _v`K | evqj Pvc teik _v`K t`j Zv`K D`PPvc etj | Avevi evqj Pvc Kg _v`K t`j Zv`K uba`Pvc etj |

mgPvc ti Lv

th me Rv`qMv`g evqj Mo Pvc GKB _v`K tm me Rv`qMv`g t`j v`K th Kvi ubK ti Lv w`tq hš Kiv nq Zv`K mgtc`ti Lv ev mgPvc ti Lv (Isobar) etj |

3.6.3 : mvZiU Pvc ej q

f-c`to me Rv`qMv`g GKB i Kg Zvc gv`v _v`K bv | Avevi cW ex` ubR A`t`q | AveZ`bi (NY`bi) dtj cW ex` c`p t`tk-evqj m`KQ`v m`Q`tk hv`q | GB `B Kvi Y f-c`to K`q Kiv Pvc ej t`qi m`o n`t`q`Q (cW ex`K ej t`qi g`Zv n`ti _v`Kv e`v`v Kvi AA`j t`K ej q ej v n`t`q`Q) | f-c`to Gi Kg mvZiU Pvc ej q i t`q`Q | G` t`j v n`"Q :

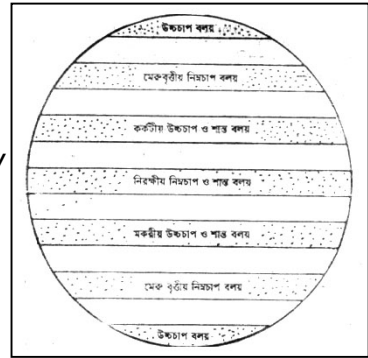
1. $\text{ibi } \eta\text{ixq } \text{ib}^{\text{a}}\text{Pvc } \text{ej } \text{q}$
2. $\text{KK}\theta\text{ixq } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{q}$
3. $\text{gKiixq } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{q}$
4. $\text{m}\xi\text{giye}\xi \text{ c}\theta \text{ kixq } \text{ib}^{\text{a}}\text{Pvc } \text{ej } \text{q}$
5. $\text{K}\xi\text{giye}\xi \text{ c}\theta \text{ kixq } \text{ib}^{\text{a}}\text{Pvc } \text{ej } \text{q}$
6. $\text{D}\xi\text{i}\xi\text{giyAA}\hat{\text{t}}\text{j } \text{i } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{q}$
7. $\text{`}\eta\eta\text{Y } \text{tgiyAA}\hat{\text{t}}\text{j } \text{i } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{q}$

3.6.4 : $\text{ibi } \eta\text{ixq } \text{ib}^{\text{a}}\text{Pvc } \text{ej } \text{q}$

$\text{ibi } \eta\text{itiLv } \text{t}_\text{-}\text{tK } 5^\circ \text{ D}\xi\text{i } \text{I } 5^\circ \text{ `}\eta\eta\text{Y } \text{A}\eta\text{ivstki } \text{gta} \text{ GB } \text{ib}^{\text{a}}\text{Pvc } \text{ej } \text{q } \text{ue} \text{-}\xi\text{Z}$
 $\text{ibi } \eta\text{itiLv } \text{Dci } \text{mh}^{\text{e}}\text{ermti } \text{`}\theta\text{evi } \text{j } \text{afvite } \text{uKiY } \text{t} \text{`q} \text{ ZvB } \text{G } \text{AAj } \text{f}_\text{-}\text{c}\hat{\text{t}}\text{o } \text{D}\hat{\text{o}}\text{Zg}$
 $\text{AAj } \text{AZ} \text{`}\text{uak } \text{Zr\text{t}ci } \text{Rb} \text{ G } \text{AAj } \text{i } \text{evqyAZ} \text{`}\text{s} \text{lnij } \text{Kv } \text{I } \text{c}\hat{\text{h}}\text{vii } \text{Z } \text{ntq } \text{DaY}\hat{\text{g}}\text{Lx } \text{nq}$
 $\text{dtj } \text{evqiy } \text{IRb } \text{K}\xi\text{g } \text{hivq } \text{Ges } \text{ib}^{\text{a}}\text{Pvc } \text{m}\mu\text{o } \text{Kti } \text{GfivteB } \text{ibi } \eta\text{ixq } \text{ib}^{\text{a}}\text{Pvc } \text{ej } \text{tqi}$
 $\text{m}\mu\text{o } \text{ntqtQ}$

3.6.5 $\mu\text{iv}\xi\text{-q } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{q}$

$\text{ibi } \eta\text{ixq } \text{AAj } \text{t}_\text{-}\text{tK } \text{D}\xi\text{B } \text{evqyDaY}\hat{\text{g}}\text{Lx } \text{nq } \text{Ges } \text{hZB}$
 $\text{Dcti } \text{I}\text{tV } \text{ZZB } \text{axti } \text{axti } \text{kixZj } \text{nq} \text{ kixZj } \text{evqy}$
 $\text{fvix } \text{nlqvi } \text{dtj } \text{f}_\text{-}\text{c}\hat{\text{t}}\text{o } \text{tb}\hat{\text{t}}\text{g } \text{Av}\hat{\text{t}}\text{m } \text{Ges } \mu\text{iv}\xi\text{q}$
 $\text{AA}\hat{\text{t}}\text{j } (\text{KK}\theta\mu\text{iv}\xi \text{ I } \text{gKi}\mu\text{iv}\xi\text{i } \text{KvQvKvQ}) \text{ `}\text{ib}$
 $\text{Kti } \text{tbq} \text{ Gfivte } 25^\circ \text{ t}_\text{-}\text{tK } 35^\circ \text{ D}\xi\text{i } \text{I } \text{`}\eta\eta\text{Y}$
 $\text{A}\eta\text{ivstki } \text{ga} \text{`eZ}\hat{\text{P}}\text{AA}\hat{\text{t}}\text{j } \text{`}\theta\text{W } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{tqi } \text{m}\mu\text{o}$
 $\text{nq} \text{ D}\xi\text{i } \text{tMjv}\hat{\text{t}}\text{a}^{\text{c}}\text{Gi } \text{bvg } \text{KK}\theta\text{ixq } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{q}$
 $\text{Ges } \text{`}\eta\eta\text{Y } \text{tMjv}\hat{\text{t}}\text{a}^{\text{c}}\text{Gi } \text{bvg } \text{gKiixq } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{q}$



$\text{mP}\hat{\text{T}} \text{ 3.6.1 : Pvc } \text{ej } \text{q } \text{mgn}$

3.6.6 : $\text{tgiye}\xi \text{ c}\theta \text{ kixq } \text{ib}^{\text{a}}\text{Pvc } \text{ej } \text{q}$

$\text{c}\text{u}_\text{-}\text{exi } \text{AveZ}\hat{\text{P}}\text{bi } \text{Rb} \text{ m}\xi\text{giye}\xi \text{ I } \text{K}\xi\text{giye}\xi \text{ t}_\text{-}\text{tK } \text{kixZj } \text{evqyPmi} \text{`}\text{tK } \text{uQu}\hat{\text{t}}\text{K } \text{hivq}$
 $\text{dtj } 60 \text{ t}_\text{-}\text{tK } 70 \text{ D}\xi\text{i } \text{I } \text{`}\eta\eta\text{Y } \text{A}\eta\text{ivstki } \text{evqiy } \text{Pvc } \text{K}\xi\text{g } \text{hivq} \text{ D}\xi\text{i } \text{tMjv}\hat{\text{t}}\text{a}^{\text{c}}\text{GB}$
 $\text{ib}^{\text{a}}\text{Pvc } \text{ej } \text{tqi } \text{bvg } \text{m}\xi\text{giye}\xi \text{ c}\theta \text{ kixq } \text{ib}^{\text{a}}\text{Pvc } \text{ej } \text{q } \text{Ges } \text{`}\eta\eta\text{Y } \text{tMjv}\hat{\text{t}}\text{a}^{\text{c}}\text{Gi } \text{bvg } \text{K}\xi\text{giy}$
 $\text{e}\xi \text{ c}\theta \text{ kixq } \text{ib}^{\text{a}}\text{Pvc } \text{ej } \text{q}$

3.6.7 $\text{tgiy} \text{`kixq } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{q}$

$\text{Df}\text{q } \text{tgiyAA}\hat{\text{t}}\text{j } \text{miv } \text{ermiB } \text{ei}\text{t}\text{d } \text{XvKv } \text{`}\text{v}\text{tK } \text{Ges } \text{G } \text{`}\eta\eta\text{Y } \text{AAj } \text{mngg}\hat{\text{U}}\text{tj } \text{i } \text{A}\hat{\text{s}}\hat{\text{M}}\text{Z}$
 $\text{kixZi } \text{c}\theta\text{Kvc } (\text{A}\hat{\text{uak}}) \text{ tewk } \text{nlqvi } \text{Kvi}\hat{\text{t}}\text{Y } \text{evqiy } \text{Zvcgv}\hat{\text{I}}\text{v } \text{AZ} \text{`}\text{s} \text{Kg } \text{nq } \text{I } \text{evqyfvix}$
 $\text{nq} \text{ G } \text{mg} \text{-}\text{I } \text{Kvi}\hat{\text{t}}\text{Y } \text{tgiyAA}\hat{\text{t}}\text{j } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{tqi } \text{m}\mu\text{o } \text{ntqtQ} \text{ D}\xi\text{i } \text{tMjv}\hat{\text{t}}\text{a}^{\text{c}}\text{GB } \text{D}^{\text{P}}\text{Pvc}$
 $\text{ej } \text{tqi } \text{bvg } \text{D}\xi\text{i } \text{tgiyAA}\hat{\text{t}}\text{j } \text{i } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{q } \text{Ges } \text{`}\eta\eta\text{Y } \text{tMjv}\hat{\text{t}}\text{a}^{\text{c}}\text{Gi } \text{bvg } \text{`}\eta\eta\text{Y } \text{tgiy}$
 $\text{AA}\hat{\text{t}}\text{j } \text{i } \text{D}^{\text{P}}\text{Pvc } \text{ej } \text{q}$

mviisk

Zvc evotj Pvc Ktg hvq| evqjZ Rj xqev®ú tewk _vKtj Pvc Ktg hvq| evqj Zvc I
cW_exi wR At¶¶ Ny¶bi dtj evqj Pvc ej tqi mwó ntqtQ|

civvEi gjvqb 3.6

mWK DEti i civk WK (v) vPy v b |

1. vbi vti Lv t_ tK 5 DEi I 5 v vY A vstki gta tKvbr evqPvc ti LmU Aew-Z?
 (K) D"PPvc ej q (L) vbvvc ej q
 (M) gKixq D"PPvc ej q (N) KKvq D"PPvc ej q
2. mgymgzij 1 eMvUvUvi vtb evqj Pvc KZ nq?
 (K) 3.03 tKvR (L) 4.03 tKvR
 (M) 1.03 tKvR (N) 2.03 tKvR
3. evqj Pvc tKvb hS;v tq civgvc Kiv nq?
 (K) vvgUvi (L) evti vUvi
 (M) j vKtUvUvi (N) nvBtWvUvi
4. evqjZ Rj xqv tui civgY te to tMij evqj Pvc vKifc nq?
 (K) te to hvq (L) Ktg hvq
 (M) GKB i Kg vK (N) tKv vI ev to b |
5. f;cv to KqvU Pvc ej q AvtQ?
 (K) 5vU (L) 6vU
 (M) 7vU (N) 8vU
6. vstiq D"PPvc ej q tKvb A vstki ga eZP vtb Aew-Z?
 (K) 35-45 (L) 20-25
 (M) 15-45 (N) 25-35

DEi : 1 | L 2 | M 3 | L | L 5 | M 6 | N

msvB cvk

1. evqj Pvc vK?
2. Pvc ej q ej tZ vK tevSb?
3. Pvc ej q KqvU I vK vK?

iPvj-K cvk

1. evqj Pvc ej q, t j vi eYv v b |

cW 3.7

evqšėin : ıbqZevqy ı'ıbxq evqy

Dř'ık"

GB cW tktI Avcıb

- 1 evqycėvn ıK Zv ej řZ cvi řeb,
- 1 evqycėvřni Kvi Y ej řZ cvi řeb,
- 1 evqycėvřni ıbqg e'ıL'ıv Ki řZ cvi řeb,
- 1 evqycėvřni eYėv ıv řZ cvi řeb,
- 1 evqycėvřni dj vřj Dřj k Ki řZ cvi řeb|

3.7.1 : evqšėin ıK?

mhřvc I evqřřci cv_řK"i Rb" GKıU meřkl ıbqřg evqy GK'ıv nřZ Ab"ıřb cėvnZ nı qıřK evqšėin etj | mřřřřc ř;çřoi mgrřřřř evqy řj vřj řK evqšėin etj |

3.7.2 : evqycėvřni Kvi Y

tKıřbv ıřb Zvc teřo tMřj evqycėvřni Z I nıj Kv nq| ZLb evqy I Rb Křg hvq| nıj Kv evqDçři DřV hvq| dřj evqy řvc Křg hvq| tm mgrř evqřřřřř i mgrv ıvLvi Rb" Avřk çvřk D"PPřc AĀř t_řK ıb=řvc AĀř i ıv řK evqycėvnZ nq| A_ř Zvc Ges řřřci cv_řK"i Rb" evqyme mgrř GK'ıv t_řK Ab" ıřb evqycėvnZ nq|

3.7.3 : evqšėvřni ıbqg

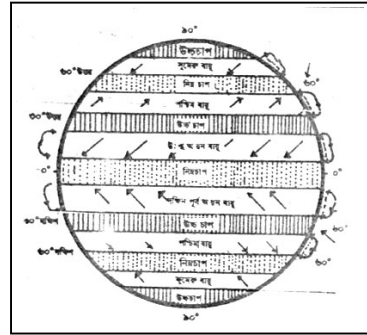
evqycėvnZ nı qıv mgrř KřqKıU ıbqřg çvı řvıj Z nq

- 1. ıb=řvc AĀř i evqDĒB I nıj Kv nq, ZLb evqřřřřř i mgrv ıvLvi Rb" D"PPřc AĀř t_řK křZj I řvıx evqıb=řvc AĀř i ıv řK cėvnZ nq|
- 2. evqyDĒi tMvj řřřřřř řK tetř Ges ıvřřř tMvj řřřřřř řK tetř cėvnZ nq| Kvi Y çv_ex çvřđg t_řK çėř řK AveZė (Nıřř) Ki řř Ges ıbı řřřřLv t_řK řgiy AĀř i ıv řK hřB hřı qı hvq ZZB MıZřem řgıvřřř KğřZ _řK| GB mřřK tdřřř i mř etj |
- 3. DĒi tMvj řřř řh ıv řK evqycėvnZ nq tmıv řK ıçOb ıçřı ıçřřř řřř řKı evqy řvc Kğ _řK| ıKřřř ıvřřř tMvj řřřřřř ĩeciřZ Ae'ı nq| GB mřřK evřm e'ıj U mř etj |
- 4. evqyřh ıv K t_řK cėvnZ nq tmıv K Abıvřř evqy bıgKi Y nq| řhgB DĒi çvřđg ıv K t_řK evqycėvnZ nřj řmB evqy bıg nře DĒi çvřđg evqy
- 5. evqycėvřni MıZçř çvıvıo A_ev çėř _řKřj evqšėvřni MıZi ıv K çvı eZė nře Ges řem Křg hřře|

3.7.4 : cKvitf

cw_exi weifbæ~vibi weifbæcKvi evqzèvntK PriuU
fvM nef³ Kiv nq| G₃ t₃ v n³ Q

1. ubqZ evqy2. miviqK evqy3. AvbqigZ evqy4.
~vbxq evqy



uPÎ 3.7.1 : ubqZ evqzèv

3.7.5 : ubqZ evqy(Planetary Winds)

th mKj evqymiv ermi ubqigZ fite cw_exi Pvc
ej q₃ t₃ v ðviv ubqisZ n₃q eQti mKj mg₃q GKB
w₃ t₃ K cèvnZ n₃q Zv₃ t₃ K ubqZ evqyetj | ubqZ evqy
uZb cKvi :

1. Avqb evqy(Trade wind) : KKØxq I gKixq D³PPvc ej q t₃ t₃ K th evqybi ¶ixq
ubæðvc ej tqi w₃ t₃ K cèvnZ n₃q Zv₃ t₃ K Avqb evqyetj | tdti t₃ j i m₃ f₃ Ab₃ v₃ t₃ i GB evqy
DÈi tMj v₃ t₃ a₃ w₃ b₃ w₃ t₃ K tetK DÈi-ce³ w₃ K t₃ t₃ K Ges `w₃ ¶Y tMj v₃ t₃ a₃ evg w₃ t₃ K tetK
`w₃ ¶Y-ce³ w₃ K t₃ t₃ K cèvnZ n₃q| c₃ P₃ x₃ K₃ v₃ t₃ j cvj j v₃ M₃ v₃ t₃ b₃ v₃ e₃ w₃ Y₃ R₃ v₃ n₃ v₃ R GB evqy
cèvn₃ t₃ K Ab₃ v₃ i Y K₃ t₃ i hv₃ Z₃ v₃ q₃ v₃ Z₃ | Z₃ v₃ B Gi Aci b₃ v₃ g e₃ w₃ Y₃ evqy(Trade winds) |
DÈi tMj v₃ t₃ a₃ GB evqy DÈi ce³ Avqb evqy b₃ v₃ t₃ g c₃ w₃ i P₃ Z | DÈi-ce³ Avqb evqy NÈv₃ q 16
w₃ K₃ t₃ j w₃ g₃ U₃ v₃ i Ges `w₃ ¶Y-ce³ Avqb evqy NÈv₃ q c₃ Øq 23 w₃ K₃ t₃ j w₃ g₃ U₃ v₃ i t₃ e₃ t₃ M cèvn₃ Z n₃q |
Avqb evqy bi ¶₃ t₃ i L₃ v₃ i K₃ v₃ Q₃ v₃ t₃ j t₃ m₃ L₃ v₃ b₃ K₃ v₃ i A₃ w₃ z₃ w₃ ³ Z₃ v₃ c GB evq₃ t₃ K Da₃ v₃ Ø₃ j₃ x₃
K₃ t₃ i | Z₃ L₃ b₃ i ¶₃ t₃ i L₃ v₃ i A₃ A₃ t₃ j evq₃ y Av₃ b₃ v₃ i g₃ K (f₃ i g₃ i m₃ v₃ t₃ g₃ v₃ s₃ t₃ i j) cèvn₃ e₃ U₃ n₃q hv₃ q |
Z₃ v₃ B w₃ i ¶₃ t₃ i L₃ v₃ i DÈi ev `w₃ ¶Y 5° A₃ ¶₃ t₃ i L₃ v₃ i ch₃ s₃ i ~v₃ b₃ t₃ K kv₃ s₃ l₃ ej q etj |

2. ciðgv evqy(Anti trade wind or westerlies)

m₃ v₃ s₃ t₃ q D³PPvc ej q t₃ t₃ K Av₃ i l₃ w₃ evqy DÈi l₃ `w₃ ¶Y t₃ g₃ i ye₃ ð c₃ Ø₃ k₃ x₃ q ubæðvc
ej tqi w₃ t₃ K cèvnZ n₃q Zv₃ t₃ K ciðgv evqyetj | GB evqy DÈi tMj v₃ t₃ a₃ w₃ b₃ w₃ t₃ K tetK
`w₃ ¶Y-ciðg evqy Ges `w₃ ¶Y tMj v₃ t₃ a₃ evg w₃ t₃ K tetK DÈi-ciðg ciðgv evqy
(Westerlies) b₃ v₃ t₃ g cèvn₃ Z n₃q |
`w₃ ¶Y tMj v₃ t₃ a₃ R₃ j f₃ v₃ t₃ M₃ i c₃ w₃ i g₃ v₃ t₃ e₃ n₃ k₃ v₃ K v₃ GB evqy c₃ Øj t₃ e₃ t₃ M R₃ j f₃ v₃ t₃ M₃ i D₃ c₃ i w₃ t₃ q
cèvn₃ Z n₃q | Z₃ v₃ B `w₃ ¶Y tMj v₃ t₃ a₃ GB evqy c₃ Øj ciðgv evqyetj | 40° t₃ t₃ K 47° `w₃ ¶Y
A₃ ¶₃ i s₃ t₃ k₃ i g₃ t₃ a₃ ch₃ s₃ i GB evqy M₃ v₃ z₃ t₃ e₃ m₃ e₃ t₃ P₃ t₃ q t₃ e₃ n₃ k₃ n₃ q etj B₃ v₃ t₃ K M₃ R₃ Ø₃ k₃ j P₃ i j k₃ v₃
(Rearing forties) etj | 30° t₃ t₃ K 35° DÈi l₃ `w₃ ¶Y A₃ ¶₃ i s₃ t₃ k₃ i g₃ a₃ e₃ Z₃ P₃ A₃ A₃ t₃ j
Av₃ b₃ v₃ i g₃ K evqzèv₃ n₃ Ab₃ v₃ e₃ K₃ i v₃ hv₃ q b₃ v₃ | GB A₃ A₃ j t₃ K A₃ k₃ A₃ ¶₃ i s₃ k₃ etj |

3. tgi yevqy(Polar Wind)

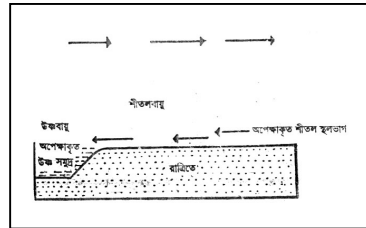
m₃ t₃ g₃ i y₃ l₃ K₃ t₃ g₃ i y₃ D³PPvc ej q t₃ t₃ K t₃ g₃ i y₃ c₃ Ø₃ k₃ x₃ q ubæðvc ej tqi w₃ t₃ K ubqigZ fite
th evqy cèvn₃ Z n₃q Zv₃ t₃ K t₃ g₃ i y₃ evqyetj | DÈi tMj v₃ t₃ a₃ DÈi ce³ w₃ K t₃ t₃ K Ges `w₃ ¶Y
tMj v₃ t₃ a₃ w₃ ¶Y-ce³ w₃ K t₃ t₃ K GB evqy cèvn₃ Z n₃q | DÈi tMj v₃ t₃ a₃ Gi b₃ v₃ g m₃ t₃ g₃ i y₃ evqy l₃
`w₃ ¶Y tMj v₃ t₃ a₃ Gi b₃ v₃ g K₃ t₃ g₃ i y₃ evqy n₃q | GB evqy AZ³ s₃ l₃ k₃ i Z₃ j l₃ f₃ i x₃ |

3.7.5 : mguuqK evqy(Periodical Wind)

w`tbi tKv`bv w`v`th mg`q A_ev eQ`ii tKv`bv w`v`th FZ`Z th evq`v`n Rj I`
 `j fv`Mi Zv`tc cv_`K`i Rb` m`v`o nq Zv`K mguuqK evqy`ej | mg`y`evqy`j evqy`Ges
 tgš`m`gx evqy`GB evqy`c`v`tni Aš`M`Z |

3.7.6 mg`y`evqy(Sea Breeze)

mg`y`Zx`ie`Z`P` tKv`bv `t`bi evq`v`n m`v`avi`YZ Rj
 I` `j fv`Mi Ges w`b I` iv`Zi Zv`tc Zvi`Z`g`i
 Dci w`b`f`P` K`ti | w`tbi tej`v`q m`th`P` D`E`v`tc mg`y`i`

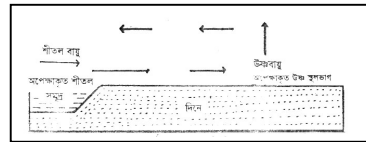


¶Pı 3.7.2 : mg`y`evqy

Rj A`tc`q`v`v` w`b`K`U`-` `j fv`M Awa`K D`E`B` nq | Z`L`b
 `t`ji D`c`ti`i evqy`D`o`, c`h`v`i`Z` I` n`v`j`K`v` nq | G`B
 n`v`j`K`v` evqy`D`c`ti`i D`v`v` t`M`t`j` t`m`L`v`t`b evqy`P`v`c` K`t`g` h`v`q` Z`L`b` m`i`M`t`i`i` D`c`ti`i` evqy`
 Z`y`b`v`g`j`-K` f`v`te` k`x`Z`j` I` D`P`P`v`c`h`y` `v`t`K | mg`y`-`j`v`M` t`_t`K` `j` fv`Mi` w`t`K` evqy`
 c`v`v`n`Z` nq | G`t`K` mg`y`-`evqy`ej |

3.7.7 : `j evqy(Land Breeze) : m`U`vi`ci` `j` fv`M

Rj fv`M t`_t`K` Z`v`c` w`v`i`K`i`Y` n`t`Z` `v`t`K | `j` fv`M `j`
 Z`v`c` w`v`i`K`i`Y` K`ti` k`x`Z`j` n`t`q` h`v`q | w`K`š`z` Rj fv`M
 A`t`b`K`q`v`y` Z`v`c` a`ti` i`v`L`t`Z` c`v`ti | Z`v`B` Rj fv`M a`x`ti`



¶Pı 3.7.3 : `j evqy

a`x`ti` k`x`Z`j` nq | G`B` mg`q` Z`y`b`v`g`j`-K`f`v`te` `t`ji` D`c`i`w`-`Z` evqy` P`v`c` t`e`w`k` nq Ges Rj
 fv`Mi D`c`ti`i evqy` P`v`c` K`g` nq | d`t`j` `j` fv`M t`_t`K` mg`y`i` w`t`K` evqy`c`v`v`n`Z` nq |
 G`t`K` `j` evqy`ej |

3.7.8 : tgš`m`gx evqy

FZ`zc`w`ie`Z`f`bi` m`v`t`_`m`v`t`_` th evqy`c`v`tni` w`K` c`w`ie`Z`B` nq Zv`K` tgš`m`gx evqy`ej |
 m`th`P` D`E`i`v`q`b` (m`h`h`L`b` D`E`i` t`M`j`v`t`a`j` g`v`f`v`te` w`K`i`Y` t`_q) I` `w`v`v`q`v`q`t`bi` Rb` FZ`z`
 c`w`ie`Z`f`bi` K`v`i`t`y` `j` fv`M I` Rj fv`M Zv`tc cv_`K`i` Rb` tgš`m`gx evqy` m`v`o` nq |
 m`th`P` D`E`i`v`q`y` Rj fv`M Zv`tc cv_`K`i` Rb` tgš`m`gx evqy` m`v`o` nq |
 R`j`y`-R`j`v`B` g`v`t`m` m`h`K`K`h`m`v`š`li` D`c`i` j` v`f`v`te` w`K`i`Y` t`_q | d`t`j` g`a`-`w`v`v`q`v`-c`e`G`i`k`q`v`
 D`E`i`-c`w`i`o`g` f`v`i`Z` L`y`B` D`E`B` n`t`q` h`v`q | Z`L`b` G`B` A`A`t`j` w`b`v`t`i`c`i` m`v`o` nq | t`m` mg`q`
 f`v`i`Z` g`n`v`m`i`Mi` t`_t`K` `w`v`v`q`v`-c`e`A`v`q`b` evqy`G`B` A`A`t`j` i` w`t`K` A`v`t`m | G`B` evqy` b`v`g` nq
 `w`v`v`q`v`-c`w`i`o`g` tgš`m`gx evqy` k`x`Z`v`t`j` m`h`g`K`i`m`v`š`li` D`c`i` j` v`f`v`te` w`K`i`Y` w`t`j` `w`v`v`q`v`-
 c`e`G`i`k`q`v` I` g`a`-`G`i`k`q`v`i` `j` fv`M` L`y`B` k`x`Z`j` n`t`q` c`to | w`K`š`z`D`E`i` t`M`j`v`t`a`j` mg`y`
 A`t`c`q`v`K`Z`-D`o` `v`t`K | Z`L`b` `j` fv`Mi` D`P`P`v`c` A`A`j` t`_t`K` evqy`c`v`v`n`Z` nq | G`B` evqy`
 D`E`i`-c`e`w`i`K` t`_t`K` A`v`t`m` e`t`j` G`t`K` D`E`i`-c`e`w`i`g`š`m`gx evqy`ej |

3.7.9 : evqycēvtni djdj

evqycēvtni mglj Ges Kzlj DfB AvtQ thgb-
mglj

1. evqycēvtn f-c#ô Zv#ci mgZv i #lv K#i |
2. mgÿ^aevqyngÿ^a Zxi -' -j fivM#K i -# I #bg# iv#L
3. #bqZ evqycēvtn mgÿ^atm#Z #bqšÿ K#i |
4. evqycēvtni k#³#Z Kj Kvi Lvbr Pij v#br hvq |
5. evqycēvtn Øri v tbšKv #Ksev Rrv#R cvj L#U#q Pj vP#j mÿeav nq |
6. Av -#evqycēvtni d#j e#ócvZ nq |
7. #Kv#br #Kv#br -#bi tivM R#evYevqycēvtni Øri v Ab-# P#j hvq |

Kzlj

1. So, Z#lvb, UvBdy, U#b#Wv, n#vi #Kb evqycēvtni Rb-B nq |
2. f-c#ôi #lq m#ab K#i |
3. So-Z#lv#b Ni ev#o, MvQcvj v mn RbR#eb #lvZM# -nq |

mvisk

m#Zvc I evqyPv#ci cv_#K"i Rb" #br # #bq#g evqÿ GK-#b n#Z Ab-#v#b cēv#nZ
nI qv#K evqycēvtn e#j | Zvc I P#ci cv_#K"i Rb" evqycēv#nZ nq | # evi v#i i n#m-
e#x, FZz#i eZ# Ges Rj fivM I -j fivM Zv#ci Zvi Z#g"i Rb" m#v#qK evqÿ m#ó
nq | th evqy#bq#gZ cēv#nZ nq Zv#K #bqZ evqye#j | #bqZ evqy#Zb c#Kvi-Avqb
evqyci#ógv evqy# tgi yevqÿ evqycēvtni b#v#iea mglj Ges Kzlj i #q#Q |

cıfVĖi gj`ıqb 3.7

mıK DĖıi cıfk ıK (˘) ıPy ı b|

1. nij Kı evqytKı_vq hvq?

| | |
|------------------------|------------------------|
| (K) Dcđi DđV hvq | (L) ıbđP Pđj hvq |
| (M) Wıb ı đK cĖınnZ nq | (N) evg ı đK cĖınnZ nq |
2. DĖi đMıj vđa[©]evqytKıv ı đK cĖınnZ nq?

| | |
|------------|-------------|
| (K) evgıđK | (L) WıbıđK |
| (M) DĖııđK | (N) `ıđYıđK |
3. DĖi đMıj vđa[©]th ı đK evqycĖınnZ nq tm ıcQb ı đK ıđđı `ıvıđj WıbıđKi evqy t_đK evg ı đKi evqıy Pıv Kg _đK Ges `ıđYı đMıj vđa[©]Gi ıecıxZ Ae`ı nq-evqy cĖıđđı GB mđıđı bıg ıK?

| | |
|---------------------|-----------------|
| (K) AvıKıđıWđımi mđ | (L) tđđıđj i mđ |
| (M) evBm e`ıđj U mđ | (N) Uvıđmıbı mđ |
4. KKđıx I gKııx D`PPıv ej q nđZ th evqyđıđıx ej đđı ı đK cĖınnZ nq ZıđK ıK evqyđj ?

| | |
|-------------------|-----------------|
| (K) đđıyevqy | (L) đđıđıx evqy |
| (M) cđđıvıqb evqy | (N) Avıqb evqy |
5. `ıđYı ce[©]Avıqb evqyKZ ıKđj ıvıđıvı teđM cĖınnZ nq?

| | |
|--------|--------|
| (K) 16 | (L) 23 |
| (M) 29 | (N) 33 |
6. đđıyevqy cđıvđ `eıkó` ıK?

| | |
|--------------------|---------------------------|
| (K) nij Kı Ges DĖB | (L) Dò I Av` [©] |
| (M) Zıv I Pıv nıb | (N) kıZj I fıvıx |
7. mıvıđK evqycĖıv Kq aıđYı nq?

| | |
|---------|---------|
| (K) Pıv | (L) `đ |
| (M) Qq | (N) AvU |

DĖi : 1| K 2| L 3| M 4| M 5| L| N 7| M

msıđB cđke

1. ıbqZ evqycĖıđđı msAvı ı b|
2. đđıđıx evqyKıđK etj ?
3. ıbqZ evqycĖıv Kq cđKıvı I ıK ıK?

iPbıđj-K cđke

1. ıbqZ evqycĖıđđı eYđv ı b|
2. evqycĖıđđı đj vđj ıj Lđj|

3.8.3 : evqj mĀq KivR

giĀĀtj cēngvb evqj MivZcř_ tSivSiv, cřli LŪ, evej vRvZixq KivUv MvQ BZ`w`
Ōviv etavi mēšřib ntj evqj mivZ evij i ĩKQyAsk tmLřtb w`řbi ci w`b Rgv ntj
_řřK Ges řgk tŌvU LřřUv GKivU evij i civřřoi mřř nq| GřK evij qivno (Sand dune)
etj |

thw`K ntjZ evqycēvřvř nq tm w`řK _řřK evij qivnoi gv_v (Head Dune) Avi evqyřh
w`řK etq hřq tm w`řK _řřK evij qivnoi řj R (Tail Dune)| gv_vi w`řK evij qivno
mivĀZ ntq AMřni ntj ej v nq AMēZř evij qivno (Advance Dune) | Avevi, tKivřbv
GKivU ĩkj vLřři `řcivřk evij qivnoi mřř ntj ZřřK ej v nq civkř' evij qivno (Lateral
Dune)|

AvKivZ. I MvB Abřvqx evij qivnořK Avevi `řřřř řřř Kiv hřq

1. w`řhř evij qivno (Transverse Dune) Ges (2) AbřřN evij qivno (Longitudinal
Dune)| th me evij qivno evqj MivZi mřř AvovAvnořřř MivZ nq Zřř`i etj w`řhř
evij qivno| th me evij qivno evqj MivZi mřř mřřřřřř řřř mřř nq Zřř`i ej v nq
AbřřN evij qivno| GBřřř Lřř `řN evij qivno MivZ ntj ZřřK etj mřř evij qivno (Seif
Dune)|

GŌvov evqj MivZi mřř AvovAvnořřř Aařř`řKivři th evij qivno mřř nq ZřřK evLřř
(Barkhan) etj| evLřřbi mřřřřři w`řK Dēj (Convex) I w`řQb w`řK AeZj
(Concave) AvKivZi ntq _řřK| evLřř ř`Lřř AřřKiv Aařř`řKiv ĩks Gi b`řq|
evLřř mřřřř řřřřř AřřK_řřř GKřř Ae`řb Křř| evqycēřřřni MivZ Abřřvqx Giv ařřř
ařřř `řřřřřřř nq| ZřřB Gř`i Pj břřř evij qivno etj |

mivřsk

evqy`řřřřř KivR Křř| h_v- řřř KivR I mĀq KivR| evqyřřř cřřř řřř KivR Křř|
h_v- Aebgb, AeNřřř I Nřřř| Aebgřřbi dřřř MZ ev ĩbřřřřřř mřř nq| AeNřřřřř
dřřř Rřřřř Ges řřřřřřř cēřřř mřř nq| Nřřřřř dřřř cřřř LŪ ĩgřř evj řřřřř
civřř nq| evqj mĀq Kivřřř dřřř evioqivno mřř nq| AvKivZ. I MvB Abřřvqx
evij qivnořK `řřřř řřř Kiv nq| h_v- w`řhř evij qivno Ges AbřřN evij qivno|

cufVëi gj`vqb 3.8

mWK DËti i cufk WK (v) wPy w b |

1. evqj cãvb KvR K'wU?
 (K) 1wU (L) 2wU
 (M) 3wU (N) 4wU
2. wKfite RbMb mwó nq?
 (K) NI'Yi dtj (L) NI'Yi dtj
 (M) Aebgtbi dtj (N) mÂtqi dtj
3. tKvtr tKvtr gi'vgtZ wkj v Amgvb fite 'qacwB ntq wbtPi Ask Ly miyGes
 Dcti i Ask Ly Pl ov AvKwZi ntq Ae`vb Kitj Dvfk WK etj ?
 (K) RbMb (L) evi Lvb
 (M) tMsi (N) evnj qmo
4. giyAAjt i evqj 'q Kvth' tkl chiq tKvbwU?
 (K) tMsi (L) mÂqRvZ ceZ
 (M) evnj qmo (N) evj KYv
5. gv`vi w`tk evnj qmo mwAZ ntq AMthi ntj Dvfk WK etj ?
 (K) AMêZ'evnj qmo (L) wZhR evnj qmo
 (M) cvk,' evnj qmo (N) Ab%N°evnj qmo
6. evqj MwZi m½ AvovAvno fite AaP` Kvi th evnj qmo mwó Zvfk WK etj |
 (K) mxd evnj qmo (L) AMêZ'evnj qmo
 (M) evLb (N) Pj bkxj evnj qmo

DËi : 1 | L 2 | N 3 | N 4 | N 5 | N 6 |

msv'jB cãe

1. evqj 'q KvR WK WK?
2. evqj mÂq KvR WK WK?

iPbgj-K cãe

1. evqj Kvth'evnj eYbr Kiy |

cW 3.9

ewpvcvZ I mgel'P tiLv

Dt'ik`

GB cW tk'fI AvciB

- 1 ewfbačKvi ewpvcvZi bvg ej tZ cvi teB,
- 1 ewfbačKvi ewpvcvZi eY'v w' tZ cvi teB,
- 1 mgel'P tiLv wK Zv ej tZ cvi teB,
- 1 ewp gvc htšj eY'v w' tZ cvi teB |

3.9.1 : ewpvcvZ

f₇-c^o mecj- c^ub i viki Dcwi fvtM m^h i w^k Zvtci dtj Rj xqev^oú i m^wo nq | GB Rj xqev^oú D^tal^oD^tv Avevi NYxfZ nq | GK mgq Rg^uU evav Rj xqev^oú Avcb fvti f₇-c^o c^wZZ nq | GtK ewpvcvZ (Rainfall) etj |

Ab^of^ote ejv h^uq evq^tZ Rj xqev^oú c^wigvY ewx tctj Dⁿv NYxfZ n^tq m^yle Rj KYvi f^c evq^oÚtj i awj KYvq Avk^t M^hY K^ti Da^ov^oK^tk f^vm^tZ v^tK | GtK etj tgN | Da^ov^oK^tk Zvtci n^wm tctq w^kikiv^t Dc^w-Z nq Ges tgN ga^o-Z Rj KYvi ci^oúti i ms^oútk^oG^tm A^tc^oq^oKZ.ep^ov^oKvi Rj we^o tZ i f^cv^oš^oti Z n^tq f^zc^o c^o | GtKB ewpvcvZ (Rainfall) etj |

3.9.2 : ewfbačKvi ewpvcvZ

ewpvcvZ wK f^ote ms^uU^oZ nq, tmB w^of^oÉ^otZ ewpvcvZ^tK c^uv^oZ P^ovi w^o fvtM f^vM Kiv nq | h_v- 1. c^wi Pj b ewpvcvZ 2. k^tj v^tq^oc ewpvcvZ 3. NY^ovZ ewpvcvZ 4. ms^uU^o ewpvcvZ |

1. **c^wi Pj b ewpvcvZ (Convective Rain):** w^o v^oc g^oÚtj i evq^oDÉB n^tq Dc^oti I t^ov Ges k^oZj I c^hw^oi Z nq | GB f^ote evq^o Z^ov n^wm tctq Aw^oZ^o Rj xqev^oú N^oxfZ nq Ges t^oU^o t^oU^o Rj KYvq c^wi YZ n^tq ewp Av^oK^oti c^wZZ nq | Z^otK c^wi Pj b ewpvcvZ etj |
2. **k^tj v^tq^oc ewpvcvZ :** Rj xqev^oú c^ov^oevq^oPj vi c^o ce^o M^ot^o evav tctq ce^oZi M^ov tetq Dc^oti I t^ov Ges k^oZj n^tq c^oZer^o c^ov^ok^oewpvcvZ NU^oq | ce^oZi th c^ov^ok^oewpvcvZ^o w^oZ, tmL^ov^ob GB tk^oY^oi ewpvcvZ nq | D^on^otK c^oZer^o c^ov^ok^oWindward Slope) etj | Aci c^ov^ok^oewpvcvZ nq b^ov ej t^oj B P^otj | D^on^otK ewp O^oq ev Ab^ov^oZ c^ov^ok^o(Leeward Slope) etj |
3. **NY^ovZ ewpvcvZ :** NY^ov^oZi dtj w^o v^oc tk^o v^o evq^oN^ojtZ N^ojtZ Dc^oti DV^otZ v^oK^otj D^on^ovi Z^ov n^wm c^ovq I D^on^ov k^oZj nq | evq^oZ Ae^o-v^ob^oi Z Aw^oZ^o Rj xqev^oú ZL^ob NYxfZ n^tq ewpvcvZ N^oU | GtK NY^ovZ ewpvcvZ (Cyclonic Rain) etj |

mviisk

Rj xqer^u Dta^uDt^v NbrfZ n^{tq} Avevi Rj Kbr i^fc f⁻c^to c^wZZ n^l q^rt^kB e^po^cvZ etj | e^po^cvZ Pvi c^kvi h^{_}v c^wi Pj b e^po^cvZ, `k^tj v^rt^ql^c e^po^cvZ, NY^evZ e^po^cvZ Ges msNI^o e^po^cvZ | e^po^kYvi Dci w^fi^E K^ti e^po^cvZ^tK Avevi I `B f^vt^M f^vM Kiv nq, h^{_}v- u^o u^o e^po Ges ukj v^ep | c^wlexi th mKj `v^tb Mo em^l R e^po^cvZ mgvb nq gvb^pt^t th mKj `v^tbi Dci w^tq th Au^kv ev^kv ti Lv A¹/₄b Kiv nq Z^vt^k mgel^q ti Lv etj | e^po^cvZ c^wi g^vc^k h^st^k o^ep^og^vb^hs^o ejv nq | Bsti^wR^tZ GB h^st^k (Rain Gause) ti Bb^tMR ejv nq |

c^vt^vEⁱ g^j-v^qb 3.9

m^wk D^Etⁱ i c^vk w^k (v) w^py w^b |

- e^po^cvZ th f^vte ms^wvZ nq tm w^fi^Et^Z e^po^cvZ^tK Kq f^vt^M f^vM Kiv nq?
 (K) 2 f^vt^M (L) 3 f^vt^M
 (M) 4 f^vt^M (N) 5 f^vt^M
- ce^fZi M^vt^q er^v t^ct^q t^kv^b ai^tYi e^po^cvZ nq?
 (K) msNI^o (L) NY^evZ
 (M) c^wi Pj b (N) `k^tj v^rt^ql^c
- t^kv^tbr A^At^j te^wk msNI^o e^po^cvZ nq?
 (K) t^gi y^AA^tj (L) m^vs^tq A^At^j
 (M) b^wv^tZ^vo A^At^j (N) gⁱ f^wg A^At^j

D^Ei : 1 | M 2 | N 3 | N

ms^wf^B c^kv^Ei

- e^po^cvZ K^vt^k etj ?
- e^po^cvZⁱ t^kY^we^fv^M t^l Lv |
- c^wi Pj b e^po^cvZ w^k f^vte ms^wvZ nq?

i^pb^vg^j-K c^ke

- e^po^cvZ K^vt^k etj ? w^k f^vte e^po^cvZ ms^wvZ nq?
- w^wf^bo^ck^vi e^po^cvZⁱ w^eeⁱ Y^w b |

cW 3.10

tgšmgx evqy

Dt'ik

GB cW tkłI AvciB

- 1. tgšmgx evqyK Zv RvbtZ cvi teb,
- 1. tgšmgx evqyni KviY Dtj L KižZ cvi teb,
- 1. tgšmgx evqy eYv w žZ cvi teb,
- 1. f-cžo tkvbr tkvbr t`k ev Gj Kvq tgšmgx evqyt`Lv hvq Zv Dtj L KižZ cvi teb|

3.10.1 : tgšmgx evqyK?

Aviex ōglmgō ktāi vsjvq A_©ntjv FZž FZzcwieZšbi mŕ_ mŕ_ th evqy cēvtni w K cwi ewZž nq Dnvi bivg tgšmgx evqy BštiwRžZ GB evqycēvntK Monsoon ešj |

3.10.2 : tgšmgx evqyni KviY

mšhP DEivqb (mh©hLb DEi tMj vta©j šfvte wKiY t`qv) I `wŕYvqšbi Rb` FZz cwieZšbi KvižY `j fivM I Rj fivM Zvšci cv_šK`i Rb` tgšmgx evqy mŕō nq| kvZ Mšš FZžž wkvj `j fivM I Rj fivMi Dctii evqyDòZv I Pŕšci cv_šK`i Rb` tgšmgx evqy D`e nq| tgšmgx evqyngy` evqyI `j evqy e`vcK ms`iY grĭ |

3.10.3 : cāib cāib tgšmgx evqynj v-

- 1. `wŕY-cwōg tgšmgx evqy
- 2. `wŕY-ce©tgšmgx evqy
- 3. DEi-ce©tgšmgx evqy
- 4. DEi-cwōg tgšmgx evqy

bxtP GB cāib cāib tgšmgx evqy,tj vi mswŕB eYv t`I qv ntj v|

`wŕY-cwōg tgšmgx evqynj : Gvkqvi `wŕYfvšM KKšmšš tiLv AvZmug KtižQ| MššKvšj mh©KKšmšš tiLvi Dci j šfvte wKiY t`q| G mgq ga` Gvkqv wškl Kti fviZxq Dcgnv`tki tk`švM AZ`š DEB nšq cto| ZLb G AĀšj mšgr ubaPvc tKš`i mŕō nq| GB cwi w-wžžZ `wŕY tMj vta©mšššq D`PPvc ej q nžZ AvMZ `wŕY-ce©Avqb evqybi ŕtiLv AvZmug Kti Gvkqv gnv`tki wššvšci w šK cēvntZ nq| ubi ŕtiLv cvi nšq evqytdtišj i mŕ Abvnti `wŕY-cwōg w K nžZ DEi-ce©w šK cēvntZ nq| fviZxq Dcgnv`tk GB evqy `wŕY-cwōg tgšmgx evqy bŕtg cwi wPZ|

~WJY-ce@tgšmgx evqy. th tgšmgx evqycēvn Pxb, Rvcvb, Bt`vPxb, di tgrvRv Økfc
~WJY-ce@ K nřZ AvMgY Kti DnřK ~WJY-ce@tgšmgx evqyetj |

DĒi-ce@tgšmgx evqy:DĒi tMj vta@hLb kxZKvj ZLb ~WJY tMj vta@gKi μmšl
AĀtj mĥ@j pfiŕe wKiY t`q| GB mgq ~WJY-ce@I ga` Gwkqvi `j fvm AZ`šl
kxZj nřq cřo| wKšzbKUeZřmgy` AřcřwKZ.Dò _vřK| ZLb `j fřtMi Dcwı `Z
D`P Pvc řK`^nřZ kxZj evqygnıvMři i wĥvc řKt`ř wřK cēvnZ nq| GB evqy
DĒi-ce@ K nřZ cēvnZ nq etj GřK DĒi-ce@tgšmgx evqyetj |

DĒi-cıŃg tgšmgx evqyDĒi-ce@tgšmgx evqyibiřtiLv AwZμg Kti tdřtřj i mř
Abřvři DĒi-cıŃg tgšmgx evqyřfc ~WJY-ce@řK cēvnZ nq| GB evqycēvřtKB
DĒi-cıŃg tgšmgx evqyetj |

3.10.4 : veřbacřvi tgšmgx evqy cřve

~WJY-cıŃg Ges ~WJY ce@Dřq tgšmgx evqymgř`nřZ chřB Rj xqer@ú mšMř Kti |
GB evqy`j fřtM cřek Kti cıvvo ceřZ evavcřB nřq cřy evřcvZ NUvq|
DĒi-ce@tgšmgx evqy`j fřtMi Dci wřq cēvnZ nq etj Rj xqer@ú kY` _vřK|
GRb` kxZKřtř ~WJY I ga` Gwkqvi t`k_řjv evřnřb _vřK| DĒi-cıŃg tgšmgx evqy
fřvZ gnıvMři nřZ Rj xqer@ú mšMř Kti Ař÷řj qv gnřt`řki DĒi fřtM evřcvZ
NUvq|

Avřvř`i ersj v`k tgšmgx Rj evqy AšMř etj GLvřb Mř@řKřj cřy evřcvZ nq Ges
křřZ evřcvZ nq bv ej řj B Přj | ersj v`k Oror- křř skv, Bt`vPxb, gvřvbgvi,
_vřj vŪ, cıwK`řtřbi DĒi cıŃgřsk, Pxb, Rvcvb, řKvı qv, wřřqZbřg, wclřj cvBb,
Ař÷řj qv wKq`skmn Avřiv AřbK Gj vKřřZB tgšmgx evqy`Lv hřq|

mvi sk

FZřřř` th evqycēvnZ nq, ZřřK tgšmgx evqyetj | cřvb tgšmgx evqycēvn Priw
h_v- ~WJY-cıŃg tgšmgx evqy ~WJY-ce@tgšmgx evqyDĒi-ce@tgšmgx evqyGes DĒi-
cıŃg tgšmgx evqy Avřvř`i ersj v`k tgšmgx evqy AšMř, GLvřb tgšmgx evqy
cřřve Mř@řKřj Ges křř Křj cřq evřnřb _vřK|

c̄iVwEi gj-vqb 3.10

m̄wK DĒi i c̄iK w̄K (v) w̄P̄y w̄ b |

1. Avi ex ōgl m̄g' k̄t̄āi A_ ŋK?
(K) mgq (L) FZz
(M) Avenvl qv (N) Rj evqy
2. DĒi c̄iŋg t̄ḡsm̄g'x evqyt̄Kv̄bv gn̄im̄Mi n̄t̄Z Rj ıqer̄ú ms̄M̄h̄ K̄i Āt̄÷ ŋj qvi
DĒi vs̄t̄k ēw̄cv̄Z NUvq?
(K) c̄h̄v̄ś̄l gn̄im̄Mi (L) Av̄Uj w̄w̄UK gn̄im̄Mi
(M) fvi Z gn̄im̄Mi (N) DĒi gn̄im̄Mi
3. eisj v̄t̄ `t̄k t̄Kv̄b Rj evqyt̄ `Lv̄ hv̄q?
(K) gn̄v̄t̄ k̄ıx Rj evqy (L) t̄ḡsm̄g'x Rj evqy
(M) w̄bi ˆııx Rj evqy (N) f-ga'm̄M̄ıxq Rj evqy
4. t̄Kv̄b t̄` k̄ıŪt̄Z t̄ḡsm̄g'x evqyc̄ēv̄m̄Z n̄q?
(K) Pxb (L) Rvc̄ıv̄b
(M) w̄j w̄eqv (N) di t̄gv̄Rv̄

DĒi : 1| N 2| N 3| L 4| M

ms̄v̄ŋB c̄k̄e

1. t̄ḡsm̄g'x evqym̄ı̄ı Kvi Y mḡı- w̄K w̄K?
2. w̄w̄fb̄ıc̄Kvi t̄ḡsm̄g'x evqy c̄f̄ıve w̄K?

iP̄ıvj-K c̄k̄e

1. t̄ḡsm̄g'x evqy w̄K? eȲv̄ı K̄i ı̄j |

cW 3.11

tRvqvi fUlv

Dt`ik`

GB cW tk`I AvciB

- 1 tRvqvi fUlv msAv ej tZ cvi`teb,
- 1 tRvqvi fUlv KviY e`vL` Ki tZ cvi`teb,
- 1 cU_ex cto tRvqvi fUlv mupi t`q`I P`^aI m`hP c`fve eYBv Ki tZ cvi`teb|

3.11.1 : tRvqvi fUlv (Tide and Ebb)

mgj`i cwb ubw`0 mgq AšI GK`v`b dtj I tV Ges GK`v`b tbtg hvq| Gfite cOZ`K mto evi NÈvq mgj`i cwb GKevi ubqigZfite DVv-bvgrv Kti | mgj`i cwb ubqigZfite dtj DVv`K tRvqvi Ges tbtg hvq qv`K fUlv etj | P`^aI m`hP AvKI` Ges cU_exi tK`^mZM kw`i c`fite tRvqvi- fUlv ntq`_v`K| tRvqvi fUlv mgj`i-c`to Ges mgj`i tgvnvr ntZ b`x c`_ wKQy`i chS`I AbfZ nq| mgj`i ga`fivM cwb mvaviYZ 30 tm. wq. ntZ 90 tm. wq. (1-3 dš chS) DVv bvgrv Kti | wKšDcKtj i ubKU mMi DcmMti i MfviZv Kg etj tmLv`b cwb i`vk A`bK tenk DVvbvgrv Kti | GRb`B mgj`i tgvnvr ntZ b`x mg`ni MvZc`_ KtqK gvBj e`vcx tRvqvi-fUlv AbfZ nq|

Dv`y mMi tRvqvi hLb Zvi DcKtj AMfvi gnxtmrv`b c`ek Kti ZLb Gi D`PZv evx` cvq| mgj`i Lwv A_ev b`xi tgvnvrq tcv`evi ci tRvqv`ii cwb b`xi MvZi vevixZ w`tK c`v`nZ nq| me b`xi w`fZi w`tq hLb tRvqv`ii cwb`j fivMi Af`š`i c`ek Kti ZLb A`bK mgq gtb nq thb KtqK dš D`P cwb i`qvj b`x evnZ ntq DRv`b I tV| Avevi fUlv mgq cwb hLb tbtg thtZ`_v`K ZLb b`x AvZvi` MvZ kw`i j`vf Kti | GRb` fUlv mgq b`x Zj`bvqj-Kfite Li tmZv nq| GtZ c`KwZK Dcv`tq b`xi Zj`vbx mgj`i`bxZ nq|

3.11.2 : tRvqvi-fUlv KviY

tKb cOZ`w`b wKQymgtqi Rb` mgj`i cwb dtj I tV Avevi ubqigZfite tbtg hvq G m`u`K`-fveZ:B gvbtj i gtb tKšZj Rv`M| c`P`v`Kv`tj tRvqvi fUlv KviY m`u`K` b`v`v` c`Kvi Aev`e K`i`Yv Kiv nZ| ZLb gvbtj i av`Yv wQj cU_exi k`m-c`k`tmi Rb` tRvqvi fUlv nq| cU_exi k`m Mh`Yi mgq cwb dtj Dt`v etj tRvqvi nq Ges k`m Z`vM Kivi mgq cwb tbtg hvq qv` fUlv nq| wKšzeZ`v`b v`Av`v`M`b gtb Kti`b th, cU_exi Dci P`^aI m`hP AvKI` Ges cU_exi v`b`Ri MvZ I AveZ`bi Rb` m`p tK`^mZM kw`i B tRvqvi fUlv Rb``v`q| v`b`v`v`Rvqvi fUlv KviY Avtj v`PZ nj |

1. **gnvKtI P cFve** : cL_exi mKj c`vt_P kw³ AvtQ, ZvB GKwU AciuU#K AvKI P Kti tQ/GB AvKI P Yi big gnuKI P GwU mYúo th cL_exi tK`a l cmbi Dcwi fvtMi Dci P t`i AvKI P kw³ i Zvi Zg`B tRvqi fWvi cãvb Kvi Y|
2. **tK`mZM kw³ i cFve** : tKej gnuKI P kw³ i cFve P`a l mH B tRvqiti i Rb``vqx bq| NYBkxj cL_exi ctô th tK`mZM kw³ Drcbæng, tRvqiti i Rb` Zv A#bKvsk `vqx|
GB AvKI P kw³ i cFveB cL_exi Dcwi`Z Zij AveiY cL_ex n#Z weP#Z n#Z cvi tQ bv| mKšZgnvKI P kw³ i cFve meP mgvb bq| `fmeKfiteB th Mh ev DcMh hZ eo Zvi AvKI P xq kw³ ZZ AwaK| mKšZ`Z;ewx tctj AvKI P Kivi qIgzv nwm cvq|

3.11.3 : cL_ex ctô tRvqi-fWvi Rb` P`a mH P cFve

P`a Ges mH DfqB cL_ex tK AvKI P Kti Ges Dftqi AvKI P kw³ i cFve tRvqi fWvi msNWZ nq| mH P`a A#tqIv`B tKwU IvU j qI, Y eo| mKšZcL_ex n#Z Zv P`a A#tqIv mZbkZ Avnk, Y`#i Aew`Z| GRb` cL_exi Dci mH A#tqIv P t`i AvKI P A#bK teuk Ges AwaK KvhRi| mgMô cL_ex I Zvi c`v`mgj ni Dci mH A#tqIv P t`i KvhRix AvKI P kw³ 2.5, Y teuk| P`a l mH P AvKI P kw³ cL_exi tK`a t#j KvR Kti `vtK| mKšZcumb Zij etj Zvi Dcwi fvtM P t`i AvKI P kw³ AwaK KvhRix nq| e`Z cmbi DciB AvKI P xq cFve AbfZ nq|
cL_exi th Ask hLb P t`i mK m`L Dcw`Z nq, P`a cL_exi tmB Ask tK ZLb meP A#tqIv teuk AvKI P Kti| Gw`K w`tq Avei KwWb`j fvtMi PvB#Z cmbi mki Dci AvKI P kw³ i cFve I KvhRwii Zv AwaK| GRb` cL_exi th Ask hLb P t`i AvKI P kw³ mePvB#Z teuk ZLb cL_ex I P t`i AvKI P Yi Rb` l cL_ex ctô i Zij I nij Kv cumb i mki Dci tK`mZM kw³ i cFve teuk nq| Gi dtj B cumb i mki me`v evB#i i w`tK wew`B nq Ges Zij cumb i mki KwWb f;fvM n#Z wew`ObentZ Prq| Ggubfite tK`mZM kw³ l tRvqi fWvi mYú#Z mnvqZv Kti| Zte tK`mZM kw³ A#tqIv P t`i AvKI P tRvqiti i Rb` teuk `vqx| Kvi Y tK`mZM kw³ fzc#i PZw`K KvhRi| mKšZ P t`i AvKI P kw³ cãvbZ GKw`tK AwaK KvhRi|

mvisk

P>`aI mh`f-c`oi Rj I `j tK Aveivg AvKI` Ki tQ GB AvKI`Yi c`vite f-c`oi
c`nb c`iZi`bB `vb mektl dj I tV Ges Ab`T tbtg hvq| c`nbi GB dtj DVtK
tRvqi Avi tbtg hvl qv`K f`lv etj | c`iZ tRvqi f`lv m`to ev`iv NEv mg`qi
e`eavtb msNiuZ nq| P>`aGes m`h`P AvKI`B tRvqi f`lvi c`avb KviY| c`_ex c`o
mh`A`c`v P`v`i AvKI` v`gZv 2.5 ,Y tevk|

c`vV`Ei gj-`vqb 3.11

m`vK D`E`i i c`vk v`K (v) v`P`y v`b|

- tRvqi -f`lvi mgq mg`y`i ga` fiv`Mi c`nb i`vik KZUKZl Vv bivv K`i?
(K) 1-3 tm.vg (L) 1-3 dU
(M) 1-3 v`gUvi (N) 1-3 MR
- tRvqi -f`lvi gj- KviY tKv`vU?
(K) m`h`P AvKI` (L) tK`v`m`ZM etj
(M) tK`v`m`ZM ej (N) P`v`i AvKI`
- c`_exi Dci mh`A`c`v P`v`i AvKI` KZ`_b tevk?
(K) 2.5 (L) 3.5
(M) 13 (N) 1.3
- c`_exi tKv`b Astk P`v`i AvKI` tevk c`o?
(K) PZ`v`K (L) tK`v`i v`tK
(M) c`_exi th c`o P`v`i KvtQ `v`K (N) c`_exi th c`o P`v`i t`_tK `h`i `v`K

D`E`i : 1| L 2| N 3| K 4| M

msv`vB c`k`e

- tRvqi -f`lv Kv`K etj?
- tRvqi -f`lv msNiuZ nI qvi KviY v`K?

iPbvj-K c`k`e

- tRvqi fiv`v v`K? Gi Kvi Ymg`v`K v`K?

cw 3.12

tRvqvi fUwv msMvB I tkUvefM

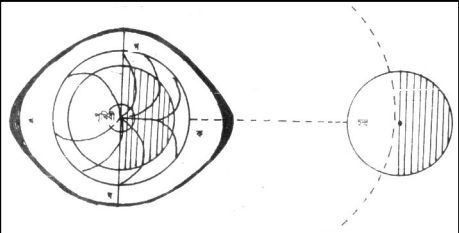
Dt'ik

GB cw tkI Avcib

- tRvqvi fUwv wKifc msMvZ nq Zv e'vL'v KiZ cvi teb
- wefbaecKvi tRvqvi fUwv tkYx D'j L Kti Dnv`i msAv D'j L KiZ cvi teb

3.12.1 t tRvqvi fUwv wKifc msMvZ nq

tRvqvi t P>`a I m'j h'p AvKI'p I NY'okj cU_exi tK>`mZK k'w'3 i c'f'v'iteB tRvqvi fUwv msMvZ nq| h'w' g'tb Kiv nq, cU_exi Dc'w' f'vM me'ca mgvb c'w'b'w'v'ki 0'v'v AveZ| w'P'1 bs n'tZ j'q' K'ib cU_ex c't'oiK 0'K'w'^-v'b P't>`i me'f'c'q'v' w'b'K'U'e'Z'x'p m'z'iv's P't>`i AvKI'p 0'K'w'^-v't'b me'f'c'q'v' t'w'k| c'w'b' Zij c'v'_e'tj cU_exi K'w'b Ask A't'c'q'v' m'n't'RB Ges t'w'k c'w'g'v't'Y AvK'6. n'te| K'v't'RB 0'K'w'^-v't'bi c'w'b' d'z'j DV'te Ges 0'M'w'^ I 0'N'w'^-v'b `w' n't'Z c'w'b' AvK'6. n'tq 0'K'w'^-v't'bi Dc't'i G't'm R'g'v n'te| Z'L'b'0'K'w'^-v't'b tRvqvi| GB tRvq'v't'i b'ig g'ly' ev c'Z'`q' tRvqvi| Avevi 0'K'w'^-v't'bi w'ec'ix'Z w't'K 0'L'w'^-v't'bi th c'w'b' Av't'Q|cU_exi tK>`a A't'c'q'v' P>`a n't'Z 6,400 w'K.ig. A'w'a'K `j'e'Z'p' m'z'iv's cU_exi tK>`a `t'i P't>`i AvKI'p 0'L'w'^-v't'bi c'w'b' Dc't'i AvKI'p A't'c'q'v' A'w'a'K| Avevi 0'L'w'^-v't'bi c'w'b' w'b't'P th K'w'b' `j' f'v'M Av't'Q, Zv cU_exi tK't>`i m'w'n'Z `p'f'v'te Ave'x' Av't'Q| m'z'iv's cU_exi tK>`a `t'j P't>`i AvKI'p 0'L'w'^-v't'bi c'w'b' Dc't'i AvKI'p A't'c'q'v' A'w'a'K| Avevi 0'L'w'^-v't'bi c'w'b' w'b't'P th K'w'b' `j' f'v'M Av't'Q, Zv cU_exi tK't>`i m'w'n'Z m'y'p' f'v'te Ave'x' Av't'Q| m'z'iv's Z'v' Dc'i P't>`i AvKI'p tK>`a `t'j i AvKI'p'Y'i cU_exi K'w'b' Ast'ki g'v'S'K'v't'b th d'w'k n'te, M I N `v'b n't'Z w'K'Q'yc'w'b' G't'm t'm'B d'w'k R'g'te| G'Q'v'ov 0'L'w'^-v't'bi c'w'b' f'v't'M'i Dc'i cU_exi g'v'n'K'I'p k'w'3 i c'f'v'e K't'g h'v'q Ges tK>`m'ZM k'w'3 i c'f'v'e e'w'x' c'v'q| d'z'j tK>`m'ZK k'w'3 i c'f'v'te P'v'i c'v'k'p' c'w'w'i'v'w'k 0'L'w'^-v't'b c'f'w'n'Z n'tq tRvq'v't'i i m'w'p' K't'i, GB tRvq'v't'i b'ig t'M'S'Y ev c't'iv'q' tRvqvi |



w'P'1 3.12.1 : tRvqvi fUwv wKifc msMvZ nq

fUwv t cU_ex t'g'v'U c'w'b'w'v'ki c'w'g'v't' me'p' mgvb b'q| h'L'b cU_exi G'K'c'v't'k'p'g'ly' tRvqvi Ges A'c'i c'v't'k'p' t'M'S'Y tRvqvi nq, Z'L'b GB `B' tRvq'v't'i g'a'e'Z'p' m'g't'K'v't'Y A'w'e'Z' Ask'0'q n't'Z c'w'b'w'v'k' m't'i h'v'q e'tj H `B' `v't'b Z'L'b fUwv n'q|

cw_ex AveZfb cw_exi th Ask Pth`i mššL Avtm tmB Ask Ges Zvi wecixZ Astk
mgj`i cwib dtj Dtv tRvqvi nq| Gt`i ga`eZPmgfKvY Aew`Z `ib0tq cwib tbtg
fvlv nq| mZivis GKB `vfb c0Zv`b `gvi tRvq i l `gvi fvlv nq| tRvqvi l fvlv
c0Z`Ki w`wZKvj 6 NšUv 13 ug. c0q| Dctiv³ eY0v nZ tRvqvi fvlv#K v`v`ij wLZ
tkYvZ wef³ Kiv hvq|

tRvqvi fvlv tkYvefvl

K. gj` tRvqvi

(L) tMŠY tRvqvi

c0VvEi gj`vqb 3.12

mVK DEti i c0k wK (v) wPy w b|

1. GKwU `vfb `vbk KZevi tRvqvi nq?

(K) GKevi

(L) `gvi

(M) wZbevi

(N) Pri evi

2. tKvb `vfb `vbk KZevi fvlv nq?

(K) Pri evi

(L) wZbevi

(M) `gvi

(N) GKevi

3. c0Z`K tRvqvi l fvlv w`wZKvj KZ?

(K) 24 NšUv

(L) 12 NšUv

(M) 6 NšUv 13 wgvbU

(N) 13 NšUv 6 wgvbU

cW 3.13

gvbtl i A_ %wZK wqvkj vci Dci tRvqi fWvi cFve

Dt'k"

GB cW tktl Avci

- gvbtl i A_ %wZK wqvkj vci Dci tRvqi fWvi cFve eYv KitZ cvi teb
- tRvqi fWvi Dtj - LthvM" cFve cto ZLb `vb mgtni bvg ej tZ cvi teb

3.13.1 t tRvqi fWvi cFve

gvbtl i A_ %wZK wqvkj vci Dci tRvqi fWvi ht_ó cFve itqtQ| `j frtMi Dcti cmbivntZ Ges e'emvq emvYtR"i Dcti tRvqi fWvi ht_ó fvgKv AvtQ| Gi dtj gvbtl bvbv fite DcKZ.n tq _vtK| wbtv tRvqi fWvi cFve, t jv mglj Ges Kzlj AvKvti Dtj LKiv nj |

mgj

1. tRvqiti mgq cwb epx cvq etj mg`Mvq RvntRi ctq| b`x e`ti cletk mjev nq| Avevi fWvi tmZi mZ H RvntR Avvqtm mgj` Gtm cto| PÆMg, Kj KvZv, j Ub, cFwZ. b`x e`ti GB ifc tRvqiti Urb I cmb epxi Rb" e`ti RvntR cletk Ges fWvq RvntR evni Kiv nq|
2. tRvqi fWvi Rb" b`x mgtni cwb wbgp _vtK| `wbK `gvi tRvqi fWvi nI qvi dtj b`xZ cWZZ AveRvni` Ges b`xi tgvbvq cWj, t jv wbtvntZ ntj b`xi wbgp nq|
3. tRvqi fWvi Rb" cWj gvi cto b`xi gly eU ntZ cvti bv| dtj tbs Pj vPtj i thvM" nq| Bsj `vtUi tUgm b`xZ tRvqi fWvi `iy cWj RgtZ cvti bv| etj B me`v tbs-evntvM" _vtK|
4. tRvqi fWvi tmZi Rb" b`xLvZ Mfxi nq| Aveivg tRvqi fWvi Urb cWj gWU cto b`xi gly eU ntZ cvti bv| jeYv³Kvi dtj kvZ cWv t`tki b`xi cwb Rtg bv|
5. tRvqi kv³ wntvteI e`eüZ nq| cW_exi AtbK Astk weivU AvKvti i Rj varb wbgp Kti tRvqiti mgq cwb tZ fWZ`Kti iLv nq| fWvi mgq H cwb miyct_ wbtv wMZ Kti cwb we`y DrctvKiv nq|
6. b`xi tRvqi cwb tmPi mrvqZv Kti| AtbK b`xi cvk`ntZ Lbb Kiv Lvjt tRvqiti cwb AvUvKtq RvgtZ tmP t`qv nq|

7. tRvqvi fWvi dtj tbš-Pj vPj Z_v e`emv-emvYtR`i mekl mjev nq| tRvqvti mgq Zv I Zvi Af`šti cmb Awak nq etj eo mg`Mvgx RvntRi ct`j b`xtZ cček Kiv mjev nq|

Kzj

1. tRvqvi fWvi Rtb` mgj`i jeYv³ cmb b`xi gta` w`tq t`tki Af`šti cček Kti etj b`xi cmb AwakZi jeYv³ nq| jeYv³ cmb Kul. KvtRi Rb` Abg`thvMx|
2. tKvb tKvb b`xtZ tRvqvti mgq evb WvKvi dtj AtbK mgq tbšKv, j`Â cfwz. Wte hvq ev` qwZM` nq Ges b`xi cvkZ`GjvKvi Rvbgvtj i cfwz. qwZmvab nq|

mvisk

- gvb`i A`wZK w`uqKjvtci Dci tRvqvi fWvi , i`cY`c`fve itqtQ|
- tRvqvi-fWvi Rtb` b`xi cmb wbg` _vtK
- tRvqvi-fWvi mgj Ges Kzj DfqB w``gvb itqtQ| Zte mgvtj i Zjbrq Kzj bMY`|

cvWvEi gj`vqb 3.13

mWK DĖti i cvk WK (v) wPy w`b|

1. tRvqvi fWvi dtj tKvb b`xi tgvnvrq cvj RgtZ cvtibv?
 (K) tUgtn (L) I Rvi
 (M) ivBb (N) wSj vg
2. tRvqvi fWvi cfwte b`xtZ MtI i Ae`v tKgb nq?
 (K) fivU (L) wvj b nq
 (M) Mfxi nq (N) Acw ewZ` _vtK
3. tRvqvi fWvi dtj b`xtZ jeYv³ cmb cček Kiti tKvbUj Dci gvivZK cfwte cto?
 (K) tbš-Pj vPjt i Dci (L) wki Kvi Lvbi Dci
 (M) ebfugi Dci (N) Kul. KvtRi Dci

DĖi : 1| K 2| M 3| N

msvjB cček

1. gE` I tMSY tRvqvi wK?

Gm Gm im tçMg

2. tRvqti i Rb" cL_xi I Ptb`i cFve Ajj v`rfvte wj Lly|

iPbuj-K cke

1. tRvqvi -fWvi msÁv w`b|

2. tRvqvi -fWvi djvdj eYDv Kiab|

cW 3.14

mg~tmZ

D`ik`

GB cW tk`I Avcib

- mg~tmZi msAv ej tZ cvi`eb
- mg~tmZi KviY, t`jv ej tZ cvi`eb
- mg~tmZi djvdj eYv Ki`Z cvi`eb

3.14.1 t mg~tmZi msAv

Avgt`i GB cW_exi wZb PZz`sk cWb| cW_extZ itq`Q A`bK m`Mi gnvm`Mi | wKšZ GB mg`j`i cWb KLbI GK`vb w`i _v`K bv| Zv me`v PjvPj Ki`Q| evqj MvZi g`Zv mg`j`i cWbI GK`vb n`Z Ab`vb c`v`nZ n`Q| mg~tmZi c`fve bvbv`f`te t`L`Z cvl qv hvq| w`f`b`æ`ng`~I gnv`k mg`j`ni DcKj w`f`b`æ`D`I kvZj tm`Zi c`fve j`q` Kiv nq| GB mKj mg~tmZ, t`jv ch`e`q`Y K`i gvbly Zv`i`K bvbv`f`te e`envi Ki`Q| t`tki Rjevqy emb`R`i Dci mg~tmZi c`fve AZ`w`aK | msAv t mg`j`i cWb me`vB PjvPj Ki`Q| evqj MvZi g`Zv mg`j`i cWbI mg`j`i GK`vb n`Z Ab`vb c`v`nZ n`Q| mg`j`i GK`vb n`Z Ab`vb mg`j`i cWbI w`b`w`I | w`b`q`w`Z mg~tmZ e`j` |

3.14.2 t mg~tmZi KviY

w`f`b`æ`f`te mg`j`i Dcwi f`v`M Rjivki mgZvi e`w`Z`p`g N`U| w`b`Zv`šB `v`f`w`eK w`b`q`g Rjivki Dcwi f`v`M t`mB mgZw`eav`bi Rb` Rjivki w`K`Q`y Ask mg`j`i GK`vb n`Z Ab`vb w`tk c`v`nZ nq| th mKj KviY mg~tmZi D`m`e nq w`b`æ Zv`i mg`j`U ms`w`B Av`j`vPbv Kiv nj |

1. evqyc`v`n t w`tkI`A`M`Yi g`Z evqyc`v`nB mg~tmZi c`v`b KviY| cW_ex AveZ`bi dtj f`c`t`o KZK, t`jv w`b`q`Z evqyc`v`tni m`j`o nq| GB w`b`q`Z evqyc`v`n, t`jv tKvb bv tKvb w`b`w`I c`f`_ c`v`nZ nq| mg`j`i Dci w`t`q evqy c`v`nZ nevi mgq GB evqyc`v`n, t`jv tKvb bv tKvb w`b`w`I c`f`_ c`v`nZ nq| mg`j`i Dci w`t`q evqyc`v`nZ nevi mgq GB evqy`t`j`vi NI`Y m`M`t`i Dc`i`i `t`i`i Rjivk GK`vb n`Z Ab`vb w`tk c`v`nZ nq| c`v`b c`v`b mg~tmZ, t`jv`K f`c`t`o`i c`v`b c`v`b evqyc`v`n, t`jvi c`_ AbyriY Ki`Z t`Lv hvq| Avqbevqyc`v`nZ G`j`vKvq tm`Z c`w`og n`Z ce`f`tk c`v`nZ nq| f`viZ gnvm`M`ti FZzcwi eZ`bi m`f`_ m`f`_ hLb tg`š`m`g`x evqyc`v`tni MvZ cwi eZ`B nq ZLb Z_vq mg~tmZi cwi eZ`B n`q evqj MvZc_ AbyriY K`i| t`mRb` evqyc`v`tni g`ib`P`f`i m`nZ mg~tmZi g`ib`P`f`i Ace`m`ig`A`m` t`Lv hvq|

2. DòZvi ZviZg" t mgj"i newfbæAstk DÈvtci ZviZg" mg^{~a} tmiZi AbZg KviY| ubi qixq AÂtj mhPnk¥ tmvRvfmvR Ges tgiyc0`tk ZxhRfite cto| dtj tgiyc0`k Atcqv ubi qixq AÂtj mgj"i cumb AwaK DÈvtc DÈB ntq AvqZtb epxc0B I nvj Kv Ges Zvi NbZ;Ktg hraq| wKšztgiyc0`tk mstKvPtb dtj cumb ivik fvix nq| ubi qixq AÂtj i Dò I nvj Kv cumbivki mg^{~a} cto DPy ntq tftm Dfv Ges kxZj tgiyc0`tki w tk Dò c0 cèvn ev ewnt tmiZ (Hot Surface Currendt) ifc mgj"i Dcwi fivM w tq cèvnZ nq| ubi q c0`tki GB iY"vbcjY Kievi Rb" tgiyAÂtj i kxZj I fvix cumb kxZj Aštcèvn (Cold Under Current) ifc ubi qixq AÂtj i w tk cèvnZ nq| Gfk cumbi 0cwi Pj b^etj |
Dò mg^{~a} tmiZ kxZj AÂtj i w tk cèvnZ nevi mgq Zvi cumbivk µgk AwaK kxZj ntq _vK| tm Rb" Zv kxZj cumbi minZ axti axti wgtk fvix nq Ges Wte hraq| cqvšti kxZj tmiZ ubi qixq c0`tki w tk cèvnZ nevi mgq Zvi cumbivk µgk Dò I nvj Kv nq| tm Rb" g0tj tcšvi ci tm vbi tmiZi minZ wgtk c0 cèvn cwi YZ nq| GRb" ubi qixq c0`tki Dci ntZ wtp Ges tgiyAÂtj wP ntZ Dctii w tk cumb cèvnZ nq| dtj GB `v vbi Dci wP (Up and down) cèvn mwo nq| GB cèvn tk cwi Pj b tmiZ (Convection Current) bvtg AvfinZ Kiv nq|
3. ev`uxfetbi ZviZg" t Dò g0tj i mgj"i cumb AwaK DÈvc jvf Kti c0jy cwi gvtY evt`ú cwi bZ nq| wKšzvmZkxZvò I kxZj AÂtj i cumb tmiZc DÈvc cvq bv etj AtcqvKZ.Kg ev`uxfZ nq| DÈvtci cv`K"i Dci ev`uxfetib ZviZg" wbfP Kti| mgj"i Kvb Astk DòZvi Rb" ev`uxfeb tenk ntj Rj iviki mgZv i qv Kivi Rb" Pwi w K ntZ kxZj tmiZ tmw K cèvnZ nq| GBifc ev`uxfetbi ZiZtg"i Rb" mg^{~a} tmiZi DrcwE nq| ubi qixq I mvšiq AÂtj th mg`l mvi c0q Pvi w tk `li 0viv ten0Z Ges c0vj x 0viv gnmvMi ev Aci tkvb mvmi minZ msh9 ev`uxfetibi ZviZg" ekZ mntRB mKj mvmi ci`utii gta" tmiZ Drcbenq| fga"mvmi th cwgY cumb ev`uxfeZ nq b`x ev ewo cumb tm Afve ciY KiZ citi bv| tmRb" wRešvi c0vj x w tq GKwU c0 cèvn AvUj wUK gnmvMi ntZ fga"mvmi w tk AMhi nq| ewèK mvmi ev`uxfetbnZzcumb nvm, b`x AvnbZ cumb Atcqv Kg etj Zv ntZ c0 cèvn DÈi mvmi Ges Zvi mvi ntZ Aštcèvn ewèK mvmi Avtm|
4. jeYv³Zvi ZviZg" t AwaK jeYv³ cumb, Dò I Kg jeYv³ Atcqv Nb I fvix etj Zvi Pvc tenk| GRb" AwaK jeYv³ cumb wtpi w tk tbtg hraq Ges jNzi I AtcqvKZ.jeYv³ cumb Dctii w tk Dfv Avtm| Gišc DaY©tmiZ Ges wbtmiZi mw= nq| ev`uxfeb ekZ tkvb mvmi cumb Ktg tmtj Zvi jeYv³Zv epx cvq| Zvt`i AwaK jeYv³ mg^{~a} ntZ Aí jeYv³ mgj"i w tk Aštcèvn Ges Aí jeYv³ etj AvUj wUK gnmvMi I Kò. mvmi ntZ Kg jeYv³ cumb c0 cèvn ifc fga"mvmi w tk cèvnZ nq|

5. f₇fivMi Ae⁻vb t mg^{-a}tmžZ cēvvnZ nei mgq Zvi m^ošL Zvi tKvb ⁻j fivM
cotj tmžZi Muz cwi ewZ² nq| ubi q| c^o tk tKvb ⁻j fivM bv⁻v^tKj ubi q| xq
tmžZ eivei cūōg w^tK Pwj Z n^tZv| wKš' GB tmžZ AvUj wUK gnvMvMti i
eivRtj i ce^oDcKtj , c^ošlgnvMvMti c^eo^ofvi Zixq 0xc c^oš Ges fvi Z gnvMvMi
AvndKvi `wqY c^eo^ogv⁻vbMv⁻vi 0xtc evav tctq `š^o ev wZb fivM wef³ n^tq DĒi
I `wqY w^tK tetK cēvvnZ nq|
6. cū⁻exi AvnyK Muz t cū⁻ex ubR A^tqji Dci cūōg n^tZ ce^o tk Nj^tQ| cū⁻exi
GB AvnyK Muzi dtj mg^t i cūb cūōg n^tZ ce^o tk cēvvnZ n^tq mg^{-a}tmžZi
m^oš Kti | td^ttj i m^oš Ablyqx GB tmžZ DĒi tMj v^ta^oWvb w^tK Ges `wqY
tMj v^ta^oevg^w tk tetK Ptj |
- 7| Mfxi Zv wnm^ote DòZvi `elg^o nq| Aí Mfxi ⁻v^tbi cūb m^tRi DĒB n^tq
Dcti i D^tV Av^tm Ges kxZj cūb ub^tP t^bt^og hvq| GB i^tc DaY^olvqx I ubaMvgx
tmžZi mg^t a^oubq^ogZ cēv^tni m^oš nq|

3.14.3 t mg^{-a}tmžZi w K

cū⁻exi wewfb^oAs^tki m^oMi gnvMvMti cūbi mgZv i q^ovi Rb^o Ges wemZ evq^oč^ov^tni
dtj th mg^{-a} tmžZi D^o e nq Zv cūvbZ (1) evq^oč^ov^tni w K Ab^ovi Y Kti |
DògU^tj Avq^o evq^o w K Ab^ovi mg^{-a} tmžZ DĒi ce^oev `wqY cūōg ev DZZi
cūōg w^t tk cēvvnZ nq| (2) cū⁻ex AveZ^obi dtj mg^{-a}tmžZ evq^oč^ov^tni b^ov^oq DĒi
tMj v^ta^oWvb w^tK Ges `wqY tMj v^ta^oevg^w tk tetK hvq| (3) Dò tmžZ mg^t i
Dcwi fivM w^tq c^oč^ov^oni^tc Ges kxZj tmžZ Dcwi fivM cūbivi^oki wKQy^oPy^ow^tq
As^tc^ov^oni^tc cēvvnZ nq| (4) cū⁻g^ot^o evav tctj mg^{-a}tmžZ w K cwi eZ^o Kti |
(5) Mfxi mg^t a^otmžZi teM wKQy^o š^o|

3.14.4 t ew^tR^oi Dci mg^{-a}tmžZi c^ov^oe

1. wnggU^tj Aew⁻Z ev b^owZk^ot^oZvò AĀ^tj i kxZj Zi As^tk Aew⁻Z mg^t i cūb
kxZk^ot^o R^tg hvq| cū⁻exi A^tbK t⁻tk eQ^ti i te^oki fivM mq mg^t i cūb R^tg
⁻v^tK| wKš^omg^t i Hifc As^tk Dò tmžZ cēvvnZ n^tj Dò tmžZi c^ov^ote Z⁻v^oq
kxZk^ot^o I eid R^tgZ c^oti bv| Dò DĒi AvUj wUK tmžZi c^ov^ote BD^ti^tci
DĒi cūōg^ost^ok bi^tq^o DĒi I m^ovi^o ermi R^ov^oR Pj v^oPj Ki^tZ c^oti | c^oš^ov^oš^o
Zvi `wq^oš^o ew^oš^o m^oMi cūb R^tg hvq| Avevi b^owZk^ot^oZvò AĀ^tj i D^oPZi
As^tki mg^t a^okxZj tmžZ cēvvnZ n^tj H kxZj tmžZi c^ov^ote tm⁻v^tbi cūbivi^ok
Rg th^tZ c^oti | Dò R^ov^ovb tmžZi c^ov^ote K^oib^oW^ovi cūōg DcK^oš I f^ov^oK^oš^o
eidg^o ⁻v^tK| wKš^ozkxZj j^ove^oW^ovi tmžZi c^ov^ote K^oib^oW^ovi ce^oDcK^oš Ges
kxZj te^oni s tmžZi c^ov^ote c^oš^oY tm^ow^of^ot^oqZ BD^omb^oqt^obi ce^oDcK^oš ei d^ov^oQ^ob^oer^oq|

mvi^osk

- mg^t i GK ⁻vb n^tZ Ab^o ⁻v^tb mg^t i cūbi ub^t R I ubq^ogZ Pj v^oPj i Muz^tK
mg^{-a}tmžZ etj |

- evqycèvn DòZvi ZviZg, ev-úxfetbi ZviZg, jeYv³vi ZviZg, f₇fv₇Mi Ae⁻vb c_uexi Avy³KMuz I MfxiZvi Kvi₇b mg⁻³tm₇Zi Drci^É nq|
- we₇kI we₇kI w₇q₇g evqycèvn Aby₇ti mg⁻³tm₇Zi w₇K w₇Pw₇Z nq|
- Rj evq₇y Dci I mg⁻³tm₇Zi c₇fv₇e i₇q₇Q|
- e⁻emv emv₇R⁻i Dci mg⁻³tm₇Zi c₇fv₇e i₇q₇Q|

c₇fv₇Ei gj₇vq₇ 3.14

m₇w₇K DÈ₇i i c₇fv₇k w₇K (-) w₇P₇y w₇b|

1. AvqberqycèvnZ Gj vKvq mg⁻³tm₇Z tKvbw₇ tK cèvnZ nq?
 (K) DÈ₇i w₇K t₇tK w₇q₇y w₇tK (L) ce⁹₇tK c₇w₇g
 (M) w₇q₇y t₇tK DÈ₇i w₇tK (N) c₇w₇g t₇tK ce⁹₇w₇tK
2. c_uexi AveZ₇bi dtj DÈ₇i tMj v₇a⁹Kvb w₇tK tet₇K hvq|
 (K) Wbv₇w₇tK (L) evg₇w₇tK
 (M) DÈ₇i w₇tK (N) w₇q₇y w₇tK
3. Dò tm₇Z mg₇y¹ Dcwi fvM w₇tq Avi kxZj tm₇Z DWwi fv₇tM c₇mbi i₇w₇ki w₇KQy₇bPy w₇tq cèvnZ nqt Gi₇c tm₇Z tK w₇K etj?
 (K) Dò tm₇Z (L) kxZj tm₇Z
 (M) cwi Pj b tm₇Z (N) cwi enb tm₇Z
4. mg⁻³tm₇Zi teM tKv₇vq Z₇z₇bv₇gj₇Kfv₇te te₇w₇k nq?
 (K) DcK₇tj (L) Mfxi mg₇y^a
 (M) DÈ₇i tgi₇tZ (N) w₇q₇y tgi₇tZ
5. tKvb mg₇y^atm₇Zi c₇fv₇te fv⁻èvi I KvbWwi c₇w₇g DcKj ei dg₇y⁹ v₇tK?
 (K) te₇z₇tj v tm₇Z (L) K₇vj ix tm₇Z
 (M) Rvc₇vb tm₇Z (N) nvg₇tevi tm₇Z

ms₇y₇B c₇kè

1. mg₇y₇^atm₇Zi w₇K ej tZ w₇K e₇Svq?

iPbv₇gj₇-K c₇kè

1. mg₇y₇^atm₇Z w₇K? mg₇y₇^atm₇Zi Kvi Y eY₇èv Ki₇ab|
2. mg₇y₇^atm₇Zi c₇fv₇e eY₇èv Ki₇ab|

cW 3.15

AvUj vUK gnmvMiq

Dt`ik`

GB cW tk`I AvciB

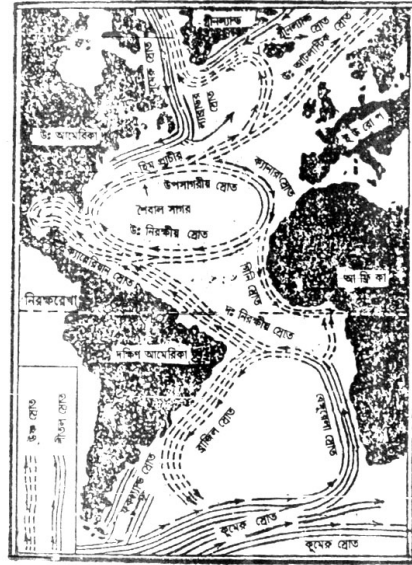
- AvUj vUK gnmvMti i cwi vPvZ v` tZ cvi`eb
- AvUj vUK gnmvMiq c`vb c`vb tmZ , tj vi bvg Dt`j K i tZ cvi`eb
- AvUj vUK gnmvMiq tmZ , tj vi eY`v v` tZ cvi`eb
- vP` G`K AvUj vUK gnmvMiq tmZ , tj v t` Lv tZ cvi`eb

3.15.1 t AvUj vUK gnmvMti i cwi vPvZ

Ae`vb t ce`Dck`j BDt`vc I AvvdKv Ges cwo`g Dck`j DEi I `vY Avt`gvi Kvq
 Aew`Z | vbi v`i Lv AvUj vUK gnmvMti i DEi I `vY Astk ef³ Kti`Q |
 AvqZb -AvUj vUK gnmvMti i AvqZb c`q 8 tKvU 15 j v` eM`K`j vvgUvi AvqZ`b
 GvU c`exi v`Zxq ep`Eg gnmvMi |
 Mfxi Zv t AvUj vUK gnmvMti i Mo Mfxi Zv 12,000 dU,
 Dck`j t fM`Df`q Dck`j e` i tevk, Oxc A`c`vKZ.Kg |
 evYvR`K , i`j; t c`ext`Z th c`vU gnmvMi i`q`Q Zb`a` AvUj vUK gnmvMti
 evYvR`K , i`j; me`P`q tevk | miveQiB GB gnmvMti i Dci v` t`q miv`K RinvR
 Pj vPj Kti |

3,15,2 t AvUj vUK gnmvMti i c`vb c`vb tmZ t AvUj vUK gnmvMti i c`vb
 c`vb tmZ , tj v nj |

1. te½tqj tmZ
2. DEi I `wqY ubi qxq tmZ
3. eRj tmZ
4. DcgnvMiq tmZ
5. jveWvi tmZ
6. Ktgi tmZ
7. dKj vU tmZ
8. cwDg MØj vU tmZ
9. K vYvi x tmZ
10. wWY tmZ



পট 3.15.1 : AvUj wUK gnmvMiq t`iZ

3.15.3 t AvUj wUK gnmvMiq tmZ mgñi eYBv

cåvb cåvb tmZ, tji vi eYBv t`l qv nj t

1. **te½tqj tmZ** t `wqY gnmvMt i nZ kxZj Ktgi K tmZ cèvnZ nq| GB tmZ cwDg evqj cfi tei gñi Gtm cte tetK hvq| cti AvdKvi `wqY cwDg DcKtj cZnZ nq DEi te½tqj v tmZ bñtg AMñi nq AvUj wUK G cðek Kti |
2. **DEi I `wqY ubi qxq tmZ** t DEi ceI `wqY ceAvqi evqj cfi te Ges cxi AveZñbi Rb AvUj wUK gnmvMt i ubi qxq Añtj `yU Dò tmZi DrciE nq| GB tmZ ðqK DEi I `wqY ubi qxq tmZ etj |
3. **eRj tmZ** t te½tqj v tmZ `wqY ceAvqb evqj cfi te cwDg tetK `wqY ubi qxq tmZi minZ ugtk hvq| GB uguj Z tmZ cwDg wKØy AMñi nq `wqY Avtgui Kvi tmUi K Añi xtc cZnZ nq DEi I `wqY kvLv wef³ nq| `wqY kvLv eRj tmZ (Dò) bñtg eRtj i ceDcKtj eivei AMñi nq Ges cbi vq Ktgi ytmZi minZ ugtk hvq|
4. **DcgnvMiq tmZ** t Dctiv³ `wqY ubi qxq tmZi DEi kvLv `wqY Avtgui Kv DEi ceDcKj añi AMñi nq| cti GuU a`wi weqv mMt i cðek Kti DEi ubi qxq tmZi `wqY kvLv minZ uguj Z nq| GB uguj Z tmZ `wqY tgu tKv DcgnvMt i cðek Kti | tgu tKv DcgnvMt i DrciE etj GB tmZi bñtg DcgnvMiq tmZ | GuU msKxY³ tKwi Wv cñv xi ga` wñtg tetM cèvnZ nq DEi ubi qxq tmZi DEi kvLv minZ uguj Z nq| GB `vñb Gi MvZ NvUvi cðq wKtj vguvi

Rtj i DòZv còq 27.2 tm.tMÒ Ges eYMp bxj | GB ugwj Z tmZ DEi còp tK t`tK cèvnZ n`q ga` AvUj vUK wZbvU kvLvq weF³ nq| h_v-

K) Gi cèvb I cèk`l kvLv Dò tmZi f`c weUK Øxccj I DEi cùòg BDti v`ci cùòg cìk`r t`q bi l`tqi DEti tkl nq| GtK DEi I AvUj vUK tmZ etj | Bnv BDti v`ci kxZj DEi cùòg DcKj tK Dò ivtL|

L) `w`Y kvLv cZv`rtj i DcKtj còZnZ n`q cùòg `w`Y I cti cùòg tetK DEi ubi`q t`mZ m`z ugwj Z nq| GtK K`vbvix tmZ etj | GiU kxZj tmZ|GB Rj evZ`P Af`st`i tKvb tmZ nq bv| GB tmZ w`nxb Rtj fvmgub AvMvQv I `kevj miv`AZ nq Ges wKQyDw`c Rb`q| GiU `kevj mivMi etj cwi vPZ|

M) DEi kvLv Mòj`v`Ùi cùòg v`cìk`r t`q DEi w`tK cèvnZ nq| DEi I `w`Y ubi`q t`mZi ga`eZ`P cùòg n`Z ce`vix GKvU tmZi Drci`E nq| GiU ubi`q còZtmZ etj cwi vPZ|

5. j`vev`v tmZ t DEi gnvMvMi `v`Ùi kxZj Mòj`v`Ùi ZK cùòg I ce`cìk`r t`q cèvnZ n`q j`vev`vi DcØt`ci w`KueZ`P n`q DcgnvMvMiq tmZi Dò I Mvp bxj Rtj i m`xv`ti Lv m`y i f`vte t`Lv hvq| GB m`xv`ti Lv tK ingc`Ø`xi etj | kxZj Rj Dò Rj A`tc`q f`vix etj GB tmZ AvI GKUz`w`t`b AM`hi n`q DcmvMiq tmZi w`t`e`v`ze hvq| j`vev`vi tmZi m`z fvmgub ing`k`j` Dò DcmvMiq tmZi ms`ú`k`G`tm Zvi eid M`j hvq| ing`k`j` evnZ K`g I w`k`j v g`y`b t`c`q mg`-Z`j miv`AZ n`q gMevQov mivU K`ti | Avevi DcmvMiq tmZi Dci w`t`q cèvnZ evqyDò I Av`n`q Ges j`vev`vi tmZi Dci w`t`q cèvnZ evqykvZj I i`-` nq| GB `b evqy msv`g`k`f`Y GB A`A`j So nq Ges Nb K`qv`kvi Drci`E nq| ing`k`j` , t`j v RvrvR Pj vP`j e`v`NvZ miv`Ø K`ti |

(6) K`zgi ytmZ t cèj cùòg evqyØv v ZvvoZ n`q GvUvKvUkv gnv`t`k`i DEi w`t`q th kxZj tmZ cùòg t`tK ce`v`bqZ cèvnZ n`q Zv K`zgi ytmZ b`v`g cwi vPZ| `w`Y Av`g`wi Kvi `w`Y w`t`q G tmZ AvUj vUK gnvMvMti c`èk K`ti |

(7) dKj`v`Ù tmZ t AvUj vUK gnvMvMti c`èk Kivi ci K`zgi ytmZi kvLv DEi w`t`KK tetK dKj`v`Ù Øxccj I Av`R`Ø`vbi ga` w`t`q DcK`j eivei DEi w`t`K cèvnZ n`q t`q| GB tmZ vU dKj`v`Ù b`v`g cwi vPZ| GiU GKvU kxZj tmZ|

(8) cùòg Mòj`v`Ù tmZ t DcmvMiq tmZi w`Ø`xq kvLvU DÌ w`t`K tetK AvBj`v`Ù I Mòj`v`Ùi `w`Y cvk w`t`q AM`hi n`q Mòj`v`Ù I e`v`w`db Øxccj`Ai t`w`v`fm c`v`j`xi ga` w`t`q Dò cùòg Mòj`v`Ù tmZ b`v`g DEi w`t`K cèvnZ n`q t`q|

(9) K`vbvix tmZ t DcmvMiq tmZi ZZxq kvLvU ØK`vbvix tmZ`v`b`v`g `w`Y w`t`K tetK cZ`v`j I cùòg Avv`d`kvi cùòg cvk w`t`q cèvnZ n`q t`q| G tmZ cti

`B kvLvq nef³ nqtqQ| c0g kvLv Avqb evqy cFvte `wY-cu0g w`K tetK ubi qXq tm#Zi m½ wuj Z nqtqQ|

(10) wMb tmZ t K`vbviK tm#Zi wZxq kvLv cu0g AvcdKvi wMb DcKtj i cvk w`q wMb tmZ bvtg `wY ubi qtiLv chS c0vvnZ nqtqQ| tmLvfb G tmZ ubi qXq wecixZ tm#Zi m½ wgtk wMb DcmvMti c0ek Kti#Q| GuU GKU kxZj tmZ|

D0i AvUj wUK gnvmvMti c0S w`q wwfbaetmZ c0vtni dtj gvSvgnS `vfb tmvZevvnZ Wvj cvj v, Nvm, `kevj cFwZ. c0jy cwi gvY mwAZ nqtq th tmZ wnxb mvMti mwp nqtqQ Zv 0%kevj mvm`bvtg cwi wPZ|

mvisk

- AvqZtbi w`K w`q AvUj wUcK cu_exi gta` wZxq epEg gnvmvMi
- AvUj wUK gnvmvMti emYwR`K , iZj metPtq tenk|
- GB gnvmvMti Dtj L thvM` 10wU tmZ itqtQ| tmZ , tj vi gta` telzqj v tmZ D0i I `wY ubi qXq tmZ, e0Rj tmZ, DcmvMiq tmZ j ve0Wvi tmZB c0vb|
- D0i AvUj wUK gnvmvMti c0S w`q wwfbaetmZ c0vtni dtj gvSvgnS `vb tmZ wnxb nqtq cto|GB `vfb mvMti tkl mvMti tkl fvM AveR0v Rtb# Avti KuU mvMti mwp nqtqQ GB mMi w`kevj mMi bvtg cwi wPZ|

cvtV0i gjvqb 3.15

mWK D0ti i cvtk wK (v) wPy w`b|

1. AvUj wUK gnvmvMti ceDcKtj tKvb gnvt`k `w Aew`Z?
 (K) D0i Avtqwi Kv I `wY Avtqwi Kv (L) AvcdKv I BDti v c
 (L) BDti v c I Gukqv (N) Gukqv I At÷ wj qv
2. AvUj wUK gnvmvMti Mo Mfxi Zv KZ?
 (K) 120 d0 (L) 1200 d0
 (M) 12000 d0 (N) 120000 dU
3. dKj `vU tm#Zi wtkl Zj wK?
 (K) kxZj tmZ (L) D0 tmZ
 (M) wgtk^a tmZ (N) Zxe^a tmZ
4. DcmvMiq tm#Zi ZZxq kvLvU wK bvtg cwi wPZ?
 (K) Kzgi ytmZ (L) j ve0Wvi tmZ
 (M) dKj `vU tmZ (N) K`vbvi x tmZ

5. DĒi AvUj vWUK gnvmMti i cōšl w`tq weifbætmiZ cĕvtni dtj gvSvgnS `v`tb tmĭZ evinZ weifbdllvj cvj v, Nvm, tkI jv Rvĭg GKuU mvmMti i mĭp KtiĭQ Zvi bvg wK?

(K) tUibm mvmMi

(L) `kej mvmMi

(M) gZ mvmMi

(N) Kō.mvmMi

DĒi t 1| L 2| M 3| K 4| N

msvjB cĕkē

1. AvUj vWUK gnvmMti i cĕvb t`ĭZmgn wK wK?

iPbvj-K cĕkē

1. AvUj vWUK gnvmMi xq t`ĭZi weeiY `vl |

=====

3.11 t`ĭK Dcti hĕtē Dcti i Ask ev` hĕtē wgvj tĭ t`LĭZ nĕ|

cW 3.11

tRvqi fĭlv

Dĭĭk`

GB cW tkĭI Avcib

1 tRvqi fĭlvi msÁv ej tZ cviĕb,

1 tRvqi fĭlvi KviY e`vL` KiĭZ cviĕb,

1 cW_ex cĭō tRvqi fĭlv mĭpĭ t`ĭĭĭ P>`I mĕhP cĭve eYĖv KiĭZ cviĕb|

3.11.1 : tRvqi fĭlv (Tide and Ebb)

mgĭĭ ĭ cĭvb wĭw`Ė mgq Ašĭi GK`v`tb dtj IĭV Ges GK `v`tb tĭtĭg hĭv| Gfĭtē cĭZ`K mĭtō evi NĒvq mgĭĭ ĭ cĭvb GKevi wĭbqĭgZfĭtē DVv-bvgr Kti | mgĭĭ ĭ cĭvb

ubqungZfite dzj DVitK tRivqi Ges tbtg hvl qvtK fUlv etj | P>`a I mthP AvKI⁹ Ges cU_exi tK>`mZM kW³i cFite tRivqi- fUlv ntq _vtK| tRivqi fUlv mgj^a-cfo Ges mgjⁱ tgnbr ntZ b`x ct_ uKQy`i chSf AbfZ nq| mgjⁱ ga`fvtM cmb mvaviYZ 30 tm. ug. ntZ 90 tm. ug. (1-3 dZ chS) DVv bvgv Kti | uKszDcKtj i ubKU mvmi DcmMti i Mfxi Zv Kg etj tmLvtb cmb iuk AtbK teuk DVvbvgv Kti | GRb`B mgjⁱ tgnbr ntZ b`xmgfni Muzct_ KtqK gvBj e`vcx tRivqi-fUlv AbfZ nq|

Dbt⁹ mvmi tRivqi hLb Zvi DcKtj AMfxi gnxtmvtb cdek Kti ZLb Gi D`PZv epx cvq| mgjⁱ Lwo A_er b`xi tgnbrvq tcUevi ci tRivqiti cmb b`xi Muzi vecixZ u`tK cewnz nq| me b`xi wfZi u`tq hLb tRivqiti cmb `j fvtMi Af`sti cdek Kti ZLb AtbK mgq gtb nq thb KtqK dZ D`P cmbi t`qvj b`x ewnz ntq DRvtb I tV| Avevi fUlv mgq cmb hLb tbtg thtZ _vtK ZLb b`x AvZi³ Muz kW³ jvf Kti | GRb` fUlv mgq b`x Zj bvgj-Kfite Li tmZv nq| GtZ cUkuzK Dcvtq b`xi Zj vbx mgj^abxZ nq|

3.11.2 : tRivqi-fUlv KviY

tKb cUzwb uKQymgtqi Rb` mgjⁱ cmb dzj I tV Avevi ubqungZfite tbtg hvq G mautK⁹ fieZ:B gvbtj i gtb tKszZj RvtM| cUpxKvtj tRivqi fUlv KviY mautK⁹ bvbv cKvi Aer`e Kiyv Kiv nZ| ZLb gvbtj i aviyv uQj cU_exi klm-cKtmi Rb` tRivqi fUlv nq| cU_exi klm MhtYi mgq cmb dzj D tV etj tRivqi nq Ges klm Z`vM Kivi mgq cmb tbtg hvl qvq fUlv nq| uKszeZgvtb veAvbMvb gtb Ktib th, cU_exi Dci P>`a I mthP AvKI⁹ Ges cU_exi ubtRi Muz I AveZfbi Rb` mo tK>`mZM kW³B tRivqi fUlv Rb` `vqx| ubtRivqi fUlv KviY Avtj mPZ nj |

1. **gnvKI⁹ cFie** : cU_exi mKj c`vt_⁹ kW³ AvtQ, ZvB GKiu AciuU⁹tK AvKI⁹ Kti tQ| GB AvKI⁹Yi bvg gnvKI⁹ Gu mYuo th cU_exi tK>`a I cmbi Dcmi fvtMi Dci P>`i AvKI⁹ kW³i Zvi Zg`B tRivqi fUlv cAvb KviY|
2. **tK>`mZM kW³i cFie** : tKej gnvKI⁹ kW³i cFite P>`a I mthB tRivqiti Rb` `vqx bq| NYBkxj cU_exi cfo th tK>`mZM kW³ Drcbæng, tRivqiti Rb` Zvl AtbKvsk `vqx| GB AvKI⁹ kW³i cFiteB cU_exi Dcmi`Z Zij AveiY cU_ex ntZ wePvZ ntZ cvi tQ bv| uKszgnvKI⁹ kW³i cFie meP mgvb bq| `vfmeKfiteB th Mh ev Dcmh hZ eo Zvi AvKI⁹xq kW³ ZZ Avak| uKsz`i-Zj epx tctj AvKI⁹ Kivi qIgzv nvm cvq|

3.11.3 : cU_ex cfo tRivqi-fUlv Rb` P>`amthP cFie

P>`a Ges mthDfqb cU_ex tK AvKI⁹ Kti Ges Dftqi AvKI⁹x kW³i cFite tRivqi fUlv msNwZ nq| mthP>`a Atc qIv `B tKvU IvU j qI , Y eo| uKszcU_ex ntZ Zv P>`a Atc qIv uZbkZ Avk , Y `ti Aew`Z| GRb` cU_exi Dci mthAtc qIv P>`i AvKI⁹ AtbK teuk Ges Avak KvhRi | mgM⁰cU_ex I Zvi c`v_⁹mgfni Dci mthAtc qIv

Pt`i KvhRix AvKIŷx kwi³ 2.5 ,Y teuk| P>`a I mthP AvKIŷx kwi³ cW_exi
 tK>`tj KvR Kti _vtK| wKšZcmb Zij etj Zvi Dcwi fvM Pt`i AvKIŷx kwi³
 AwaK KvhRix nq| e`Z cmbi DciB AvKIŷxq cŷve AbŷZ nq|
 cW_exi th Ask hLb Pt`i wK mšL Dcw`Z nq, P>`a cW_exi tmB AsktK ZLb
 meŷcŷv teuk AvKIŷ Kti| Gw`K w`tq Avevi KwB `j fvMi PvBtZ cmbi viki Dci
 AvKIŷ kwi³ i cŷve I KvhRvvi Zv AwaK| GRb` cW_exi th Astk hLb Pt`i AvKIŷ
 kwi³ mePvBtZ teuk ZLb cW_ex I Pt`i AvKIŷyi Rb`I cW_ex cŷoi Zij I nij Kv
 cmb i viki Dci tK>`wZM kwi³ i cŷve teuk nq| Gi dtjB cmb i vuk meŷv evBtii
 w`tK wewŷB nq Ges Zij cmb i vuk KwB f;fvM nŷZ wew`QbenŷZ Pvq| Ggwbfvte
 tK>`wZM kwi³ I tRvqvri fvWv mŷotZ mnvqZv Kti| Zte tK>`wZK kwi³ Aŷcŷv Pt`i
 AvKIŷ tRvqvŷii Rb` teuk `vqx| KvY tK>`wZM kwi³ fzcŷoi PZw`K KvhRi|
 wKšZPt`i AvKIŷx kwi³ cŷvbZ GKw`tK AwaK KvhRi|

mvisk

P>`aI mh^of-c^oi Rj I `j tK Aweivg AvKI^o Ki^o GB AvKI^oYi c^oite f^o-c^oi
c^onb c^oZ^o bB `vb we^oktI djy I tV Ges Ab^o t^o b^o h^ovq| c^ombi GB d^oj DV^otK
tR^ovqi Av^o t^o b^o h^ov q^otK f^olv etj | c^oZ tR^ovqi f^olv m^oto ev^otiv NE^ov mg^oqi
e^oea^otb msN^oUZ nq| P>`aGes m^oh^o AvKI^oB tR^ovqi f^olv c^onb K^ovY| c^olex c^oo
mh^oA^otc^o P^o t^o AvKI^o q^ogZv 2.5 ,Y te^onk|

c^oV^oE^oi gj-^ovq^ob 3.11

m^oWK D^oE^ot^oi c^otk W^oK (v) i^oP^oy i^ob|

- tR^ovqi -f^olv mg^o mg^o i^o ga^o f^ov^oMi c^onb i^ovik KZU^oKZ^o Vv b^ogv K^ot^o?
(K) 1-3 tm.ug (L) 1-3 dU
(M) 1-3 v^oUvi (N) 1-3 MR
- tR^ovqi -f^olv gj- K^ovY t^oK^ov^oU?
(K) m^oh^o AvKI^o (L) t^oK^o m^oZM etj
(M) t^oK^o m^oZM ej (N) P^o t^o AvKI^o
- c^olexi Dci mh^oA^otc^o P^o t^o AvKI^o KZ^o, b te^onk?
(K) 2.5 (L) 3.5
(M) 13 (N) 1.3
- c^olexi t^oK^ov Ast^o P^o t^o AvKI^o te^onk c^oto?
(K) PZ^o K (L) t^oK^o i^o v^o t^oK
(M) c^olexi th c^o P^o t^o i^o K^ov^oQ^o v^otK (N) c^olexi th c^o P^o t^o t^o t^oK^o i^o v^o t^oK

D^oE^oi : 1| L 2| N 3| K 4| M

ms^ov^oq^oB c^oke

- tR^ovqi -f^olv K^ov^oK etj?
- tR^ovqi -f^olv msN^oUZ nI q^ovi K^ovY W^oK?

i^oP^ov^oq^o-K c^oke

- tR^ovqi f^olv W^oK? Gi K^ovY mg^o W^oK W^oK?

cW 3.12

tRvqvi - fWlv msNUb I tkYnefM

Dřřk`

GB cW tkřI Avciob

- 1 tRvqvi fWlv wKiřc msNUZ nq Zv e`vL`v KiřZ cviřeb,
- 1 wevfbaecKvi tRvqvi fWlv tkYx Dřř kři Dnřř i msAv Dřř kři KiřZ cviřeb|

3.12.1 : tRvqvi fWlv wKiřc msNUZ nq

tRvqvi : Pš`a I mřřP AvKIř I NYřkřj cW`exi tK`řMZM křš i cřřřeb tRvqvi fWlv msNUZ nq| hř` gřb Kiv nq, cW`exi Dcwi fM meřř mgvb cmbimki řriv AveZ| wPřř j řř Kib cW`ex cřři řK` řvb Přř ř meřřřřv wKueZřř mřřivs Přř ř AvKIř řK` řřřb meřřřřv teřk| cmb Zij c`v`eřj cW`exi Křw Ask Ařcřřv mřřRB Ges teřk cwi gřřY AvKó.nře| KřřRB řK` řřřbi cmb dřř DVře Ges řM` I řN` řvb `řř nřZ cmb AvKó.nřq řK` řřřbi Dcři Gřm Rgv nře| ZLb řK` řřřb tRvqvi | GB tRvqřři i bvg gřř ev cřř`řř tRvqvi | Aveři řK` řřřbi weciřZ wřřk řL` řřřb th cmb AvřQ, cW`exi tK`ř` Ařcřřv Pš`a nřZ 6,400 wK.řg. AvřK `ieZřř mřřivs cW`exi tK`ř` řřř Přř ř AvKIř řL` řřřbi cmbi Dcřři AvKIř Ařcřřv AvřK| Aveři řL` řřřbi cmbi wřřř th Křw řj fM AvřQ, Zv cW`exi tK`ř` řřř mřřZ `přřř Aveř AvřQ| mřřivs Zvi Dci Přř ř AvKIř tK`ř` řřř AvKIřři mgvb| KřřRB Pš`a řL` řřřbi cmb Ařcřřv Křw cW`ex fM teřk AvKIř Kiře| GB AvKIřř cW`exi Křw Ask ki gřřSLřř th dřřk nře, M I N řvb nřZ wKQycmb Gřm řmB dřřk Rgře| Gřřv řL` řřřbi cmb fřřřmi Dci cW`exi gřřvKIř křřš i cřřře Křř hvq Ges tK`ř` řřř křřš i cřřře eřřř cřřř dřř tK`ř` řřř křřš i cřřře Pvi cřřř` cmbimki řL` řřřb cřřřv nřq tRvqřři i mřř Křř, GB tRvqřři i bvg řMřř ev cřřřř tRvqvi |

fWlv : cW`exi tgvU cmbimki cwi gřř meřř mgvb bq| hLb cW`exi GKcřřř`gřř` tRvqvi Ges Aci cřřř`řřř tRvqvi nq, ZLb GB `řř tRvqřři i ga`eZřř mgřřKřřř Aveř`Z Askřř nřZ cmbimki mřř hvq eřř H `řř řřř ZLb fWlv nq| cW`exi AveZřř cW`exi th Ask Přř ř mřřř Avřm řmB Ask Ges Zvi weciřZ Ask mgřř ř cmb dřř Dřř tRvqvi nq| Gř` i ga`eZřř mgřřKřřř Aveř`Z řvbřřř cmb řbřř fWlv nq| mřřivs GKB řřřb cřřřřb `řřř tRvqvi `řřř fWlv nq| tRvqvi I fWlv cřřřřř ki wřřřřř 6 Nřř 13 řg. cřřř| Dcřřř eYřř nřZ tRvqvi fWlvřř wřřřřřřř tkYřřř weřřř Kiv hvq|

tRvqvi fWlv tkYnefM

K. gřř tRvqvi L. řMřř tRvqvi

cřřřřři gřřřřř 3.12

mřřK Dřřři cřřř wK (ř) wPřř w b|

1. GKU ~v#b ^`nbK KZevi tRvqi nq?
(K) GKevi (L) `jvi
(M) uZberi (N) Pri evi
2. tKv#bv ~v#b ^`nbK KZevi fWv nq?
(K) Pri evi (L) uZberi
(M) `jvi (N) GKevi
3. cZ`K tRvqi I fWvi w`uZKvj KZ?
(K) 24 NÈv (cÙq) (L) 12 NÈv (cÙq)
(M) 6 NÈv 13 ugvbU (cÙq) (N) 13 NÈv 6 ugvbU (cÙq)

DÈi : 1| L 2| M 3| L

msu#B cÙe

1. gE` tRvqi Kv#K e#j ?
2. tMSY tRvqi Kv#K e#j ?
3. tRvqi KZ cÙvi I uK uK?

iPbvj-K cÙe

1. tRvqi fWv uK fiv#e msNuUZ nq? e`vL`v Ki ly|

cW 3.13
gubšj i A_šwZK uquKj vci Dci tRvqi fWvi cFve

Df`k`

GB cW tk`l Avci b

- 1 gubšj i A_šwZK uquKj vci Dci tRvqi fWvi cFve eYšv KižZ cvi`teb,
- 1 tRvqi fWvi Dšj LthvM` cFve cto Ggb `vb mgšni bvg ej žZ cvi`teb|

3.13.1 : tRvqi fWvi cFve

gubšj i A_šwZK uquKj vci Dci tRvqi fWvi hš_ó cFve itqtQ| `j fvšMi Dcši cwb i vktž Ges e`emv emYšR`i Dcš i tRvqi fWvi hš_ó fvgKv AvšQ| Gi dšj gubšy bivr fite DcKZ.nšq _všK| vbšv tRvqi fWvi cFve, šjv mšj Ges Kšj AvKvš i Dšj LKiv nj |

mšj

- 1. tRvqš i mgq cwb ešx cvq ešj mgšMvq RvnišRi cšŋ| b`x e`š i cšek mšvav nq| Avevi fWvi tmšž i mšž H RvniR Aviqvšmi mgš` Gšm cto| PšMšg, Kš Kvšv, j Ūb, cšvž. b`xe`š i GBšc tRvqš i Uvb l cwb ešx i Rb` e`š i RvniR cšek Ges fWvq RvniR emni Kiv nq|
- 2. tRvqi fWvi Rb` b`x mgšni cwb vbgš _všK| `vbK `švi tRvqi fWvi n l qvi dšj b`šž cšžž AveRšv` Ges b`xi tgvnbvq cšj, šjv vbšv vktž nšj b`xi cwb vbgš nq|
- 3. tRvqi fWvi Rb` cšj gvš cto b`xi gš eš nšž cvš b v| dšj tšš PšvPšj i thvM` nq| Bšj všš i tšgm b`šž tRvqi fWvi `i š cšj Rgšž cvš b v ešj B mešv tšš-embšh vM` _všK|
- 4. tRvqi fWvi tmšž i Rb` b`xLvZ Mfxi nq| Aveivg tRvqi fWvi Uvšb cšj gvš cto b`xi gš eš nšž cvš b v| jeYvšž dšj kvšcšvš t`ški b`xi cwb Ršg b v|
- 5. tRvqi kvšš vništel e`ešž nq| cš_exi AšbK Ašk veivU AvKvš i Ršvavi vbgš Kš i tRvqš i mgq cwbšž vžšKš i vLv nq| fWvi mgq H cwb mišcš _vbšv vMšž Kš i cwb ve`š DrcbšKiv nq|
- 6. b`xi tRvqi cwbšmššPi mšvqšv Kš i| AšbK b`xi cvkš nšž Lbb Kiv Lvšj tRvqš i cwb AvšvKšq Rvšžš tmP t`qv nq|
- 7. tRvqi fWvi dšj tšš-Pšj vPš Z_v e`emv-emYšR`i vekt l mšvav nq| tRvqš i mgq cwb AvšK nq ešj eo mgšMvq RvnišRi cšŋ| b`šž cšek Kiv mšvav nq|

Køj

1. tRvqi fWvi Rtb" mgj" i jeYv³ cmb b`xi ga" w`tq t`tki Af`Šti cØek Kti etj b`xi cmb AwKZi jeYv³ nq| jeYv³ cmb Kul. KvRi Rb" Abg`thvMx|
2. tKvRv tKvRv b`xtZ tRvqti i mgq evb WvKvi dtj AtbK mgq tbŠKv, j Â cFwZ. Wte hvq ev ¶wZMØ" nq Ges b`xi cvkØZØGj vKvi Rvbgvtj i ¶wZmvab nq|

mvisk

gvbZj i A_ØwZK wµqvKj vtci Dci tRvqi fWvi „izcY©cFve itqtQ| tRvqi-fWvi Rtb" b`xi cmb wbgP _vtK| tRvqi-fWvi mgj Ges Køj DfqB w`gib itqtQ| Zte mgjtj i Zjbvq Køj bMY" |

cvWÈi gj`vqb 3.13

mWk DÈti i cvk Wk (l) wPy w`b|

1. tRvqi fWvi dtj tKvb b`xi tgvnbvq cvj RgtZ cvti bv?

| | |
|-----------|------------|
| (K) tUgth | (L) I Rvi |
| (M) ivBb | (N) wSj vg |
2. tRvqi fWvi cFvte b`xtZ LvZi Ae`v tKgb nq?

| | |
|-------------|--------------------|
| (K) fi vU | (L) wewj b nq |
| (M) Mfxi nq | (N) Acwi ewZØ _vtK |
3. tRvqi fWvi dtj b`xtZ jeYv³ cmb cØek Kiti tKvbWj Dci gvivK cFve cto?

| | |
|-----------------------|----------------------|
| (K) tbŠ-Pj vPtj i Dci | (L) wkí Kvi Lvvi Dci |
| (M) ebfvgi Dci | (N) Kul. KvRi Dci |

DÈi : 1| K 2| M 3| N

msv¶B cØe

1. gE" I tMSY tRvqi wK?
2. tRvqti i Rb" cv_xi I Ptx` i cFve Avj v`vfvte wj Lg|

iPbvj-K cØe

1. tRvqi-fWvi msAv w`b|
2. tRvqi-fWvi dj vdj eYØv Kib|

cW 3.14
mgÿtmîZ

Dfík

GB cW tkfI AvciB

- 1 mgÿtmîZi msÁv ej tZ cvi teB,
- 1 mgÿtmîZi KviY,tjv ej tZ cvi teB,
- 1 mgÿtmîZi djvdj eYv Ki tZ cvi teB|

3.14.1 : mgÿtmîZi msÁv

Avqf`i GB cW_exi wZb PZzřk cWb| cW_extZ itqfQ AfbK mVMi gnmvMi | wKšZ GB mgÿtmîZi cWb KLbl GK`v`b w`i _v`fK bv| Zv me`v PjvPj Ki tQ| evqÿ MvZi g`Zv mgÿtmîZi cWb| GK`v`b n`Z Ab`v`b c`v`nZ n`Q| mgÿtmîZi c`fve bvbv`fite f`L`Z cvlqv hvq| w`f`b`emgÿ I gnv`k mg`ni DcKtj w`f`b`eD` I kxZj tmîZi c`fve j`f` Kiv hvq| GB mKj mgÿtmîZ,tjv ch`e`f`Y Kti gvbÿ bvbv`fite mgÿtmîZi e`envi Ki tQ| f`fki Rj evqyl ewv`f`R`i Dci mgÿtmîZi c`fve AZ`waK |

msÁv : mgÿtmîZi cWb me`vB PjvPj Ki tQ| evqÿ MvZi g`Zv mgÿtmîZi cWb| mgÿtmîZi GK`v`b n`Z Ab`v`b w`b`q`g`Z`f`ite c`v`nZ n`Q| mg`f`i cWb| GB w`b`q`g`Z` c`v`n`f`K mgÿtmîZ etj |

3.14.2 : mgÿtmîZi KviY

w`f`b`e`f`ite mgÿtmîZi Dcwi f`v`f`M Rjiviki mgZvi e`w`Z`p`g` N`U| w`b`Z`v`š`B `f`v`w`e`K w`b`q`g` Rjiviki Dcwi f`v`f`M tmB mgZv w`e`v`f`bi Rb` Rjiviki w`K`Q`w` Ask mgÿtmîZi GK`v`b n`Z Ab`v`b`i w`f`K c`v`nZ nq| th mKj KviY mgÿtmîZi D`m`e` nq, w`b`f`e`Z`v`f`i m`u`f`K`msu`f`B Avtj vPbv Kiv nj |

1. **evqyc`v`n** : w`e`f`k`l`Á`M`f`Yi g`Z` evqyc`v`nB mgÿtmîZi c`v`b KviY| cW_ex AveZ`f`bi dtj f`c`f`o` KZK,tjv w`b`q`Z evqyc`v`ni m`w`o` nq| GB w`b`q`Z evqyc`v`n,tjv tKv`f`bv bvbv`f`ite w`b`v`š` c`f`_ c`v`nZ nq| mgÿtmîZi Dci w`f`q` evqyc`v`nZ neri mgq GB evqytjvi Nl`f`Y mVM`f`i Dc`f`i `f`i Rjivik GK`v`b n`Z Ab`v`b`i w`f`K c`v`nZ nq| c`v`b c`v`b mgÿtmîZ,tjv`f`K f`c`f`o`i c`v`b c`v`b evqyc`v`n,tjvi c`_ AbvriY Ki tZ f`Lv hvq| Avqbevqyc`v`nZ GjuKvq mgÿtmîZi cW`g` n`Z ce`f`f`K c`v`nZ nq| fviZ gnmvM`f`i FZzcwi eZ`f`bi m`f`_ m`f`_ hLb tgšm`g` evqyc`v`ni MvZ cwi eZ`f` nq, ZLb Z`v`q mgÿtmîZi MvZ cwi eZ`f` Kti evqÿ MvZc_ AbvriY Kti | tmRb` evqyc`v`ni gvbv`f`f`i m`v`nZ mgÿtmîZi gvbv`f`f`i Ace`g`j f`Lv hvq|
2. **D`v`Zvi ZviZg`** : mgÿtmîZi w`f`b`e`A`f`k D`E`v`f`ci ZviZg` mgÿtmîZi Ab`Zg` KviY| w`b`i`f`x`q` A`Á`f`j m`h`f`i`k`f` tmv`R`v`f`m`v`R Ges tgiyc`f`k Zih`f`v`ite c`f`o`| dtj

tgiyc`k Atcqv ubi qixq AA`j mgj`i cmb AwaK DEvtc DEB ntq AvqZtb
ewxcuB I nij Kv nq Ges Zvi NbZ; Ktg hvq| wKstztgiyc`k tk mstKvP`bi dtj
cmb ivnk fvix nq| ubi qixq AA`ji D` I nij Kv cmbivnk mgj` cto DPyntq
tf`m I tV Ges kxZj tgiyc`k ki w`tk D` c`p c`evn ev ewnttmZ (Hot Surface
Current) ifc mgj`i Dcwi fVM w`tq c`evnZ nq| ZLb cmbi mgZv i qivt`
ubi qixq AA`ji GB i`b`-vb cijY Kivi Rb` tgiyAA`ji kxZj I fvix cmb
kxZj AStc`evn (Cold Under Current) ifc ubi qixq AA`ji w`tk c`evnZ nq|
GtK cmbi ucwi Pj b' etj |

D` mgj`tmZ kxZj AA`ji w`tk c`evnZ nevi mgq Zvi cmbivnk mgk AwaK
kxZj ntZ `vtK| tm Rb` Zv kxZj cmbi minZ axti axti wgtk fvix nq Ges Wte
hvq| cqvst`i kxZj tmZ ubi qixq c`k ki w`tk c`evnZ nevi mgq Zvi cmbivnk
mgk D` I nij Kv nq| tm Rb` D` gU`j tc`vvi ci tm `vtbi tmZi minZ
wgtk c`p c`evtn cwi YZ nq| GRb` ubi qixq c`k tk Dci ntZ wP Ges tgiyAA`j
wP ntZ Dctii w`tk cmb c`evnZ nq| dtj GB `v`-vtb Dci-wP (Up and
down) c`evn mjo nq| GB c`evntK cwi Pj b tmZ (Convection Current) bvtg
AvfvinZ Kiv nq|

3. **er`uxfetbi Zvi Zg`** : D` gU`ji mgj`i cmb AwaK DEvc jvf Kti c`ij
cwi gvtY evt`u cwi YZ nq| wKstzbnwZkxZv` I kxZj AA`ji cmb tmifc DEvc
civq bv etj AtcqvKZ.Kg er`uxfZ nq| DEvtci cv`K`i Dci er`uxfetbi
Zvi Zg` wbfP Kti| mgj`i tKv`bv Astk D`Zvi Rb` er`uxfeb teuk ntj
Rjivki mgZv i qiv Kivi Rb` Pwi w`K ntZ kxZj tmZ tmw`K c`evnZ nq|
GBifc er`uxfetbi Zvi Zg`i Rb` mgj` tmZi DrcwE nq| ubi qixq I mvstq
AA`j th mg`imvMi c`q Pvi w`tk `j v`v tev`Z Ges c`ij x v`v gnvmmi ev
Aci tKv`bv mvm`ii minZ mshy` er`uxfetbi Zvi Zg` ekZ mnt`RB H mKj
mvm`ii ci `uti i gta` tmZ Drcb`nq| fga`mvm`ii th cwi givY cmb er`uxfZ nq
b`x ev ewp cmb tm Afive ci-Y Ki tZ cvti bv| tmRb` wRe`vvi c`ij x w`tq GKwU
c`p c`evn AvUj wUK gnvmmi ntZ fga`mvm`ii w`tk AM`hi nq| ewieK mvm`ii
er`uxfeb`nZzcmb nwm, b`x AvmbZ cmb Atcqv Kg etj Zv ntZ c`p c`evn DEi
mvm`ii Ges mvm`ii ntZ AStc`evn ewieK mvm`ii Avtm|

4. **jeYv`Zvi Zvi Zg`** : AwaK jeYv`³ cmb, D` I Kg jeYv`³ cmb Atcqv Nb I
fvix etj Zvi Pvc teuk| GRb` AwaK jeYv`³ cmb wbt`Pi w`tk tbtg hvq Ges
jNzi I AtcqvKZ.Kg jeYv`³ cmb Dctii w`tk D`V Avtm| Gi`c DaY`tmZ
Ges wbt`tmZi mjo nq| er`uxfeb ekZ tKv`bv mvm`ii cmb Ktg tmZ Zvi
jeYv`³Zv ewx` civq| ZvtZ AwaK jeYv`³ mgj` ntZ Aí jeYv`³ mgj`i w`tk
AStc`evn mjo nq Ges Aí jeYv`³ etj AvUj wUK gnvmmi I K`mvm`ii ntZ Kg
jeYv`³ cmb c`p c`evni`fc fga`mvm`ii w`tk c`evnZ nq|

5. **f-fvM Mi Ae`vb** : mgÿtmZ cëvnZ nevi mgq Zvi mššj tKvtrv`j fivM cotj tmZi MvZ cwi euzZ nq| ubi qixq c`tk tKvtrv`j fivM bv`vKtj ubi qixq tmZ eivei cuog w`tk Pwv Z nZv| wKšzGB tmZ AvUj wUK gnvMvMi eivRtj i ce© DcKtj, ckvšl gnvMvMi cte© fvi Zixq šxcšx Ges fvi Z gnvMvMi AvvdKvi`wqY cte©gv`vM`vi šxtc evav tctq`š ev wZb fivM nef³ nq DEi I`wqY w`tk tetK cëvnZ nq|
6. **cw_exi AvvYK MvZ** : AvvYK MvZi dtj mgÿ`i cvnb cuog nZ ce`tk cëvnZ nq mgÿ`i tmZi mšš Kti| tdti`j i mÿ Avbvxq GB tmZ DEi tMj vta©Wvb w`tk Ges`wqY tMj vta©evgw`tk tetK Ptj |
7. **Mfxi Zv** : Mfxi Zv AvvYti DòZvi`elg`nq| Aí Mfxi`v`bi cvnb mnR DEB nq Dcti Dv Avtm Ges kvZj cvnb w`tp tbtg hvq| GBi`fc mgÿ`i Davvvgx I`v`vvgx tmZ mgÿ`i w`bqvgZ cëvni mšš nq|

3.14.3 : mgÿtmZi w`K

cw_exi wvfbwAstki mivMi gnvMvMi cvnb mgZv i`qvi Rb` Ges w`bqZ evqycëvni dtj th mgÿ`i tmZi D`me nq Zv cëvbZ-

1. evqycëvni w`K AvvYi Y Kti| DògU`j i Avqb evqÿ w`K AvvYti mgÿ`i tmZ-DEi-ce©er`wqY-cuog ev DEi-cuog w`tk cëvnZ nq|
2. cw_ex AveZšbi dtj mgÿ`i tmZ evqycëvni b`vq DEi tMj vta©Wvb w`tk Ges`wqY tMj vta©evgw`tk tetK cëvnZ nq|
3. Dò tmZ mgÿ`i Dcwi fivM w`tq còcëvni`fc Ges kvZj tmZ Dcwi fivMi cvnbivki wKQybPy`tq Aštcëvni`fc cëvnZ nq|
4. cw_gta` evav tctj mgÿ`i tmZ w`K cwi eZš Kti|
5. Mfxi mgÿ`i tmZi teM wKQy`š|

3.14.4 : evvR`i Dci mgÿtmZi cëve

1. wnggU`j Aev`Z ev bviZkvZvò AĀtj i kvZj Zi Astk Aev`Z mgÿ`i cvnb kvZkvj Rtg hvq| cw_exi AtbK t`tk eQtii tenki fivM mgq mgÿ`i cvnb Rtg`v`K| wKšzmgÿ`i Hifc Astk Dò tmZ cëvnZ nq Dò tmZi cëvte Z`vq kvZkvj I eid RgtZ cvti bv| Dò DEi AvUj wUK tmZi cëvte BDv`v`ci DEi cuogvštk bil`tqi DEti I miv ermi RvuvR Pj vPj Kitz cvti| c`qvšti Zvi`wqY evvèK mivMi cvnb Rtg hvq| Avevi bviZkvZvò AĀtj i DòZg Astki mgÿ`i kvZj tmZ cëvnZ nq H kvZj tmZi cëvte tm`v`bi cvnbivk Rtg thZ cvti| Dò Rvcvb tmZi cëvte kvbWvi cuog DcKš I fivKšvi eidgš`v`K| wKšzkvZj j`vevvi tmZi cëvte kvbWvi ce©DcKtj Ges kvZj tewi s tmZi cëvte cš³b tmv`v`tqZ BDv`v`bi ce©DcKj eidv`Qbanq|

mvisk

cW 3.15

AvUj wUK gnumMiq tmZ

Dfík

GB cW tkfI Avciob

- 1 AvUj wUK gnumMti cwi wPwZ ej tZ cvi teb,
- 1 AvUj wUK gnumMiq cäv cäv tmZ , tj vi bvg Dfj L Ki tZ cvi teb,
- 1 AvUj wUK gnumMiq tmZ , tj vi eYÖv w` tZ cvi teb,
- 1 wPÍ GfK AvUj wUK gnumMiq tmZ , tj v t` Lv tZ cvi teb |

3.15.1 : AvUj wUK gnumMti i cwi wPwZ

Ae`wb : ceDcKfj BDfivc I AvudKv Ges cwoDg DcKfj DEi I `wY Avfgwi Kvq Aew`Z | wbi wYfi Lv AvUj wUK gnumMik DEi I `wY Astk wef³ Kti tQ |

AvqZb : AvUj wUK gnumMti i AvqZb cöq 8 tKwU 15 j wY eMwKfj wguvi | AvqZtb GuU cw_exi wDZxq epEg gnumMi |

Mfxi Zv : AvUj wUK gnumMti i Mo Mfxi Zv 12,000 dZ |

DcKj : fMwDfQ DcKfj e`i tewk, Öxc AtcYvKZ.Kg |

ewYwR`K , iZj : cw_ex tZ th cUwU gnumMi itqtQ Zb#a` AvUj wUK gnumMti i ewYwR`K , iZj mePfq tewk | miveQiB GB gnumMti i Dci w` tQ mgywK RvrvR Pj vPj Kti |

3.15.2 : AvUj wUK gnumMti i cäv cäv tmZ :

AvUj wUK gnumMti i cäv cäv tmZ , tj v nj :

- 1. te½tqj v tmZ
- 2. DEi I `wY wbi wYxq tmZ
- 3. ewRj tmZ
- 4. DcmMiq tmZ
- 5. j veWvi tmZ
- 6. Ktgj tmZ
- 7. dKj vÜ tmZ
- 8. cwoDg MÖYj vÜ tmZ
- 9. K`vbi x tmZ
- 10. wWY tmZ

3.15.3 : AvUj wUK gnvmMiq tmZ mgfai eYŶv

câvb câvb tmZ tji vi eYŶv t`l qv nj :

1. te½tj v tmZ : `wY gnvmMi ntZ kxZj Kzgi ytmZ cêvnZ nq| GB tmZ cwiðgv evqy cfiŷte ctefetK hvq| cti AvudKvi `wY cwiðg DcKtj erav tctq DEi te½tj v tmZ bvtg AMhi ntq DEi AvUj wUK gnvmMt i cœk Kti |
2. DEi I `wY ubi Ŷlxq tmZ : DEi ce©I `wY ce©Avqb evqy cfiŷte Ges cw_exi AveZfbi Rb` AvUj wUK gnvmMt i ubi Ŷlxq AÂtj `wY Dò tmZ Zi DrcuÈ nq| GB tmZ ŸqtK DEi I `wY ubi Ŷlxq tmZ etj |
3. eŷRj tmZ : te½tj v tmZ `wY ce©Avqb evqy cfiŷte cwiðtq tetK `wY ubi Ŷlxq tmZ Zi munZ wgtk hvq| GB wguj Z tmZ cwiðtq wKQyŷ- AMhi ntq `wY Avtgui Kvi tm»Ui K Ašlxtc cœZnZ ntq DEi I `wY kvLv wef³ nq| `wY kvLv eŷRj tmZ (Dò tmZ) bvtg eŷRj i ce©DcKj- eivei AMhi nq Ges cŷivq Kzgi ytmZ Zi munZ wgtk hvq|
4. DcmMiq tmZ : Dctiv³ `wY ubi Ŷlxq tmZ Zi DEi kvLv `wY Avtgui Kvq- DEi-ce©DcKj at i AMhi nq| cti GuU K`mi weqv b mlMt i cœk Kti DEi ubi Ŷlxq tmZ Zi `wY kvLv munZ wguj Z nq| GB wguj Z tmZ `wY tgu tKv DcmMt i cœk Kti | tgu tKv DcmMt i DrcuÈ etj GB tmZ Zi bivg DcmMiq tmZ | GuU msKxYctdwi Wv cŷv xi ga` w tq `ŷ tetM cêvnZ ntq DEi ubi Ŷlxq tmZ Zi DEi kvLv munZ wguj Z nq| GB `vtb Gi MuZ NÈvq cœq 8 wKtj wguvi | Rjt i DòZv cœq 27.2° tm.tMŸ Ges eYŶv bix | GB wguj Z tmZ DEi cœK t_ tK cêvnZ ntq ga` AvUj wUtk wZbuU kvLv wef³ nq| h_v-
 1. cœg I câvb kvLv Dò tmZ iŷc weUk Ÿxcœ I DEi cwiðg BDtiŷci cwiðg cvkœ`w tq bil tqi DEti tkl nq| GtK DEi AvUj wUK tmZ etj | Bnv BDtiŷci kxZj DEi-cwiðg DcKj tK Dò ivtL| DEi gnvmMi `w kxZj Mŷy `vtŸi cwiðg I ce©cvkœ`w tq cêvnZ ntq j`veŷvi Dcœxtci wKŸeZœntq DcgnvmMiq tmZ Zi Dò I Mvp bix Rjt i mxgti Lv my`i fiŷte t`Lv hvq|
 2. wZxq `wY kvLv cZŷtj i DcKtj cœZnZ ntq cœtq `wY I cti cwiðg tetK DEi ubi Ŷlxq tmZ Zi mt½ wguj Z nq| GtK K`vbi x tmZ etj | GuU kxZj tmZ | GB Rj evZP Af`št i tKvbtv tmZ cêvnZ nq bv| GB tmZ wenxb Rjt fvmgub AvMvQv I `kej mŷÂZ nq Ges wKQyDwœ Rbŷq| ZvB GuU `kej mlMi etj cwi wPZ |
 3. ZZxq kvLv Mŷj `vtŸi cwiðg cvkœ`w tq DEi w tK cêvnZ nq| DEi I `wY ubi Ŷlxq tmZ Zi ga`eZœ mlMt i cwiðg ntZ ceŷŷgx GKU tmZ Zi DrcuÈ nq| GuU ubi Ŷlxq weci xZtmZ etj cwi wPZ |
5. jveŷvi tmZ : GB mxgti Lv tK ingcœxi etj | kxZj Rj Dò Rj AtcŶ fvi x etj GB tmZ Av I GKUz`wY AMhi ntq DcmMiq tmZ Zi w tœwze hvq| j`veŷvi tmZ Zi mt½ fvmgub ingœkj` Dò DcmMiq tmZ Zi ms`útKœtm Zvi eid Mtj hvq| ingœkj` evnZ K`ŷ I wkv v gŷœ tctq mgy² Ztj mŷÂZ ntq gMe Qov mŷœ Kti | Avevi DcmMiq tmZ Zi Dci w tq cêvnZ evqyDò I Av`œq

Ges j'velWvi tm#Zi Dci w`tq c#vZ evqykxZj I i® nq| GB `B evqy msugk#Y GB AA#j So nq Ges Nb Kqvkvi DrcuE nq| wng%kj` ,#jv RvnrR Pj vPtj e'vNvZ m#o Kti |

- 6. **Ktgiym#Z** : c#j cuo#v evqy#v v ZvnoZ n#q G#UvK#Ukv gnv#`tki DEi w`tq th kxZj tm#Z cuo# t`#K c#e#bqZ c#vZ n#`Q Zv Ktgiym#Z b#tg cwi#PZ| `w#Y Av#gwi Kvi `w#Y w`tq G tm#Z AvUj v#UK gnv#M#i c#ek Kti |
- 7. **dKj`vU tm#Z** : AvUj v#UK gnv#M#i c#ek Kivi ci Ktgiym#Zi kvLv DEi w`tq tetK dKj`vU 0xccc# I Av#R#Uvbi ga` w`tq DcKj eivei DEi w`tq c#vZ n#q#Q| GB tm#ZuU dKj`vU tm#Z b#tg cwi#PZ| GuU GKuU kxZj tm#Z|
- 8. **cuo# M#Yj`vU tm#Z** : DcmvMixq tm#Zi w#Zxq kvLvU DEi w`tq tetK AvBmj`vU I M#Yj`vU i `w#Y cvk w`tq AM#ni n#q M#Yj`vU I e'vndb 0xccc#Ai tWwfm c#vjxi ga` w`tq D# cuo# M#Yj`vU tm#Z b#tg DEi w`tq c#vZ n#q#Q|
- 9. **K'vbvi x tm#Z** : DcmvMixq tm#Zi ZZxq kvLvU 0K'vbvi x tm#Z' b#tg `w#Y w`tq tetK cz#vj I cuo# AvndKvi cuo# cvk w`tq c#vZ n#q#Q| G tm#Z c#i `B kvLvq w#f³ n#q#Q| c#g kvLv Avqb evqy c#v#e `w#Y-cuo# w`tq tetK wbi #jxq tm#Zi m#% w#vj Z n#q#Q|
- 10. **w#b tm#Z** : K'vbvi x tm#Zi w#Zxq kvLv cuo# AvndKvi w#b DcK#j i cvk w`tq w#b tm#Z b#tg `w#Y wbi #ji Lv ch#i c#vZ n#q#Q| tmLv#b G tm#Z wbi #jxq w#ci xZ tm#Zi m#% w#tk w#b DcmvM#i c#ek Kti#Q| GuU GKuU kxZj tm#Z| DEi AvUj v#UK gnv#M#i c#i w`tq w#f#b#tm#Z c#v#ni d#j gvSvgnS `v#b tm#ZevnZ Wvj cvj v, Nvm, `kevj c#v#Z. c#j cwi gv#Y m#AZ n#q th tm#Z w#xb m#M#i m#o n#q#Q Zv 0`kevj m#Mi' b#tg cwi#PZ|

mvisk

AvqZ#bi w`K w`tq AvUj v#UcK c#lexi g#a` w#Zxq ep#Eg gnv#m#i | AvUj v#UK gnv#M#i ev#v#R`K ,i#j me#P#q te#k| GB gnv#M#i D#j L#thvM` 10uU tm#Z i#q#Q| tm#Z ,#jvi g#a` te#%#jv tm#Z, DEi I `w#Y wbi #jxq tm#Z, e#Rj tm#Z, DcmvMixq tm#Z j'velWvi tm#ZB c#v#b| DEi AvUj v#UK gnv#M#i c#i w`tq w#f#b# tm#Z c#v#ni d#j gvSvgnS `v#b tm#Zw#xb n#q c#o| GB `v#b m#M#i tkI fv#M AveR#v R#b#Av#i KuU m#M#i m#o n#q#Q GB m#Mi uU `kevj m#Mi b#tg cwi#PZ|

