cfiff9,@)&%

lzIfs k];fut ljsf; tflnd kf7\oj|md

g]kfn ;/sf/

lzIff, lj1fg tyf k|ljlw dGqfno

z}lIfs hgzlQm ljsf; s]G›

;fgf]l7dL, eQmk'/

**ljifo;"rL**

|  |  |  |
| --- | --- | --- |
| qm= ;+=  | ljifoj:t' | k]h gDa/ |
| ! | kl/ro | ! |
| @ | tflndsf] nIo tyf p2]Zo | ! |
| # | tflndsf] ;Ifdtf | @ |
| $ | tflndsf] ;+/rgf | # |
| % | tflndsf] ljifoj:t' | $ |
| ^ | tflnd sfof{Gjog sfo{ljlw | ^ |
| & | tflnd d"Nofª\sg  | & |
| \* | kl/of]hgf sfo{ | \* |

!= kl/ro

lzIfssf] Ifdtf ljsf;sf ljleGg sfo{j|mdx¿dWo] tflnd k|d'v dfWod xf] . ljBfyL{x¿sf] l;sfO pknlAw j[l4sf nflu ljBfno txdf sfo{/t lzIfsx¿sf] lg/Gt/ ¿kdf k];fut ljsf;sf sfo{j|mdx¿ ;~rfng ug'{kb{5 . o; s'/fnfO{ Wofg lbO{ ljBfno txdf sfo{/t lzIfsx¿sf nflu klg lzIfssf] k];fut ljsf;sf sfo{j|mdx¿ ;~rfng ug]{ Joj:yf ul/Psf] 5 . lzIfssf] k];fut tflndcGtu{t k|To]s df]8\o'n !% lbgsf] x'g] u/L b'O{ df]8\o'nsf] Ps dlxgf lzIfssf] k];fut tflnd ;~rfng ug]{ Joj:yf ul/Psf] 5 . o;} j|mddf cfwf/e"t txdf sfo{/t lzIfsx¿sf nflu pgLx¿sf] cfjZstfsf cfwf/df df]8\o'n ljsf; u/L tflnd ;~rfng ug]{ j|mddf lj1fg tyf jftfj/0f ljifosf] tflnd df]8\o'n ljsf; ug{ nfluPsf] xf] . of] tflnd df]8\o'n cfwf/e"t txsf lzIfsx¿sf] cfjZostfdf cfwfl/t ljifoj:t'x¿nfO{ ;d]6]/ !) lbgsf] km];6'km]; tyf kfFr lbgsf] ljBfnodf cfwfl/t :jfWofo v08;lxtsf] tflndsf nflu tof/ ul/Psf] xf] . o; tflnddf ef}lts lj1fg, /;fog lj1fg, hLjlj1fg, jftfj/0f lj1fg tyf e" tyf cGtl/If lj1fg;Fu ;DalGwt ljifoj:t'sf] l;sfO ;xhLs/0f ;DaGwL ;dfj]z ul/Psf] 5 . o; tflnddf xfl;n u/]sf 1fg tyf l;k lzIfsx¿af6 sIffsf]7fdf k|of]udf NofO{ ljBfyL{x¿sf] l;sfO pknlAw a9f]Q/L ug{ ;xof]u k'Ug] 5 .

**@= tflndsf] nIo tyf p2]Zo**

lzIfsx¿sf] k|fl1s tyf k];fut ljsf;nfO{ ;dofg's"n, k|ljlwd}qL / j}1flgs agfO{ lGf/Gt/ l;Sg] / l;sfpg] cj;/ k|bfg ug'{ o; tflndsf] d'Vo nIo xf] . of] nIo k"/f ug{ ;xefuL lzIfsx¿n] lgDglnlvt p2]Zo k"/f ug]{ ck]Iff lnOPsf] 5 M

-s\_ kf7\oj|md / kf7\o;fdu|Lx¿sf] ;d'lrt¿kdf k|of]u u/L lj1fg l;sfOnfO{ ;xh agfpg pko'St l;sfO of]hgf, k|ljlw / ;fdu|Lsf] k|of]u ug{

-v\_ j}1flgs ;f]r / clej[lTtsf] ljsf; ug{ lj1fg k|lj|mofut l;kx¿sf] ;d'lrt k|of]u ug{

-u\_ lzIfssf] k];fut ljsf; tyf ljBfyL{sf] l;sfOnfO{ Jofjxfl/s agfpg sfo{d"ns cg';Gwfg, kl/of]hgf sfo{sf] ;d'lrt k|of]u ug{

**#= tflndsf ;Ifdtf**

tflndsf] cGTodf ;xefuL lzIfsx¿ lgDglnlvt ;Ifdtfx¿ xfl;n ug{ ;Ifd x'g] 5g\ M

-s\_ lj1fg tyf jftfj/0f ljifosf] kf7\oj|md, kf7\ok':ts, lzIfs lgb]{lzsf / ;Gbe{ ;fdu|Llarsf] cGt/;DaGw klxrfg, ljZn]if0f / k|of]u

-v\_ lj1fg l;sfOnfO{ k|efjsf/L agfpg l;sfO ;xhLs/0f of]hgf tyf ;fdu|L lgdf{0f / k|of]u

-u\_ lj1fg k|lj|mofut l;kx¿ (Science Process skills) sf] ljsf; / k|of]u

-3\_ /}yfg] lj1fg / cfw'lgs lj1fglarsf] cGt/;DaGw af]w / l;sfOdf k|of]u

-ª\_ lj1fg l;sfOdf ;"rgf tyf ;~rf/ k|ljlwsf] k|of]u ug]{ tl/sfx¿sf] klxrfg / k|of]u

-r\_ kl/of]hgfdf cfwfl/t l;sfOsf nflu l8hfOg / l;sfOdf k|of]u

-5\_ lj1fg tyf jftfj/0f l;sfOsf nflu pko'St ljlw, tl/sf / /0fgLltx¿sf] klxrfg / Jofjxfl/s k|of]u

-h\_ ljBfyL{ d"Nofª\sgsf Jofjxfl/s ;fwgx¿sf] klxrfg tyf ljlzi6Ls/0f tflnsfcg';f/ k|Zgkq / pTt/s'l~hsf lgdf{0f / k[i7kf]if0f ;~rfng

**$= tflndsf] ;+/rgf**

s= of] tflnd !% lbg cjlwsf] x'g] 5 . o;sf] klxnf] v08 !) lbgsf] tflnd sfo{zfnf 9fFrfdf cfdg];fdg] df]8af6 lhNnf ;b/d'sfddf cjl:yt z}lIfs tflnd s]G› cyjf cu'jf ;|f]t s]G›df ;~rfng x'g] 5 . o;sf] bf];|f] v08 kfFr lbg cjlwsf] :jfWofo cEof; 9fFrfdf cfwfl/t x'g] 5 .

v= bf];|f] v08sf] kfFr lbg] :jfWofo cEof; 9fFrfcGtu{t k|lzIffyL{n] cfkm" sfo{/t ljBfnodf cfwfl/t eO{ rf/ cf]6f kl/of]hgf sfo{ $% lbgleq ;DkGg ul/;Sg'kg]{ 5 . kl/of]hgf sfo{sf] ;a} k|ltj]bg klxnf] v08sf] tflnd ;DkGg ePsf] %@ lbgleq ;DalGwt z}lIfs tflnd s]G› jf cu'jf ;|f]t s]G›df clgjfo{ ¿kdf k]; ug{'kg]{ 5 . o;df d"ntM !) lbg] tflnd sfo{zfnf v08df l;sfOPsf ;}4flGts 1fg tyf l;ksf] Jofjxfl/s k|of]u Pjd\ k|lzIffyL{sf] l;h{gfTds / k|jw{gfTds Ifdtf k|bz{g ug{ pko'St kl/of]hgf sfo{ tf]lsg] 5 .

**$= tflndsf ljifoj:t'**

|  |  |  |  |
| --- | --- | --- | --- |
| j|m=;= | d'Vo ljifoj:t' | ljifo j:t'sf]] lj:t[tLs/0f | ;];g ;ª\Vof |
| != | kf7\oj|md, kf7\ok':ts, lzIfslgb]{lzsf / ;Gbe{ ;fdu|L | * lj1fg ljifosf kf7\oj|mdsf cª\ux¿sf] klxrfg
* kf7\oj|md, kf7\ok':ts / lzIfslgb]{lzsfsf] cGt/;DaGw ljZn]if0f -cfa4tf tyf cGt/\_
* ;Gbe{ ;fdu|Lsf] dxTTj, ;ª\sng / k|of]u
 | @ |
| @= | l;sfO ;xhLs/0f of]hgf | * kl/dflh{t An'D; 6\ofS;f]gf]dLdf cfwfl/t p2]Zo lgdf{0f
* kf7\oj|md sfof{Gjog of]hgf lgdf{0f / k|of]u - jflif{s of]hgf, lzIf0f ;'wf/ of]hgf / b}lgs kf7of]hgf\_
 | # |
| #= | l;sfO ;xhLs/0f ;fdu|L lgdf{0f / k|of]u | * lj1fg ljifol;sfO ;xhLs/0fsf nflu :yfgLo :t/df pknAw x'g] jf lgdf{0f ug{ ;lsg] z}Ifl0fs ;fdu|Lx¿ -klxrfg, ;ª\sng, lgdf{0f, k|of]u / ;+/If0f\_
* kl/j]zcg's"n j}slNks ;fdu|L (Improvised) sf] k|of]u
* lj1fg k|of]uzfnfdf cfjZos kg]{ cGo ;fdu|Lx¿ -klxrfg, pknAwtf, k|of]u / ;'/Iff\_
 | # |
| $= | lj1fgsf k|lj|mofut l;kx¿ -Science process skills\_ | cfwf/e"t l;kx¿* cjnf]sg -Observing \_
* dfkg -Measuring\_
* ;~rf/-Communicating\_
* juL{s/0f ug'{-Classifying\_
* cg'dfgug'{ (Predicting)
* lgrf]8 lgsfNg'-Inferring\_

PsLs[t k|lj|mofut l;kx¿* df]8]n agfpg'(Makingmodel)
* r/0fa4 ¿kn] kl/eflift ug'{ (Defining operationally)
* cGj]if0f ug'{ (Investigating)
* k/LIf0f ug'{{ (Experimenting)
 | #  |
| %= | k|fljlws tyf j}1flgs lrGtg | * j}1flgs ;f]r / clej[lTt -Scientific attitude)
* j}1flgs tyf k|fljlws ;fIf/tf -Scientific and technological literacy\_
* afnaflnsfx¿df j}1flgs l;k / lrGtgsf] ljsf; u/fpg ;xof]uL s]xL ls|ofsnfkx¿
 | ! |
| ^= | /}yfg] lj1fg (Ethno science) | * /}yfg] lj1fgsf] kl/ro, klxrfg / dxTTj
* /}yfg] lj1fg / cfw'lgs lj1fgsf] cGt/;DaGw
* /}yfg] lj1fgsf] sIff lzIf0fdf k|of]u
 | @ |
| &= | lj1fg lzIf0fdf ;"rgf k|ljlwsf] k|of]u | * ;"rgf tyf ;~rf/ k|ljlwsf] kl/ro / dxTTj
* lj1fg lzIf0fdf ;"rgf tyf ;~rf/ k|ljlwsf] k|of]u ug]{ tl/sfx¿
* cgnfOgdfkm{t k|fKt ug{ ;lsg] l8lh6n ;fdu|L ;ª\sng / k|of]u
* lzIf0f l;sfOdf df]afOn PlKns];gsf] k|of]u
 | # |
| \*= | kl/of]hgfdf cfwfl/t l;sfO | * kl/of]hgf sfo{sf] kl/ro, cf}lrTo / dxTTj
* kl/of]hgf sfo{sf] r/0f÷k|lj|mof
* kl/of]hgf sfo{sf] l8hfOg÷ gd'gf
* kl/of]hgf sfo{sf] k|:t'tLs/0f
 | #  |
| (= | lj1fg l;sfO ;xhLs/0fsf pko'St ljlw tyf tl/sfx¿ | * + lj1fg l;sfO ;xhLs/0fsf nflu ljleGg ljlwsf] 5gf]6 / k|of]u -5nkmn, k|bz{g, k|Zgf]Q/, :ynut cWoog, k|of]ufTdssfo{, cGj]if0f, vf]h, ;d:of ;dfwfgnufot\_
* lj1fg l;sfO ;xhLs/0fsf tl/sf tyf /0fgLltx¿

(Predict-Observe-Explain, Hot Chair, Think Ink Pair Share, Brainstorming, Jigsaw, Graffiti, Satellite Learning Group and so on) sf] k|of]u | % |
| !)= | ljBfyL{ d"Nofª\sg | * ljBfyL{ d"Nofª\sgsf] kl/ro, cf}lrTo / cfjZostf
* lgdf{0ffTds / lg0f{ofTds d"Nofª\sg
* lg/Gt/ ljBfyL{ d"Nofª\sgsf] cf}lrTo, dxTTj, k|lj|mof / k|of]u
* pkrf/fTds lzIf0f
* ljlzli6s/0f tflnsf, k|Zgkq / pQ/ s'l~hsflgdf{0f, k|of]u tyf ;'wf/
 | # |
| !) |  |  |  |

**gf]6M k|To]s ;q ! 306f #) ldg]6sf] x'g] 5 .**

**^= tflnd sfof{Gjog sfo{ljlw**

s= o; tflndsf] nlIft ;d"xsf ;DaGwdf ljutdf b'O{ cf]6f !) lbg] l6lk8L df]8\o'n k"/f u/]sf cyjf tflnd ck|fKt :yfoL lzIfsnfO{ Ps dlxg] tflndsf] k"/s sf];{sf ¿kdf o; tflnddf ;xefuL x'g of]Uo dflgg] 5 .

v= tflndsf] cGTodf lzIfs k];fut ljsf; k|f¿k, @)&@ cg';f/ k/LIff ;~rfng / z}lIfs hgzlQm ljsf; kl/ifb\sf] ldlt @)&$.)%.)^ ut]sf] lg0f{oadf]lhd k|df0fLs/0f ul/g] 5 . tflndsf] cGTodf ;DalGwt z}lIfs tflnd s]G›af6 k|df0fkq k|bfg ul/g] 5 .

u= :jfWofo cEof; v08sf nflu tf]lsPsf] kl/of]hgf sfo{ ;Dkfbg ug]{ j|mddf ;Gbe{ ;fdu|L cWoog, lj1;Fusf] k/fdz{ tyf k|ltj]bg n]vg ug{' d"ntM k|To]s k|lzIffyL{sf] lghL bfloTj x'g] 5 . o; sfo{sf nflu k|lzIffyL{nfO{ cfjZos k/]df Od]n jf kmf]gdfkm{t jf k|ToIf e]6 u/L ;DalGwt k|lzIfsaf6 dfu{bz{g k|fKt ug]{ ;'ljwf pknAw x'g] 5 .

3= tflnd ;xhLs/0f ubf{ b]xfocg';f/sf Go"gtd ljlwut dfkb08 k"/f ug{'kg]{ 5 M

* z}lIfs tflnd s]G›sf lj1 k|lzIfsaf6 tflnd ;];g ;~rfng ul/g] 5 . ljifosf] k|s[ltcg';f/ o; ljifo If]qdf nfdf] cg'ej ePsf JolQm tyf ;DalGwt lgsfo jf ;+:yfsf kbflwsf/L nufotnfO{ k|lzIfs agfpg ;lsg ]5 .
* ;fdflhs cWoog ljifosf ;fGble{s tflnd ;fdu|L k|of]u ub}{ 5nkmn, cGt/lj|mof, cg'ej, 36gf jf dfdnf cWoog, ;d"xsfo{ tyf k|:t'lt, :ynut e|d0fnufotsf ljlwsf] cjnDag ul/g] 5 .
* tflndsf j|mddf tf]lsPsf] tflnd Kofs]h nufotsf ;Gbe{ ;fdu|L k|To]s ;xefuLnfO{ ljt/0f ul/g] 5 .

**&= tflnd d"NofÍg**

-s\_ tflnd ;DkGg u/]kl5 k|lzIffyL{sf] pknlAw d"Nofª\sg ug{ b]xfocg';f/sf d"NofÍg cª\sef/ cg';/0f ug{'kg]{ 5 M

|  |  |  |
| --- | --- | --- |
| qm= ;+= | d"Nofª\sgsf cfwf/ | cª\sef/ |
| ! | lgoldttf, ;xeflutf / ;lqmotf | % |
| @ | l;h{gfTds tyf k|jt{gfTds sfo{ | !) |
| # | lnlvt k/LIff | @% |
| $ | :jfWofo cEof; tyf k|ltj]bg | !) |
|  | hDdf | %) |

k'gZrM cfdg]–;fdg] tyf :jfWofo b'j} cª\ssf] pQL0ff{+s %) k|ltzt x'g] 5 .

**u|]l8ª k4lt**

|  |  |
| --- | --- |
| () k|ltzt / ;f]eGbf dfly cª\s cfPdf\*) k|ltzt / ;f]eGbfdfly cª\s cfPdf ^% k|ltzt / ;f]eGbfdfly cª\s cfPdf%) k|ltzt / ;f]eGbfdfly cª\s cfPdf%) k|ltzteGbf tnsf] cª\s cfPdf | ljlzi6tf;lxt k|yd >]0fLk|yd >]0fLlåtLo >]0fLt[tLo >]0fLcg'QL0f{ jf c;kmn |

r= lnlvt k/LIffsf] k|Zgkq lgdf{0f ubf{ b]xfocg';f/sf] lu|8 cjnDag ug{'kg]{ 5 M

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| qm= ;+= | k|Zgsf] k|sf/ | k|Zg ;ª\Vof | k|ltk|Zg cª\s ef/ | k"0ff{ª\s |
| != | ax'j}slNks | !) | )=% | % |
| @= | ;ª\lIfKt pQ/fTds | % | # | !% |
| #= | ;d:ofd"ns | ! | % | % |
|  | hDdf | !^ |  | @% |

**\*= kl/of]hgf sfo{**

tflnd sfo{zfnf v08 ;DkGg u/]kl5 ;~rfng ul/g] bf];|f] :jfWofo cEof; v08df k|To]s k|lzIffyL{n] b]xfocg';f/sf] ljlzi6Ls/0f dfkb08adf]lhd kl/of]hgf sfo{ ;Dkfbg ug{'kg]{ 5 M

|  |
| --- |
| **kl/of]hgf sfo{ ljlzi6Ls/0f dfkb08**:jfWofo cEof; v08sf nflu hDdf 5 cf]6f sfo{ lgwf{/0f ul/Psf] 5 . h;df kl/of]hgf ! / kl/of]hgf @ clgjfo{ /x]sf / afFsLdWo] b'O{ cf]6f u/L hDdf rf/ cf]6f kl/of]hgf sfo{ ;a} ;xefuLn] ;Dkfbg ug{'kg]{ 5 . k|To]s kl/of]hgfsf] kl/0ffdsf ¿kdf k|To]s k|lzIffyL{n] k|ltj]bg :j¿ksf] cnucnu k|ltj]bg b:tfj]h z}lIfs tflnd s]G›;dIf clgjfo{ ¿kdf k]; ug{'kg]{ 5 M**kl/of]hgf sfo{ – !M kf7of]hgfdf cfwfl/t lzIf0f cEof;**-s\_ km/s km/s !) cf]6f kf7x¿sf] kf7of]hgf tof/L ug]{-v\_ k|To]s kf7of]hgfsf cfwf/df z}lIfs ;fdu|L ljsf; ug]{-u\_ k|wfgfWofksaf6 ;a} kf7of]hgf k|dfl0ft ug]{-3\_ kf7of]hgfsf cfwf/df sfo{tflnsfa4 lzIf0f cEof; ug]{-ª\_ k|To]s kf7 lzIf0fkl5 ljBfyL{sf] k[i7kf]if0f ;ª\sng ug]{-ª\_ kl/dflh{t kf7of]hgf clGtdLs/0f ug]{gf]6M o; sfo{cGtu{t cGo kl/of]hgf sfo{n] g;d]6]sf ljifoj:t' lzIf0fsf nflu dfq kf7of]hgf tof/ ug]{ **kl/of]hgf sfo{ – @M sfo{d"ns cg';Gwfg**sfo{d"ns cg';Gwfg ubf{ ljleGg rj|m jf r/0f ckgfpg ;lsG5 . tLdWo] lzIfsn] cfˆgf] sfo{;Dkfbg ;'wf/sf nflu s'g} Pp6f ljifo If]qdf lgDglnlvt rj|mcg';f/ sfo{d"ns cg';Gwfg u/L ;f]sf] k|ltj]bg tof/ ug'{kg]{ 5 .**kl/of]hgf sfo{ #M lj1fg lzIf0fsf nflu df]8]n lgdf{0f / k|of]u**s= pknAw ;fdu|Lsf] cfwf/df sIff & / \* sf ljBfyL{nfO{ lzIf0f ug{ pkof]uL x'g] ;f]nf/ l;:6d / s[lqd lu|g xfp;sf] df]8]n lgdf{0fv= pSt df]8n lgdf{0fsf ljlw n]vgu= df]8n k|of]u u/L sIff lzIf0f3= sIff lzIf0f cg'ej;d]tsf] cfwf/df k|ltj]bg n]vg**kl/of]hgf sfo{ $ M k|lj|mofut l;k ljsf;**s= kf7sf] 5gf]6 / cf]6f cfwf/e"t k|lj|mofut l;k -5 cf]6f\_ ljsf; x'g] u/L l;sfO ;xhLs/0f lj|mofsnfk lgdf{0fv= pSt lj|mofsnfk ;~rfng ug{ pkof]uL js{l;6 ljsf; / cGo z}Ifl0fs ;fdu|Lsf] ;"rL tof/u= lzIf0f l;sfO lj|mofsnfk ;~rfng3= lzIf0f cg'ej;lxtsf] k|ltj]bg n]vg**kl/of]hgf sfo{ %M /}yfg] lj1fg / cfw'lgs lj1fgsf] cGt;{DaGw vf]hL** s= ef}lts lj1fg, /;fog lj1fg, hLj lj1fg / e" tyf cGtl/If lj1fg;DaGwL kf7 lzIf0f ug{ cfw'lgs ljlwsf Ps Ps cf]6f lj|mofsnfk 5gf]6v= a'Fbf -s\_ df 5gf]6 ul/Psf lj|mofsnfk lzIf0f ug{ pkof]uL x'g] /}yfg] ljlw 5gf]6u= /}yfg] / cfw'lgs b'j} ljlw k|of]u u/L kf7 lzIf0f3= lzIf0f cg'ej;lxtsf] k|ltj]bg n]vg**kl/of]hgf sfo{ ^M lzIf0f l;sfOdf ;"rgf tyf ;~rf/ k|ljlwsf] k|of]u**s= k|fylds txdf cGtl/If lj1fg ;DaGwL Pp6f kf7 5gf]6v= pSt kf7 lzIf0f ug{ OG6/g]6af6 pko'St x'g] b[Zo / >Job[Zo ;fdu|L vf]hL / 8fpgnf]8u= pSt ;fdu|L k|of]u u/L sIff lzIf0f3= lzIf0f cg'ej;lxtsf] k|ltj]bg n]vg |

ΩΩΩ