**Aa¨vq : 11 cwimsL¨vb (Statistics )**

* **MbmsL¨v Kx :** †kÖwYmg~‡ni g‡a¨ msL¨vm~PK Z\_¨ ivwki gvb¸‡jv U¨vwj wPý w`‡q cÖKvk Kiv nq Ges Gi gva¨‡g MbmsL¨v ev NUbmsL¨v wba©vib Kiv nq|‡h †kÖwY‡Z hZ¸‡jv U¨vwj wPý co‡e ZZ n‡e H †kÖwYi MbmsL¨v ev NUbmsL¨v|
* **AwRf †iLv** : †Kvb Dcv‡Ëi †kÖwY weY¨v‡mi ci †kÖwY e¨eav‡bi D”Pmxgv x eivei Ges †kÖwY µg‡hvwRZ MbmsL¨v y eivei ¯’vcb K‡i µg‡hvwRZ MbmsL¨vi †jLwPÎ ev AwRf †iLv cvIqv hvq|
* **MbmsL¨v eûfzR :** Awfw”Qbœ Dcv‡Ëi †kÖwY e¨eav‡bi wecixZ MbmsL¨v wb‡`©kK we›`y

mg~n‡K ch©vqµ‡g †iLvsk Øviv hy³ K‡i †h †jL wPÎ cvIqv hvq ZvB n‡jv MblsL¨v eûfzR|

* **cÖPziK :** †Kvb Dcv‡Ëi †h msL¨v me©vwaK Dcv¯’vwcZ nq †mB msL¨vB Dcv‡Ëi cÖPziK| GKwU Dcv‡Ëi GK ev GKvwaK cÖPziK \_vK‡Z cv‡i| †Kvb Dcv‡Ë hw` †Kvb msL¨vB GKvwaKevi bv \_v‡K Z‡e †m Dcv‡Ëi †Kvb cÖPziK †bB|
* **AvqZ‡jL :** MbmsL¨v wb‡ek‡bi GKwU †jLwPÎ n‡”Q **AvqZ‡jL| AvqZ‡jL A¼‡bi Rb¨ QK KvM‡R x I y Aÿ AvuKv nq| x Aÿ eivei †kªwYe¨wß Ges y Aÿ eivei MbmsL¨v wb‡q AvqZ‡jL AvuKv nq | Avq‡Zi f~wg nq †kÖwY e¨wß Ges D”PZv nq Mbm¨L¨v|**
* **ga¨gv : cÖ`Ë DcvË¸‡jv‡K gv‡bi ( DaŸ©µ‡g ev AaŸµ‡g ) mvRv‡j †h gvb gvb DcvË¸‡jv‡K mgvb `yB fv‡M fvM K‡i Zv‡Z DcvË¸‡jvi ga¨gv e‡j|**

1| be Av`k© gva¨wgK we`¨vj‡qi 25 Rb wkÿv\_©xi MwYZ welq cÖvß b¤^i n‡jv :

34,30,50,40,43,45,65,35,55,47,36,42,55,56,55,31,54,48,49,44,37,57,58,61,44

K) †kÖwYe¨eavb 5 a‡i †kÖwY msL¨v KZ?

L) †kÖwY e¨eavb 5 a‡i MbmsL¨v wb‡ekb mviwY ˆZwi Ki|

M) Mo wbY©q Ki|

2| be Av`k© gva¨wgK we`¨vj‡qi 25 Rb wkÿv\_©xi Kw¤úDUvi welq cÖvß b¤^i n‡jv :

34,30,50,40,43,45,65,35,55,47,36,42,55,56,55,31,54,48,49,44,37,57,58,61,44

K) Dc‡ii DcvËmg~‡ni cÖPziK/ga¨K wbY©q Ki|

L) mviwY †\_‡K mswÿß c×wZ‡Z Mo wbY©q Ki|

M) Dcv‡Ëi AvqZ‡jL AvuK|

3| 8g †kÖwYi 30 Rb wkÿv\_©xi Bs‡iwR welq cÖvß b¤^i n‡jv :

45,42,60,61,58,53,48,52,51,49,73,52,57,71,64,49,56,48,67,63,70,59,54,46,43,56,59,43,68,52

K) †kÖwYe¨eavb 5 a‡i †kÖwY msL¨v KZ?

L) †kÖwY e¨eavb 5 a‡i MbmsL¨v wb‡ekb mviwY ˆZwi Ki|

M) mviwY †\_‡K Mo wbY©q Ki|

4| 25 Rb wkÿv\_©xi evwl©K cixÿvq cÖvß b¤^i wb‡P †`Iqv n‡jv :

72,85,78,84,78,75,69,67,88,80,74,77,79,69,74,73,83,65,75,69,63,75,86,66,71|

K) cÖvß b¤^‡ii mivmwi Mo wbY©q Ki|

L) †kÖwY e¨eavb 5 a‡i MbmsL¨v wb‡ekb mviwY ˆZwi Ki Ges mviwY †\_‡K Mo wbY©q Ki|

M) mivmwifv‡e cÖvß M‡oi mv‡\_ cv\_©K¨ ‡`LvI|

5| 50 Rb wkÿv\_©xi ‰`wbK mÂq wb‡P †`Iqv n‡jv|

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| mÂq(UvKvq) | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 |
| MYmsL¨v | 6 | 8 | 13 | 10 | 8 | 5 |

K) µg‡hvwRZ MYmsL¨v wbY©q Ki|

L) ga¨K wbY©q Ki|

M) mviwY †\_‡K Mo wbY©q Ki|

6| GKwU KviLvbvq 100 kÖwg‡Ki gvwmK gRywii MbmsL¨ mviwY †`Iqv n‡jv|

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ‡kÖwY e¨wß | 31 - 40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 |
| MYmsL¨v | 6 | 8 | 10 | 12 | 5 | 7 | 2 |

K) 4\_© †kÖwYiga¨gvb KZ ? cÖ`Ë mviwY‡Z cÖPziK †kÖwYi wb¤œmxgv Ges D”Pmxgv KZ?

L) kÖwg‡Ki gvwmK gRywii Mo wbY©q Ki|

 M) Dcv‡Ëi AvqZ‡jL AvuK|

7| 8g †kÖwYi 50 Rb wkÿv\_©xi evsjv wel‡q cÖvß b¤^‡ii MbmsL¨v wb‡ekb mviwY †`Iqv n‡jv|

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ‡kÖwY e¨wß | 51-55 | 56-60 | 61-65 | 66-70 | 71-75 | 76-80 | 81-85 | 86-90 |
| MYmsL¨v | 6 | 20 | 30 | 15 | 11 | 8 | 6 | 4 |

K) 2q †kÖwYiga¨gvb KZ cÖPziK †kÖwYi I c~e©eZ©x †kÖwYi MbmsL¨vi cv\_©K¨ KZ?

L) cÖPziK wbY©q Ki|

M) mivmwi c×wZ‡Z Mo wbY©q Ki|

8| 8g †kÖwYi wkÿv\_©xi weÁvY wel‡q cÖvß b¤^‡ii MbmsL¨v wb‡ekb mviwY †`Iqv n‡jv|

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ‡kÖwY e¨wß | 51 - 53 | 54-56 | 57-59 | 60-63 | 64-66 |
| MYmsL¨v | 5 | 3 | 13 | 9 | 2 |

K)cÖPziK †kÖwYi I cieZ©x †kÖwYi MbmsL¨vi cv\_©K¨ KZ?

L) cÖPziK wbY©q Ki/ Mo wbY©q Ki|

M) ga¨K wbY©q Ki|

9| 8g †kÖwYi wkÿv\_©xi MwYZ wel‡q cÖvß b¤^‡ii MbmsL¨v wb‡ekb mviwY †`Iqv n‡jv|

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ‡kÖwY e¨wß | 1 - 10 | 11-20 | 21-30 | 31-40 | 41-50 |
| MYmsL¨v | 6 | 8 | 10 | 12 | 5 |

K)cÖPziK Kv‡K e‡j?

L) Dcv‡Ëi AwRf †iLv AvuK|

M) Dcv‡Ëi AvqZ‡jL AvuK|

 \* Dcv‡Ëi MbmsL¨v eûfzR AvuK|

10| wb‡P 50 Rb wkÿv\_©xi IR‡bi ( †KwR ) MYmsL¨v mviwY n‡jv :

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IRb(‡KwR) | 45 | 50 | 55 | 60 | 65 | 70 |
| MYmsL¨v | 2 | 6 | 8 | 16 | 12 | 6 |

K) cÖPziK wbY©q Ki|

M) ga¨K wbY©q Ki|

M) Mo wbY©q Ki|

11| wb‡P 51 Rb wkÿv\_©xi D”PZi ( ‡m.wg.) MYmsL¨v mviwY n‡jv : 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| D”PZi ( ‡m.wg.) | 45 | 50 | 55 | 60 | 65 | 70 |
| MYmsL¨v | 2 | 6 | 9 | 16 | 12 | 6 |

K) MbmsL¨v eûfzR ej‡Z Kx eySvq?/ µg‡hvwRZ MYmsL¨v wbY©q Ki|

M) ga¨K wbY©q Ki|

 M) Mo wbY©q Ki|

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  b¤^i | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 |
| MYmsL¨v | 1 | 7 | 11 | 12 | 10 | 8 |

12|

 K. cÖPziK wbY©q Ki|

 M. ga¨K wbY©q Ki|

 M. mswÿß c×wZ‡Z Mo wbY©q Ki|

13| ‡Kvb GKwU cÖwZóv‡b 5 Rb Kg©Pvix PvKwi K‡ib Zv‡`i gvwmK †eZb n‡”Q 5000,7000, 8000, 4000,3000 UvKv|

K. DcvË¸‡jvi ga¨K wbY©q Ki|

L.Mo wbY©q Ki|

M. cvBwP‡Î DcvË¸‡jv‡K wbY©q Ki|

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ‡kÖwY e¨wß | 50-59 | 60-69 | 70-79 | 80-89 | 90-99 |
| MYmsL¨v | 5 | 4 | 6 | 4 | 1 |
| µg‡hvwRZ MYmsL¨v | 5 | 9 | 15 | 19 | 20 |

14

 K) cÖPziK wbY©q Ki|

 L) ga¨K wbY©q Ki|

 M) Mo wbY©q Ki|

15|

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| D”PZi ( ‡m.wg.) | 140 | 145 | 150 | 155 | 160 | 165 |
| MYmsL¨v | 4 | 4 | 8 | 2 | 7 | 5 |
| µg‡hvwRZ MYmsL¨v | 4 | 8 | 16 | 18 | 25 | 30 |

K. Dcv‡Ëi AwRf †iLv AvuK|

 L. ga¨K wbY©q Ki|

 M. Mo wbY©q Ki|

16| 8g †kÖwYi wkÿv\_©xi MwYZ wel‡q cÖvß b¤^‡ii MbmsL¨v wb‡ekb mviwY †`Iqv n‡jv|

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ‡kÖwY e¨wß | 1 - 10 | 11-20 | 21-30 | 31-40 | 41-50 |
| MYmsL¨v | 12 | 16 | 30 | 10 | 8 |

K) Dcv‡Ëi MbmsL¨v eûfzR AvuK|

L) cÖPziK wbY©q Ki|

M) Dcv‡Ëi AvqZ‡jL AvuK|

17| 8g †kÖwYi wkÿv\_©xi MwYZ wel‡q cÖvß b¤^‡ii MbmsL¨v wb‡ekb mviwY †`Iqv n‡jv|

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ‡kÖwY e¨wß | 1 - 10 | 11-20 | 21-30 | 31-40 | 41-50 |
| MYmsL¨v | 12 | 16 | 30 | 10 | 8 |

K) Dcv‡Ëi MbmsL¨v eûfzR AvuK|

L) cÖPziK wbY©q Ki|

M) Dcv‡Ëi AvqZ‡jL AvuK|

Abykxjbx- 3

1| GKwU AvqZvKvi evMv‡bi ˆ`N©¨ cÖ‡¯’i ‡`o MyY Ges †ÿÎdj 216 eM©wgUvi | evMvbwUi Pviw`‡K †eov w`‡Z cÖwZ eM©wgUv‡i 25 UvKv LiP nq|

K. evMvbwUi cÖ¯’ ÔKÕ wgUvi n‡j ˆ`N©¨ KZ n‡e?

L. evMvbwUi cÖ¯’ wbY©q Ki|

M. evMvbwUi Pviw`‡K †eov w`‡Z †gvU KZ UvKv jv‡M?

2| 40 wgUvi ‰`N©¨ Ges 30 wgUvi cÖ¯’wewkó GKwU Rwgi wVK gv‡S AvovAvwofv‡e 2 wgUvi cÖk¯Í `yBwU iv¯Ív ˆZwi Kiv n‡jv|

K.RwgwUi †ÿÎdj KZ eM© †mw›UwgUvi?

L. iv¯ÍvØ‡qi ‡ÿÎdj wbY©q Ki|

M. hw` RwgwUi wfZ‡i Pviw`‡K 2 wgUvi GKwU iv¯Ív †Zwi Kiv nq, Z‡e iv¯Ívi †ÿÎdj KZ n‡e ?

3| GKwU AvqZvKvi evMv‡bi ˆ`N©¨ 80 wgUvi Ges cÖ¯’ 50 wgUvi| evMvbwU‡K cwiPh©vi Rb¨ Gi †fZ‡i Pviw`‡K 3 wgUvi PIov GKwU iv¯Ív Av‡Q|

K.evMvbwUi ˆ`N©¨ I cÖ¯’ †mw›UwgUvi GK‡K cÖKvk Ki|

L. iv¯Ívi ‡ÿÎdj wbY©q Ki|

M. iv¯ÍvwU cvKv Ki‡Z 25 †m.wg. ˆ`N©¨ Ges 10 †m.wg.cÖ¯’wewkó KZwU BU cÖ‡qvRb n‡e ?

4| wb‡Pi wPÎwU jÿ Ki : 55.5 wg.

1.5wg.

 38 wg.

K. iv¯Ív ev‡` evMv‡bi ˆ`N©¨ I cÖ¯’ wbY©q Ki|

L. iv¯Ívev‡` evMv‡bi cwimxgv I ‡ÿÎdj wbY©q Ki|

M. iv¯Ívi †ÿ`ªdj KZ ? iv¯Ívev‡` evMv‡bi Pviw`‡K cÖwZ 3.5 wg. e¨eav‡b MvQ jvMv‡bv n‡jv | cÖwZwU MvQ jvMv‡Z 38.50 UvKv LiP n‡j, †gvU KZ UvKv LiP nq|

 5| GKwU cyKz‡ii ˆ`N©¨ 60 wgUvi Ges cÖ¯’ 40 wgUvi| cyKz‡ii cv‡oi we¯Ívi 3 wgUvi|

K. cyKz‡ii †ÿÎdj wbY©q Ki|

L. cv‡oi †ÿÎdj wbY©q Ki|

M. 40 eM© †m. wg. eM©vKvi cv\_i Øviv cvo evuav‡Z KZwU cv\_i jvM‡e|

6. GKwU AvqvZvKvi cv‡K©i ˆ`N©¨ 48 wg. Ges cÖ¯’ 32.8 wg.| cvK©wUi evB‡i Pviw`‡K 2.5 wg. PIov GKwU iv¯Ív Av‡Q |

K. iv¯Ívmn cv‡K©i ˆ`N©¨ I cÖ¯’ wbY©q Ki|

L. cvK©wUi cwimxgv I ‡ÿÎdj wbY©q Ki|

M. iv¯ÍvwUi †ÿÎdj wbY©q Ki|

7| 40 wgUvi ‰`N©¨ Ges 30 wgUvi cÖ¯’wewkó GKwU gv‡Vi wVK gv‡S AvovAvwofv‡e 1.5 wgUvi cÖk¯Í `yBwU iv¯Ív ˆZwi Kiv n‡jv| gv‡V cÖwZ eM© wgUvi RvqMvq Mvm jvMv‡Z 17 UvKv LiP nq|

K. gv‡Vi †ÿÎdj wbY©q Ki|

L. iv¯Ívi ‡ÿÎdj wbY©q Ki|

M. A‡a©K gv‡V Nvm jvMv‡Z Kx cwigvb UvKv jvM‡e?

8| GKwU AvqZvKvi †ÿ‡Îi †ÿÎdj 10 GKi Ges Zvi ˆ`N©¨ cÖ‡¯’i 4¸b |

K. AvqZKvi ‡ÿÎwUi †ÿÎdj KZ eM© MR?

L. AvqZKvi †ÿÎwUi cwimxgv KZ wgUvi ?

M. AvqZKvi ‡ÿÎwUi mgvb ‡ÿÎdjwewkó GKwU eM©Kvi †ÿ‡Îi wfZ‡i Pviw`‡K 4 MR we¯Í…Z GKwU iv¯Ív Av‡Q| iv¯ÍvwUi ‡ÿÎdj KZ eM© wgUvi|

Aa¨vq 7: †mU

1| A = {1,2,3}, B = {2,a} **Ges C = {a,b} n‡j**

**K. AB wbY©q Ki|**

**L. A(BC) wbY©q Ki|**

**M. cÖgvb Ki †h, (AB)C = (AC)  (BC)**

2| A = {1,2,3,4}, B = {2,4,6} **Ges C = {2,3} n‡j**

**K. (AB)  C wbY©q Ki|**

**L. (A  B) (B C) wbY©q Ki|**

**M. (AC)  (BC) wbY©q Ki|**

3|  = {1,2,3,4,5,6,7}A = {1,2,3}, B = {2,4,7} **Ges C = {4,5,6} n‡j**

**K. A ∕ C∕ wbY©q Ki**

**L. A∕(BC) wbY©q Ki|**

**M. cÖgvb Ki †h, (AB) ∕ = A ∕B ∕**

4|  = {1,2,3,4,5,6}A = {1,3,5}, B = {2,4,6} **Ges C = {2,3} n‡j**

**K. A – B Ges B – C wbY©q Ki|**

**L. (A  B) - (B C) wbY©q Ki|**

**M. cÖgvb Ki †h, (AB) (B – A)  (A – B) = AB**

**5| A = {x t x N Ges 1< x  5 }**

 **B = {x t x , 48 Gi ‡gŠwjK ¸YbxqKmg~n}**

 **C = {x t x N Ges 3 x < 5 } n‡j,**

 **K. (AB) wbY©q Ki|**

**L. (A  B)  (B C) wbY©q Ki|**

**M. (AC)  (BC) wbY©q Ki|**

**6|**  mvwe©K †mU **{x t x N Ges x we‡Rvo msL¨v}**

**A = {x t x N Ges 1 x  9 },**

 **B = {x t x N Ges 3< x <9 }Ges**

 **C = {x t x N Ges x2 <10 }**

**K. A ‡mU‡K ZvwjKv c×wZ‡Z cÖKvk Ki|**

**L. A∕ Ges C – B wbY©q Ki|**

M. B×C **Ges P(A  C) wbY©q Ki|**

**7|A = {x N: x2 >9 Ges x3 < 130}**

**B = { x N: x, 8 Gi ¸YbxqK}**

**C = { x N: x, 6 Gi ¸YbxqK}**

**K. A ‡mU‡K ZvwjKv c×wZ‡Z cÖKvk Ki|**

**L. (A  B) (B C) wbY©q Ki|**

**M. cÖgvb Ki †h, (AB) ∕ = A ∕B ∕**

8| A = {2,4,6,8}

**B = { x N: 1<x< 6}**

**C = { x N: x, 2 Gi ¸wYZK Ges x  10 }**

**K. A ‡mU‡K †mU MVb c×wZ‡Z cÖKvk Ki|**

**K. (A-B) C wbY©q Ki|**

**M. (AB)  C Ges (AB)  C wbY©q Ki|**

**9| P,Q,R wZbwU †mU †hLv‡b,**

**P = {x N: x <9 Ges x ‡Rvo msL¨v}**

**Q = { x N: x <9 Ges x we‡Rvo msL¨v }**

**R = { x N: x  5 Ges x ‡gŠwjK msL¨v }**

**K. p I Q ‡mU‡K ZvwjKv c×wZ‡Z cÖKvk Ki|**

**L. p(Q R) wbY©q Ki**

**M. (PR) Q Ges (pQ) (RQ) এর মান wbY©q Ki|**

**10| A = {1,2,3} Ges B = {2,3},**

**K. p(A ) Ges p( B ) wbY©q Ki|**

**L.cÖgvb Ki †h, p(A )  p( B ) = p( AB )**

**M. †`LvI †h, p(A )  p( B )  p( AB )**

**11|** KZ¸‡jv ¯^vfvweK msL¨v Øviv 311 Ges 419 †K fvM Ki‡j cÖwZ‡ÿ‡Î 23 Aewkó \_v‡K|

K. †h `yBwU msL¨vi mvavib ¸bYxqK wbY©q Ki‡Z n‡e †m `yBwU msL¨v KZ|

L. D³ msL¨vØ‡qi ¸Ybxq‡Ki †mU wbY©q Ki|

M. msL¨v `yBwU 346 I 556 n‡j Ges cÖwZ‡ÿ‡Î 31 Aewkó \_vK‡j, Zv‡`i ‡mU wbiƒcY Ki|

12| **A Ges B n‡jv h\_vµ‡g 346 Ges 556 Gi mKj ¸Ybxq‡Ki †mU|**

**K. A Ges B wbY©q Ki|**

**L. AB, AB, A - B Ges B – A wbY©q Ki|**

**M. †h mKj ¯^vfvweK msL¨v Øviv D³ msL¨v fvM Ki‡j** cÖwZ‡ÿ‡Î 31 Aewkó \_v‡K Zv‡`i ‡mU wbY©q Ki|

* **B = { x: x, 28 Gi ¸YbxqK }‡mU‡K ZvwjKv c×wZ‡Z cÖKvk Ki|**
* **A= {7,14,21,28} ‡mU‡K †mU MVb c×wZ‡Z cÖKvk Ki|**
* C = {x:x abvZ¥K c~Y©msL¨v Ges x2 < 18 }**‡mU‡K ZvwjKv c×wZ‡Z cÖKvk Ki|**
* **P = { x: x, 12 Gi ¸YbxqKmg~n }‡mU‡K ZvwjKv c×wZ‡Z cÖKvk Ki|**
* **Q = { x** **N: x, 3 Gi ¸wYZK Ges x**  **12 }**
* **R = {3,4,5,6,7,8 } ‡mU‡K †mU MVb c×wZ‡Z cÖKvk Ki|**
* **S = {4,8,12,16,20,24 } ‡mU‡K †mU MVb c×wZ‡Z cÖKvk Ki|**
* **V = { x** **N: x, 3 Gi ¸wYZK Ges x** < **36 }**
* **Q = { x : x we‡Rvo msL¨ Ges 3< x <9 }**
* **A = { x : x ‡Rvo msL¨ Ges 4< x <6 }**

13|

 B 8

 A

C

K. A, B,C, U ‡mU¸‡jv †jL|

L. **(A  B) (B C) wbY©q Ki|**

**M. cÖgvb Ki †h, (AB) ∕ = A ∕B ∕**

14|  = {1,2,3,4,5,6,7}A = {1,2,3}, B = {2,4,7} **Ges C = {4,5,6} n‡j**

**K. A B C wbY©q Ki**

**L. A∕(BC) ∕ wbY©q Ki|**

**M. cÖgvb Ki †h, (AC) ∕ = A ∕C ∕**

 Aa¨vq 4.1:exRMvwbwZK ivwk

1| x +  = 4 n‡j,

**K**. x2 +  Gi gvb wbY©q Ki|

L. cÖgvb Ki †h, x4 +  =194

M. x4  -  Gi gvb KZ?

2| a2 – 2a = -1

K. a +  Gi gvb KZ?

L. (a - ) 2 Gi gvb wbY©q Ki|

M. cÖgvb Ki †h, x2 +  = x4  +

3| 2x+=4 n‡j

K. x +  Gi gvb KZ?

L. x2 +  Gi gvb wbY©q Ki|

M. x4  +  Gi gvb wbY©q Ki|

4| a +b = 7 Ges ab = 9 n‡j

K. a2 +b2 = KZ?

L. ( a – b) 2 Gi gvb wbY©q Ki|

M. a4  - b4 Gi gvb wbY©q Ki|

5| x -  = 5 n‡j,

**K**. x2 +  Gi gvb wbY©q Ki|

L. (x + ) 2 Gi gvb wbY©q Ki|

M. x4 +  Gi gvb wbY©q Ki|

6| a -  = m n‡j

**K**. a2 +  Gi gvb wbY©q Ki|

L. (x + ) 2 Gi gvb wbY©q Ki|

M. †`LvI ‡h, a4 +  = m4 + 4m2 +2

7| x + y = 12, xy = 6 n‡j

K. x - y Gi gvb wbY©q Ki|

L. †`LvI †h, 2x2 + 2y2 = 180

M. cÖgvb Ki †h, x2y2  = () 2 – ()2

8| a2 – 2a +1=0 n‡j

K. a +  Gi gvb wbY©q Ki|

L. a4  + Gi gvb wbY©q Ki|

M. a10+ Gi gvb wbY©q Ki|

9| a = 4x+7y Ges b =4x-5y n‡j,

K. a Gi eM© wbY©q Ki|

L. a2+2ab+b2 Gi gvb wbY©q Ki|

M. ab‡K `yBwU e‡M©i we‡qvMdj iæ‡c cÖKvk Ki|

10| x = 3+ n‡j,

K. x +  Gi gvb wbY©q Ki|

L. Gi gvb wbY©q Ki|

M. cÖgvb Ki †h, x4=119-

11| a+b=,Gesa-b= n‡j,

K. ( a-b)2 Gi gvb wbY©q Ki|

L. a2+b2 Gi gvb wbY©q Ki|

M. cÖgvb Ki †h,8ab(a2+b2) = 5

12. x2 + =10 n‡j,

K. x +  Gi gvb wbY©q Ki|

L. x -  Gi gvb wbY©q Ki|

M. x4  + Gi gvb KZ

Aa¨vq 4.2:exRMvwbwZK ivwk

1| a4 - a2+1= 0 n‡j,

K. a +  Gi gvb wbY©q Ki|

L. a2 +=KZ?

M. cÖgvb Ki †h, a3+=0

2| x4+1= x2 n‡j,

K. x + = KZ?

 L. x3+ Gi gvb wbY©q Ki|

M. x4  +  Gi gvb wbY©q Ki|

3| a2-2a+1=0 n‡j,

K. a +  Gi gvb wbY©q Ki|

L. ( a + )2 Gi gvb KZ?

M. cÖgvb Ki †h,  = 4

4| a=+ n‡j,

K. a +  Gi gvb wbY©q Ki|

L. a4  +  Gi gvb KZ?

M. Gi gvb wbY©q Ki|

5| x=+

 K.= KZ?

L. cÖgvb Ki †h, x4  + =104

M. x3+Gi gvb wbY©q Ki|

6| x =  +  n‡j,

K. x +  Gi gvb KZ?

L. (x + )3Ges (x - )3 Gi gvb KZ?

M. cÖgvb Ki †h, x3+= 18

7| a2-+1 = 0

K. a +  Gi gvb wbY©q Ki|

L. cÖgvb Ki †h, a3+= 0

M. †`LvI ‡h, a3+= 1

8| a+b = 5 Ges ab = 6 n‡j,

K. ( a-b)2 Gi gvb KZ?

L. a3-b3 Gi gvb wbY©q Ki|

M. a3+b3 Gi gvb KZ?

9| x +  = 6

K. x -  Gi gvb KZ?

L. cÖgvb Ki †h,x3 + = 198

M. †`LvI ‡h, x5 +  = 672

10| 2x -  = 3 n‡j,

K. x2 +  Gi gvb wbY©q Ki|

L. cÖgvb Ki †h, 8x3 -  = 63

M. †`LvI ‡h (4x2 + ) (8x3 - ) = 1071

11| x+y = ,x-y = 

K. x2-y2 Gi gvb wbY©q Ki|

L. x2+y2I x3+y3 Gi gvb wbY©q Ki|

M. cÖgvb Ki †h x6 - y6 = 15624

12| 2x -  = 5 n‡j,

K. x3 +  Gi gvb wbY©q Ki|

L. (4x2 + ) Gi gvb wbY©q Ki|

M. cÖgvb Ki †h 8( x3 +) = 29

13| a+b = 5 Ges ab = 6

K. a2 + b2 Gi gvb wbY©q Ki|

L. (a3 - b3) Gi gvb wbY©q Ki|

M. cÖgvb Ki †h, a3 + b3 + 4 (a - b)2 - 3( a2 + b2) = 0

14| a+b=c ,a2- b2 =n, a3 + b3 = p3

K. †`LvI ‡h a3 + b3 + 3abc = c3

L. a - b Gi gvb wbY©q Ki|

M. cÖgvb Ki †h c3+2p3=3nc

15| x +  = 2

K . x +  Gi gvb wbY©q Ki|

L. (x2+) Gi gvb wbY©q Ki|

M. †`LvI ‡h, x3+ = 18

16| ( a + )2 = 3 n‡j,

K. a - Gi gvb wbY©q Ki|

L. a2+ Gi gvb wbY©q Ki|

M. a3+ Gi gvb wbY©q Ki|

17| a2 - 6a+1=0 n‡j,

K. a +  Gi gvb wbY©q Ki|

L. ( a - )2 Gi gvb KZ?

M. cÖgvb Ki †h, a3+ = 198

18| a2 - 3a - 1= a n‡j,

K. a -  Gi gvb wbY©q Ki|

L. ( a + )2 Gi gvb KZ?

M. a3 -  Gi gvb wbY©q Ki|

Aa¨vq 2.2

 1| weRq evey R%gybvdv P UvKv N eQ‡ii Rb¨ e¨vs‡K Rgv iv‡Lb|

K. mij gybvdv (I) I Pµe„w× gyjab(C) Gi myÎ `yBwU wjL|

L. P =5000, R =8 Ges N =2 n‡j mij gybvdv I gybvdv-Avmj (A) wbb©q Ki|

M. Pµe„w× gyjab I Pµe„w× gybvdv wbb©q Ki|

2| wkcÖv eo–qv †Kvb e¨vs‡K 3000 UvKv Rgv †i‡L 2 eQi ci gybvdvmn 3600 UvKv †c‡q‡Qb|

K. mij gybvdv nvi wbb©q Ki|

L. AviI 3 eQi ci gybvdv Avmj KZ n‡e|

M. 3000 UvKv GKB nvi Pµe„w× gybvdv Rgv ivL‡j 2 eQi ci Pµe„w× gyjab KZ n‡Zv?

3| Rqbvj mv‡ne 8% nvi gybvdvi 62500 UvKv 3 eQ‡ii Rb¨ wewb‡qvM K‡i‡Qb |

K. Pµe„w× gybvdv Kx?

L. cÖ`Ë Z‡\_¨i mij gybvdv KZ?

M. Pµe„w× gyjab wbb©q Ki|

4| wicb evwl©K 10.50% gybvdv 5000 UvKv 2 eQ‡ii Rb¨ e¨vs‡K Rgv ivL‡jb|

K. 1 eQ‡ii mij gybvdv KZ?

L. Pµe„w× gyjab KZ?

M. Pµe„w× gybvdv I mij gybvdvi cv\_©K¨ ‡ei Ki|

5| ewikvj kn‡ii eZ©gvb RbmsL¨v 80 jÿ Ges RbmsL¨v e„w×i nvi cÖwZ nvRv‡i 30 Rb|

K. RbmsL¨v e„w×i kZKiv nvi KZ?

L. 2 eQi ci ewikvj †jvKmsL¨v KZ e„w× cv‡e?

M. 3 eQi ci H kn‡i †jvKmsL¨v KZ n‡e?

6| ‡Kvb kn‡ii eZ©gvb RbmsL¨v 64 jÿ Ges kniwUi RbmsL¨v e„w×i nvi cÖwZ nvRv‡i 25 Rb n‡j|

K. RbmsL¨v e„w×i kZKiv nvi KZ?

L. 2 eQi ci H †jvKmsL¨v KZ e„w× cv‡e?

M. 4 eQi ci H kn‡i †jvKmsL¨v KZ n‡e?

6| nvexe m‡ne 10% gybvdvq 8000 UvKv 3 eQ‡ii Rb¨ e¨vs‡K Rgv iv‡Lb|

 K. 1 eQ‡ii mij gybvdv KZ?

L. Pµe„w× gyjab wbb©q Ki

M. Pµe„w× gybvdv I mij gybvdvi cv\_©K¨ ‡jL|

7| †Kvb g~jab GKB nvi gybdvq GK eQiv‡šÍ I `yB eQiv‡šÍ Pµe„w× g~jab h\_vµ‡g 6500 UvKv I 6760 UvKv|

K. DÏxcK Abyhvqx Pµe„w× g~ja‡bi mgxKibØq wjL|

L.g~jab wbY©q Ki|

M. hw` g~jab 10000 UvKv nq Z‡e 3eQ‡i Pµe„w× gyjab KZ ?

8| Mdzi mv‡ne cÖwZ eQi †k‡l 2000 UvKv K‡i cwi‡kva Kivi k‡Z© GKwU FY`vb ms¯’v †\_‡K 8% Pµe„w× gybdvq 5000 UvKv Fb wb‡q‡Qb|

K.D‡jøwLZ F‡bi 1 eQ‡ii mij gybvdv ‡ei Ki|

L. 1eQi ci Pµe„w× gyjab KZ n‡e|

M.2q wKw¯Í cwi‡kv‡ai ci Zvi F‡bi cwigvb KZ \_vK‡e|

9| Rvwgj mv‡ne †cbk‡bi UvKv †c‡q 10 jvL UvKvi 3 gvm AšÍi gybvdv wfwËK 3 eQi †gqv`x †cbkb mÂq cÎ wK‡b‡Qb| evwl©K gybvdv 12% |

K mij gybvdv I Pµe„w× gybvdvi myÎ `yBwU wjL|

L. 3 gvm ci wZwb KZ UvKv gybvdv cv‡eb|

M. Pµe„w× gybdvq 1eQi ci wZwb KZ UvKv gybdv cv‡eb?

 Aa¨vq 2.1

1. †Kvb Avmj 3 eQ‡i gybdv-Avmj 5500 UvKv nq Ges gybdv, Avm‡ji Ask|

K. cÖ`Ë Z\_¨ Abyhvqx Avmj †ei Ki|

L. evwl©K gybdvi nvi KZ?

M. D³ Avmj 5 eQi gybdv-Avm‡ji KZ n‡e?

2. GKwU cb¨`ªe¨ weµq K‡i cvBKvwi I LyPiv we‡µZvi 20% K‡i jvf nq| D‡jøL¨ `ªe¨wUi `ªe¨wUi LyPiv weµqg~j¨ 576 UvKv|

K. µqg~j¨ I weµqg~j¨ Kx?

L. LyPiv we‡µZvi µqg~j¨ †ei Ki|

M. cvBKvwi we‡µZvi µqg~j¨ KZ?

 3. GKRb Kjv e¨emvwq

R¨vwgwZ

ABCD GKwU mvgvšÍwiK Ges AC I BD Gi `yBwU Kb©|

K) Dchy©³ Z\_¨i wfwË‡Z weeibmn GKwU wPÎ AvuK |

L) cÖgvb Ki †h, Gi wecixZ evû I †Kvb¸‡jv ci¯úi mgvb|

M)AC I BC Kb©Øq ci¯úi mgvb n‡j GwU GKwU AvqZ|

 ABCD GKwU mvgvšÍwiK Ges AC I BD Gi `yBwU Kb©|

 L) we‡kl wbe©Pbt g‡b Kwi, ABCD GKwU mvgvšÍwi‡Ki AC I BD Gi `yBwU Kb©|

 cÖgvb Ki †h,AB=CD,AD=BC A=C, B=D

cÖgvbt1| ABllCDGes AC Zv‡`i †Q`K

BAC=ACD

Z`ªæcDAC=ACB

2|ABC IADC

BAC=ACD

DAC=ACB

Ges AC=AC

ABC IADC

AB=CD,AD=BC

Z`ªæcABC ADC

BAD=BCD(cÖgvwbZ)

M) ABCD GKwU mvgvšÍwi‡Ki AC I BD Kb©Øq ci¯úi mgvb | cÖgvb Ki †h

ABCD GKwU AvqZ|