

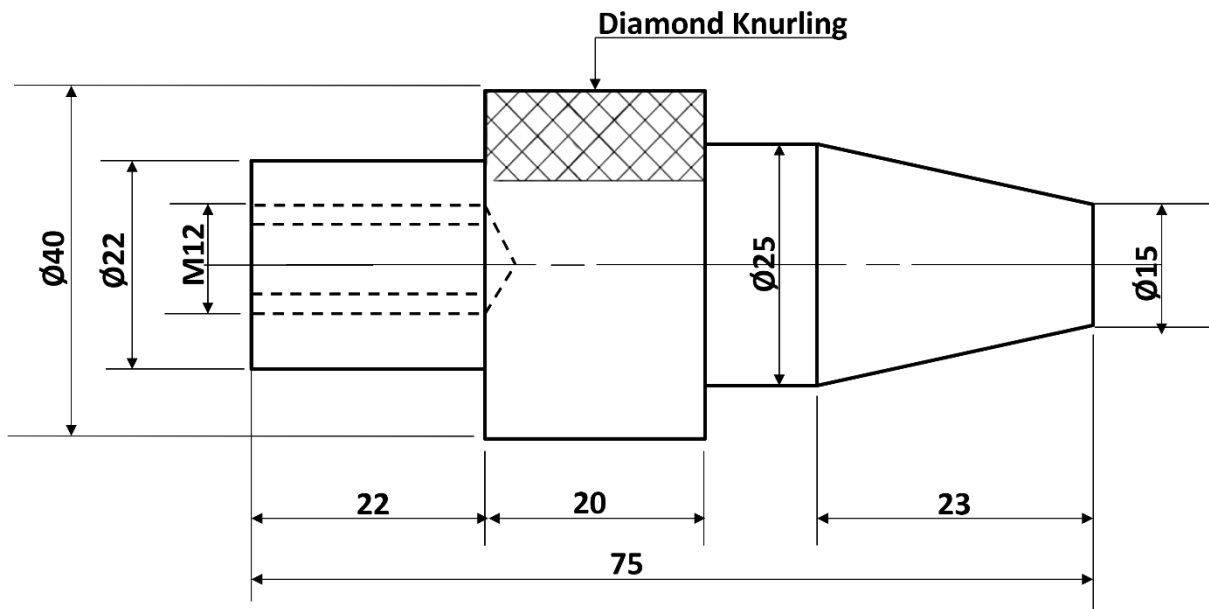
BARC SKILL TEST (2024)

Trade – Machinist / Turner

Time: 03Hrs.

Marks: 100

Q.1) Prepare the job as per Drawing below:



Tolerance: $\pm 0.05\text{mm}$

Note: All Dimensions are in mm.

Taper Degree Calculate

Given Data-

$$D = 25\text{mm}$$

$$d = 15\text{mm}$$

$$l = 23\text{mm}$$

Degree =?

$$\text{Formula - } \frac{D-d}{2l}$$

$$= \frac{25 - 15}{2 \times 23}$$

$$= \frac{10}{46}$$

$$= 0.0.2173$$

$$= 12^\circ 15'$$

NATURAL TANGENTS

| Degree | 0' | 6' | 12' | 18' | 24' | 30' | 36' | 42' | 48' | 54' | Mean Difference | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|---|----|----|----|
| | 0.0' | 0.1' | 0.2' | 0.3' | 0.4' | 0.5' | 0.6' | 0.7' | 0.8' | 0.9' | 1 | 2 | 3 | 4 | 5 |
| 0 | 0.0000 | 0.0017 | 0.0035 | 0.0052 | 0.0070 | 0.0087 | 0.0105 | 0.0122 | 0.0140 | 0.0157 | 3 | 6 | 9 | 12 | 15 |
| 1 | 0.0175 | 0.0192 | 0.0209 | 0.0227 | 0.0244 | 0.0262 | 0.0279 | 0.0297 | 0.0314 | 0.0332 | 3 | 6 | 9 | 12 | 15 |
| 2 | 0.0349 | 0.0367 | 0.0384 | 0.0402 | 0.0419 | 0.0437 | 0.0454 | 0.0472 | 0.0489 | 0.0507 | 3 | 6 | 9 | 12 | 15 |
| 3 | 0.0524 | 0.0542 | 0.0559 | 0.0577 | 0.0594 | 0.0612 | 0.0629 | 0.0647 | 0.0664 | 0.0682 | 3 | 6 | 9 | 12 | 15 |
| 4 | 0.0699 | 0.0717 | 0.0734 | 0.0752 | 0.0769 | 0.0787 | 0.0805 | 0.0822 | 0.0840 | 0.0857 | 3 | 6 | 9 | 12 | 15 |
| 5 | 0.0875 | 0.0892 | 0.0910 | 0.0928 | 0.0945 | 0.0963 | 0.0981 | 0.0998 | 0.1016 | 0.1033 | 3 | 6 | 9 | 12 | 15 |
| 6 | 0.1051 | 0.1069 | 0.1086 | 0.1104 | 0.1122 | 0.1139 | 0.1157 | 0.1175 | 0.1192 | 0.1210 | 3 | 6 | 9 | 12 | 15 |
| 7 | 0.1228 | 0.1246 | 0.1263 | 0.1281 | 0.1299 | 0.1317 | 0.1334 | 0.1352 | 0.1370 | 0.1388 | 3 | 6 | 9 | 12 | 15 |
| 8 | 0.1405 | 0.1423 | 0.1441 | 0.1459 | 0.1477 | 0.1495 | 0.1512 | 0.1530 | 0.1548 | 0.1566 | 3 | 6 | 9 | 12 | 15 |
| 9 | 0.1584 | 0.1602 | 0.1620 | 0.1638 | 0.1655 | 0.1673 | 0.1691 | 0.1709 | 0.1727 | 0.1745 | 3 | 6 | 9 | 12 | 15 |
| 10 | 0.1763 | 0.1781 | 0.1799 | 0.1817 | 0.1835 | 0.1853 | 0.1871 | 0.1889 | 0.1908 | 0.1926 | 3 | 6 | 9 | 12 | 15 |
| 11 | 0.1944 | 0.1962 | 0.1980 | 0.1998 | 0.2016 | 0.2035 | 0.2053 | 0.2071 | 0.2089 | 0.2107 | 3 | 6 | 9 | 12 | 15 |
| 12 | 0.2126 | 0.2144 | 0.2162 | 0.2180 | 0.2199 | 0.2217 | 0.2235 | 0.2254 | 0.2272 | 0.2290 | 3 | 6 | 9 | 12 | 15 |
| 13 | 0.2309 | 0.2327 | 0.2345 | 0.2364 | 0.2382 | 0.2401 | 0.2419 | 0.2438 | 0.2456 | 0.2475 | 3 | 6 | 9 | 12 | 15 |
| 14 | 0.2493 | 0.2512 | 0.2530 | 0.2549 | 0.2568 | 0.2586 | 0.2605 | 0.2623 | 0.2642 | 0.2661 | 3 | 6 | 9 | 12 | 16 |
| 15 | 0.2679 | 0.2698 | 0.2717 | 0.2736 | 0.2754 | 0.2773 | 0.2792 | 0.2811 | 0.2830 | 0.2849 | 3 | 6 | 9 | 13 | 16 |
| 16 | 0.2867 | 0.2886 | 0.2905 | 0.2924 | 0.2943 | 0.2962 | 0.2981 | 0.3000 | 0.3019 | 0.3038 | 3 | 6 | 9 | 13 | 16 |
| 17 | 0.3057 | 0.3076 | 0.3096 | 0.3115 | 0.3134 | 0.3153 | 0.3172 | 0.3191 | 0.3211 | 0.3230 | 3 | 6 | 10 | 13 | 16 |
| 18 | 0.3249 | 0.3269 | 0.3288 | 0.3307 | 0.3327 | 0.3346 | 0.3365 | 0.3385 | 0.3404 | 0.3424 | 3 | 6 | 10 | 13 | 16 |
| 19 | 0.3443 | 0.3463 | 0.3482 | 0.3502 | 0.3522 | 0.3541 | 0.3561 | 0.3581 | 0.3600 | 0.3620 | 3 | 7 | 10 | 13 | 16 |
| 20 | 0.3640 | 0.3659 | 0.3679 | 0.3699 | 0.3719 | 0.3739 | 0.3759 | 0.3779 | 0.3799 | 0.3819 | 3 | 7 | 10 | 13 | 17 |
| 21 | 0.3839 | 0.3859 | 0.3879 | 0.3899 | 0.3919 | 0.3939 | 0.3959 | 0.3979 | 0.4000 | 0.4020 | 3 | 7 | 10 | 13 | 17 |
| 22 | 0.4040 | 0.4061 | 0.4081 | 0.4101 | 0.4122 | 0.4142 | 0.4163 | 0.4183 | 0.4204 | 0.4224 | 3 | 7 | 10 | 14 | 17 |
| 23 | 0.4245 | 0.4265 | 0.4286 | 0.4307 | 0.4327 | 0.4348 | 0.4369 | 0.4390 | 0.4411 | 0.4431 | 3 | 7 | 10 | 14 | 17 |
| 24 | 0.4452 | 0.4473 | 0.4494 | 0.4515 | 0.4536 | 0.4557 | 0.4578 | 0.4599 | 0.4621 | 0.4642 | 4 | 7 | 11 | 14 | 18 |
| 25 | 0.4663 | 0.4684 | 0.4706 | 0.4727 | 0.4748 | 0.4770 | 0.4791 | 0.4813 | 0.4834 | 0.4856 | 4 | 7 | 11 | 14 | 18 |
| 26 | 0.4877 | 0.4899 | 0.4921 | 0.4942 | 0.4964 | 0.4986 | 0.5008 | 0.5029 | 0.5051 | 0.5073 | 4 | 7 | 11 | 15 | 18 |
| 27 | 0.5095 | 0.5117 | 0.5139 | 0.5161 | 0.5184 | 0.5206 | 0.5228 | 0.5250 | 0.5272 | 0.5295 | 4 | 7 | 11 | 15 | 18 |
| 28 | 0.5317 | 0.5340 | 0.5362 | 0.5384 | 0.5407 | 0.5430 | 0.5452 | 0.5475 | 0.5498 | 0.5520 | 4 | 8 | 11 | 15 | 19 |
| 29 | 0.5543 | 0.5566 | 0.5589 | 0.5612 | 0.5635 | 0.5658 | 0.5681 | 0.5704 | 0.5727 | 0.5750 | 4 | 8 | 12 | 15 | 19 |

Taper Degree Calculate

$$\text{Formula - } \frac{D-d}{2l}$$

$$= \frac{25 - 15}{2 \times 23}$$

$$= \frac{10}{46}$$

$$= 0.0.2173$$

$$= 0.0.2173 \times 57$$

$$= 12^\circ 30'$$

Tap Drill Size Formula –

Tap Size – 2 x d x pitch

$$= 12 - 2 \times 0.61 \times 1.75$$

$$= 12 - 1.22 \times 1.75$$

$$= 12 - 2.13$$

$$= 9.86\text{mm}$$

Tap Drill Size Formula –

Tap Size – pitch

$$= 12 - 1.75$$

$$= 10.25\text{mm}$$