Q. 2: Solution

At point 'A': $\varphi 80H7p6$

The values if IT6 and IT7 tolerance grades for diameter range 50 to 80 from tolerance table are 19 μm and 30 μm respectively.

Fundamental deviation for Hole, H =0

Lower limit of hole =80+0 =80 mm

Upper limit of hole =80+0.03=80.03 mm

Hole size $=80^{+0.03}_{0}$ mm

Fundamental deviation for shaft (lower deviation), p =+32 μm (from table of fundamental deviation)

Lower limit of shaft =80+0.032 =80.032 mm

Upper limit of shaft =80+0.032+0.019 =80.051 mm

Shaft size $= 80^{+0.051}_{+0.032}$

Maximum interference= Upper limit of shaft – Lower limit of hole = 80.051-80 = 0.051 mm

Minimum interference= Lower limit of shaft – Upper limit of hole = 80.032-80.030 = 0.002 mm

At point 'B': $\varphi 100H7k6$

The values if IT6 and IT7 tolerance grades for diameter range 80 to 120 from tolerance table are 22 μm and 35 μm respectively.

Fundamental deviation for Hole, H =0

Lower limit of hole =100+0 =100 mm

Upper limit of hole =100+0.035=100.035 mm

Hole size $=100^{+0.035}_{0}$ mm

Fundamental deviation for shaft (lower deviation), k =+3 μm (from table of fundamental deviation)

Lower limit of shaft =100+0.003 =100.003 mm

Upper limit of shaft =100+0.003+0.022 =100.025 mm

Shaft size $= 100^{+0.025}_{+0.003}$

Maximum interference= Upper limit of shaft – Lower limit of hole = 100.025 -100 = 0.025 mm

Minimum interference= Lower limit of shaft – Lower limit of hole = 100.003 -100 = 0.003 mm

Maximum clearance= Upper limit of hole – Lower limit of shaft = 100.035 -100.003 = 0.032 mm

Ø100.000 +0.025 +0.003

Ø80.000 +0.051 +0.032

Ø110.000

⌀ 0.05

⌀ 0.05

50.000

10.000

100.000