Q. 2: Solution

At point ‘A’: φ80H7p6

The values of 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 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 + 0.032 + 0.019 = 80.051 mm

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’: φ100H7k6

The values of 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 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 + 0.003 + 0.022 = 100.025 mm

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