Question 30

Do not write in this margin

Say, giving a reason, whether you believe that a normal model would be adequate to represent the variation in the sample whose histogram is shown in Figure 4. Briefly describe how you would test the goodness of fit of a normal model to these data. [4]

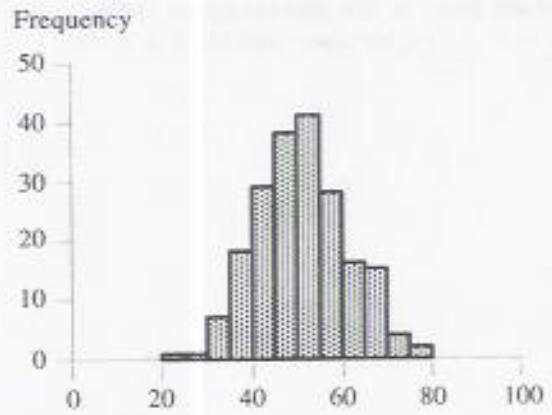

Figure 4

A normal model looks a good fit to the histogram.
a chi-squared test - calculate for a normal model. P(20<X≤25) P(25<X≤30) etc, multiply by the sample total to find expected frequencies, pooling frequencies less than 5 and calculate $\sum(O-E_F)$ against E_F $\chi^2(n-1)$.

Question 31

In a test for whether two populations A and B are the same, a sample of size 15 was collected from population A and 18 from population B. The Mann-Whitney-Wilcoxon test statistic u_A was found to be equal to 296; use a normal approximation to find the total SP for the test and report your conclusions. [5]

$296 \approx \left(\frac{15(15+18+1)}{2}, \frac{15\times18(15\times18+1)}{12}\right)$

$\approx (255, 765)$

$\frac{296-255}{\sqrt{765}} = 1.482$ $P(U_A > 296) = 0.9309$

$2\times(1-0.9309) = 0.1382$

There is no real evidence that the two populations are different.