Question 5

Find the moment estimate s^2 and the maximum likelihood estimate $\hat{\sigma}^2$ for the unknown variance σ^2, assuming that the following data arise from a normal distribution: 1.81, −6.48, 1.07, −8.63, 5.24, −4.07, 1.25, −2.07. (Choose two options.)

Options

A 4.37	**B** 8.12	**C** 5.22	**D** 21.87
E 4.68	**F** 20.83	**G** 19.14	**H** 22.12

Question 6

For the random variable X following a chi-squared distribution with 29 degrees of freedom, choose from the following options the mean of X and the median of X. (Choose two options.)

Options

A 28.34	**B** 7.62	**C** 29	**D** 58
E 34.80	**F** 24.48	**G** 30	**H** 29.34

Questions 7 to 12 are based on material covered in *Chapter 7*.

Question 7

Assuming that the following data arise from a sample from a Poisson distribution, find an exact 90% confidence interval for the unknown mean μ:

8, 8, 6, 8, 7, 5, 7, 13, 5, 6, 10, 12.

SSC

Options

A $(6.90, 9.06)$	**B** $(6.63, 9.39)$	**C** $(6.41, 9.68)$	**D** $(6.58, 9.25)$
E $(6.32, 9.51)$	**F** $(6.28, 9.55)$	**G** $(6.88, 8.96)$	**H** $(6.90, 8.93)$

Question 8

Choose from the following options an approximate (i.e. normal-based) 99% confidence interval for a Poisson mean μ, based on a sample of size 25 with mean 7.24.

Options

A $(5.93, 8.75)$	**B** $(6.05, 8.59)$	**C** $(5.82, 8.89)$	**D** $(5.73, 8.75)$
E $(4.94, 13.54)$	**F** $(5.99, 8.49)$	**G** $(4.78, 14.93)$	**H** $(5.85, 8.63)$

Question 9

In a sample of size 50 in which the subjects were independently selected from the population of British males in their 40s, 36 were found to use spectacles 'permanently, or for some purposes'. Use these data to find exact and approximate 90% confidence intervals for the underlying proportion of spectacle-wearers in the relevant population. (Choose two options.)

Options

A $(0.65, 0.79)$	**B** $(0.60, 0.82)$	**C** $(0.67, 0.77)$	**D** $(0.60, 0.84)$
E $(0.58, 0.84)$	**F** $(0.62, 0.80)$	**G** $(0.62, 0.82)$	**H** $(0.64, 0.80)$