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3. For a particular website, hacking attempts occur randomly at a rate of 0.3 per hour.

(a) Show that the probability of at least one hacking attempt taking place in a randomly selected one-hour period is 0.259 to 3 significant figures.

(2)

(b) Find the probability that exactly 6 hacking attempts take place in a randomly selected 24-hour period.

(3)

Following a security update, Saira believes that the rate of hacking attempts on the website has decreased. She records 38 hacking attempts in a 7-day period following the update.

(c) Comment on Saira's belief by using an appropriate approximation and a suitable test at the 5% level of significance. State your hypotheses clearly.

(7)

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Question 3 continued

(Total 12 marks)

Q3