**TEST ANSWER KEY**

**MULTIPLE CHOICE SECTION**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1B** | **2A** | **3D** | **4A** | **5A** | **6B** | **7C** | **8D** | **9C** | **10B** |
| **11B** | **12D** | **13A** | **14C** | **15A** | **16B** | **17D** | **18D** | **19A** | **20B** |

**FREE RESPONSE SECTION**

|  |  |  |  |
| --- | --- | --- | --- |
| **QUESTION** | **Content** | **Point** | **Note** |
| **question 1**  **(1 point)** | Randomly select a positive integer less than Let be the event 'selecting a prime number', and  be the event 'selecting a number divisible by ”.   1. Find the event 2. Find the event |  |  |
|  | **0.25** | **-** Exactly 4 elements or more are scored..  -Fewer than 4 elements are not scored. |
|  | **0.25** | **-** 3 elements or more are scored.  -Fewer than 3 elements are not scored. |
|  | **0.25** | **- 7** elements or more are scored.  - Fewer than 7 elements are not scored. |
|  | **0.25** | - Correct answer. |
| **question 2a**  **(0,75 point)** | Randomly roll a fair and homogeneous die once. Let  be the event “ a face with dots appears ”,  be the event “ a face with dots appears ”. Calculate the probability of the event |  |  |
| We have: the probability of eventis | **0,25** | - Correct answer. |
| the probability of event  is | **0,25** | **-** Correct answer. |
| Sinceand are two mutually exclusive events, we have : | **0,25** | **-** Correct answer. |
| **question 2b (0,75 point)** | Two marksmen shoot 2 bullets in succession at a target.. The probability of hitting the target for the first and second marksmen are  and 0,7 espectively. Knowing that the results of each shot are independent of each other, calculate the probability of the event 'both marksmen miss the target”. |  |  |
| Let  be the event that the first marksman hits the target.  We have: | **0,25** | - Correct answer |
| Let be the event that the second marksman hits the target  We have: | **0,25** | - Correct answer |
| Thus, the probability of the event “both marksmen miss the target” is | **0.25** | - Correct answer. |
| **question 3**  **(1,5 point)** | Two players take penalty kicks. The probability that the first player scores is .The probability that the second player misses is .   1. Calculate the probability that both players score. 2. Calculate the probability that exactly one player scores. |  |  |
| a. Let  be the event that the first player scores  We have: | **0,25** | - Correct answer |
| Let be the event that the second player scores.  We have: | **0,25** | - Correct answer |
| The probability that both players score is: | **0,25** | - Correct answer. |
| b. Case 1: The first player scores, the second player misses | **0,25** | - Correct answer.  Note: Students can do case 2 first. |
| Case 2: The first player misses, the second player scores | **0,25** | - Correct answer. |
| Thus, the probability of the event “exactly one player scores” is | **0,25** | - Correct answer. |
| **question 4**  **(1.0 point)** | Box A contains white balls,  red balls and  blue balls. Box B contains white balls,  red balls and blue balls. Randomly draw one ball from each box.   1. Drawing two blue balls. 2. Drawing two balls of the same color. |  |  |
| 1. Let be the event of selecting a blue ball from box A     Let be the event of selecting a blue ball from box B | **0,25** | - Correct answer  and  Scored if correct. Incorrect in one of the two or both results in no score. |
| Thus, the event of selecting two blue balls is: | **0,25** | **-** Correct answer. |
| b. The probability of selecting two red balls is:  The probability of selecting two white balls is: | **0,25** | **-** Correct answer. |
| The probability of selecting two balls of the same color is: | **0,25** | **-** Correct answer. |