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| **Question Number** | **I** | **II** | **III** | **Total** |
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| **Question Number** | **1** | **2** | **3** | **4** | **5** | **Total** |
| **Answer** |  |  |  |  |  |  |

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| **Question I:** **Choose the correct answer, then fill in the table above:****(1) If is a vector in such that then**  **(a) (b) 1 (c) (d) None of the previous****(2) The Wronskian of the functions , is equal to****(a) -1 (b) 1 (c) 0 (d) None of the previous****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****(3) The unit vector that has the same direction as** **(a) (b) (c) (d) None of the previous****(4) Let be a subset of then is****(a) Linearly independent but does not span (b) Spans but is not linearly independent** **(c) a basis for (d) None of the previous****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **(5) If the coordinate vector of with respect to the basis of is given by , then the vector** **(a) (b) (c) (d) None of the previous** |
| **Question II:****A. Let Then answer the following****(i) Prove that is a subspace of** **(ii) Find a basis for . What is the dimension of** **B. Let be vectors in then answer the following****(i) Find the value of such that are orthogonal.****(ii) Use part (i) to compute.****B. Let be a set of vectors in , then answer the following****(i) Prove that is a basis for****(ii) Write the vector as a linear combination of the vectors in**  |
| **Question III:** **Let , with the following operations for** **Then answer the following:**1. **Find the object**
2. **If find the object such that**
3. **Show that is not a vector space with the above operations.**

 **Good Luck☺** |