



Note: Answer only five questions.

Each question has 14 marks.

Q1: If $\vec{A} = a_1i + b_1j + c_1k$, $\vec{B} = a_2i + b_2j + c_2k$ and $\vec{C} = a_3i + b_3j + c_3k$ then

prove that: $\vec{A} \cdot (\vec{B} \times \vec{C}) = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$

Q2: Let $\vec{v} = i + 3j - 2k$ and $\vec{w} = -3i - 9j + 6k$ prove that $\vec{V} // \vec{W}$.

Q3: Sketch the graph from the following adjacency matrix then find edge matrix:

$$\begin{pmatrix} 0 & 1 & 0 & 1 \\ 1 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 \end{pmatrix}$$

Q4: Solve the following linear system by using Gauss-Jordan method:

$$x_2 + 2x_3 + x_4 = -1$$

$$x_1 + 2x_2 - 4x_3 = 0$$

$$2x_1 + 3x_2 - 7x_3 + 2x_4 = 4$$

$$x_2 + x_3 - 3x_4 = 1$$

Q5: Let $A = \{1,2,3,4, \dots, \dots, 20\}$ and $B = \{2,3,5,7,11,13,17,19\}$ find

1- $|A \cup B|$

2- How many subsets can be built from the set A which contain four elements

Q6: Solve the following recurrence relation

$$C_n = C_{n-1} + C_{n-2} \text{ such that } C_0 = C_1 = 1$$

Ministry of Higher Education & Scientific
Research

University of Technology

Applied Sciences department

وزارة التعليم العالي و البحث العلمي

الجامعة التكنولوجية

قسم العلوم التطبيقية

Class: 1st year

Final Examination
(2014-2015)

Subject: English Language

Date:

Examiner: A.L Yasien Mashhot Taher

Allowed time: 3 hours

Q1: Read the following passage carefully then answer the questions below:

An elevator is wonderful. It is really only small room. Rooms usually stay in one place. Elevator travel up and down all day long. Sometimes a worker stands in the elevator. He or she runs it up and down. In modern elevators there is no worker. The people walk in. They know what floor they want. They push a button and the elevator goes to that floor. It is all very fast and easy. Elevators are very important for us. Why? Think about a tall building. Maybe it has twenty floors. Maybe it has fifty or more. Who can walk up all those stairs? Maybe people can climb them one time. Can someone climb thirty floors to an office every day? Can small children walk up to their apartment on the twenty-fourth floor? Can their mother and father carry food up all those stairs? Of course not. We can have high building because we have elevators. We could not have all the beautiful tall building in the world without elevators. They are really wonderful.

A-Give a title for this passage. (2 marks)

B-Give the main idea for this passage. (3 marks)

C- Give the meaning of the underlined words. (5 only) (5 marks)

D- From the passage answer the following questions.(5 only) (10marks)

1-What is an elevator?

2-How is an elevator different from other rooms?

3-Does a worker run a modern elevator?

4-How do people make an elevator go up and down?

5-Can people walk up twenty or forty floors every day?

6-Why can we have high buildings?

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