Question 1 :

3 marks for square waveform of correct duty cycle.

3 marks for square waveform of correct time period.

Question 2 :

2 marks for correct output of “ab-cd” subroutine.
Test case:

a = 05h, b = 02h, c = 01h, d = 08h. Output (a.b - c.d) = 02h

3 marks for correct output of “det3x3” subroutine.
Test case:

Matrix Elements are 04h, 02h, 01h, 05h, 02h, 03h, 00h, 03h, 08h
Determinant = DBh

2 marks for non-invertible matrix case. Give all elements of the matrix the same number. The determinant should be 0 and hence all results must be FFh.

3 marks for correct calculation of cofactors.
Test case:

Matrix Elements are 01h, 02h, 03h, 00h, 01h, 04h, 05h, 06h, 00h
Cofactors are E8h, 14h, FBh, 12h, F1h, 04h, 5h, FCh, 01h

3 marks for correct working of “transpose” subroutine. Enter some random numbers and check if the elements are transposed.

6 marks for final inverse outputs (3 each for the following 2 test cases).
Test case 1:

Matrix Elements are 01h, 02h, 03h, 00h, 01h, 04h, 05h, 06h, 00h
Inverse Matrix Elements are E8h, 12h, 05h, 14h, F1h, FCh, FBh, 04h, 01h

Test case 2:

Matrix Elements are 02h, 04h, 01h, 01h, 00h, FEh, FFh, 03h, 04h
Inverse Matrix Elements are 00h, FFh, FFh, 00h, 01h, 00h, 00h, FFh, 00h
Also give marks if answers are 00h, 22h, 23h, 24h, 01h, 00h, 00h, 23h, 24h

If the student directly shows final output and all results are correct, it obviously means that all their subroutines are correct, so you can give them full marks.