

# Asgn-1

**You need to be alert to (usually minor) changes that may be made to the assignment statement or to the guidelines after the assignment is first put up. Refresh this frame and re-read the assignment carefully before you make your final submission.**

## Q1

Answer with justification:

- Is the 2-out-of-5 code a cyclic code?
- Is the even parity BCD code a cyclic code?
- Is the Hamming code a cyclic code?

## Q2

- Determine the generator polynomial for the Gray code of  $n$ -bits.
- The Gray code remains cyclic after applying a fixed number (say  $m$ ) of left rotations -- let it be called the H-code. Determine the generator polynomial for the  $n$ -bit H-code.

## Q3

Consider length 7 binary cyclic codes.

- How many cyclic codes are possible?
- Determine the generator polynomials for those codes.

## Q4

Take the last two digits of the roll numbers of the members of your group and convert the corresponding BCD to binary using the reverse double-dabble method.

## Q5

Find out the total number of equivalence relations on the set  $A = \{1, 2, 3, 4\}$  and also write down the equivalence classes.

## Q6

Consider sets  $A_1, \dots, A_k$  and all possible intersections of those sets or their complements; then consider the resulting meet and joins of those; what kind of algebraic structure is that?

## Marking guidelines

Assignment marking is to be done only **after** the deadline expires, as submissions gets blocked after the assignment is marked. Enter the breakup of marks while marking.

For each singleton question or part of a multipart question	
Correct approach	3
Overall correctness	2
<b><i>Grand Total Marks</i></b>	<b><i>50</i></b>

## Submission

PDF of answers prepared using LaTeX (say overleaf)

Use electronic submission via the [WBCM link](#)

You should keep submitting your incomplete assignment from time to time after making some progress, as you can submit any number of times before the deadline expires. **You should submit all your files together.**

## Warning

Cases of copying will be dealt with seriously and severely, with recommendation to the Dean to de-register the student from the course.