

College of Electronic Technology  
Electromagnetic I - fall 2019-2020

Time: 90 minutes

Midterm Exam

Total Marks is (40)

Answer these questions as the best of your knowledge:

(20 MARKS)

Q1)

Let  $A = 2a_x + 5a_y - 3a_z$ ,  $B = 3a_x - 4a_y$ , and  $C = a_x + a_y + a_z$ . (a) Determine  $A + 2B$ . (b) Calculate  $|A - 5C|$ . (c) For what values of  $k$  is  $|kB| = 2$ ? (d) Find  $(A \times B)/(A \cdot B)$ .

(20 MARKS)

Q2)

Let  $A = \rho \cos \theta a_\rho + \rho z^2 \sin \phi a_z$

- (a) Transform  $A$  into rectangular coordinates and calculate its magnitude at point  $(3, -4, 0)$ .
- (b) Find the outward flux per unit volume for  $A$ ?
- (c) When we can say to the vector  $A$  is solenoidal? and potential?
- (d) For the ice-cream cone Fig-d express  $dl$ ,  $ds_1$ ,  $ds_2$ ?

