1. **MCQ: Choose Only One Answer.**

   (a) In this semester, we have 24 classes excluding the midterm week. According to the 'Attendance Policy' of the University, at least how many classes a student needs to be present to be eligible to attend the final exam?

   A. 15. **B.** 16. **C.** 17. **D.** 18.

   (a) ———— **C** ————

   (b) In this section of CSE330, how many regular quizzes and how many makeup quizzes will be taken?

   A. 4 regular quizzes and 2 makeup quizzes. **B.** 5 regular quizzes and 1 makeup quizzes.
   C. 3 regular quizzes and 3 makeup quizzes.
   D. 6 regular quizzes with no makeup, but the best 4 will be counted.

   (b) ———— **A** ————

   (c) If the mantissa $m = 2$, then $\mathrm{fl}\big[5.9 + (5.5 + 0.4)\big]$ equals

   A. 10. **B.** 12. **C.** 11. **D.** None of these.

   (c) ———— **B** ————

   (d) If the mantissa $m = 3$, the average of 5.01 and 5.02 will be

   A. 5.015. **B.** 5.02. **C.** 5.01. **D.** 5.00.

   (d) ———— **D** ————

   (e) If we round off $(2.1032)_5$ to 4 significant figure (*i.e.* $m = 4$), it would be

   A. 2.103. **B.** 2.104. **C.** Rounding off is not possible. **D.** Ahh !!! I do not know the answer and for that I gladly accept ZERO mark. (And how can I refuse you).

   (e) ———— **C** ————

   (f) Let $x = \dfrac{3}{4}$ and $y = \dfrac{13}{16}$. If $m = 3$, then $\mathrm{fl}(xy)$ will be equal to

   A. 0.100. **B.** 0.101. **C.** 0.110. **D.** 0.111.

   (f) ———— **B** ————

Problems: Marks are as indicated

2. The general solution of a quadratic equation $ax^2 + bx + c = 0$ is given by $x_{1,2} = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ which are called roots. Verify that the sum of roots is $-b/a$ which is a fundamental property of polynomial or algebra.

   Solution: From the given data, we can the two roots as

   $$x_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \quad \text{and} \quad x_2 = \frac{-b - \sqrt{b^2 - 4ac}}{2a} \ .$$

   Therefore, we can easily write,

   $$
   \begin{aligned}
   x_1 + x_2 &= \frac{-b + \sqrt{b^2 - 4ac}}{2a} + \frac{-b - \sqrt{b^2 - 4ac}}{2a} \ , \\
   &= \frac{-b + \sqrt{b^2 - 4ac} - b - \sqrt{b^2 - 4ac}}{2a} \ , \\
   &= -\frac{2b}{2a} \ , \\
   &= -\frac{b}{a} \ .\checkmark
   \end{aligned}
   $$