Math 105 TOPICS IN MATHEMATICS
SOLUTION FOR QUIZ – II (02/09)

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[I] (2pts) $3^3 \ = \ 3 \cdot 3 \cdot 3 \ = \ 27.$ $\left(-5\right)^2 \ = \ 5^2 \ = \ 5 \cdot 5 \ = \ 25.$

[II] (3pts)

(1) $\left(x+y\right)^4 \ = \ x^4 \ + \ \boxed{4} \ x^3\, y \ + \ \boxed{6} \ x^2\, y^2 \ + \ \boxed{4} \ x\, y^3 \ + \ y^4 \,.$

(2)   If $a + b + c \ = \ 0$ then $a^3 + b^3 + c^3 \ = \ \boxed{3} \ a\, b\, c.$

[III] (6pts) $\displaystyle\binom{4}{3} \ = \ 4.$ $\displaystyle\binom{6}{2} \ = \ 15.$ $\displaystyle\binom{7}{4} \ = \ 35.$

[IV] (2pts) $\displaystyle\binom{5}{0} \ + \ \binom{5}{1} \ + \ \binom{5}{2} \ + \ \binom{5}{3} \ + \ \binom{5}{4} \ + \ \binom{5}{5}$

$$= \ \ 1 + 5 + 10 + 10 + 5 + 1 \ \ = \ \ 32 \ \ = \ \ 2^5.$$

[V] (7pts)   Identify all the 2-to-the-powers among the numbers listed below:

4,   6,   8,   10,   12,   16,   24,   32,   36,   48,

54,   64,   72,   84,   96,   108,   128,   144,   216,   256.

$\boxed{\underline{\text{Answer}}}$:   4,   8,   16,   32,   64,   128,   256.