

**Multiple-Choice Test – Sources of Error**  
**Autar Kaw**

1. Truncation error is caused by approximating
  - (A) irrational numbers
  - (B) fractions
  - (C) rational numbers
  - (D) exact mathematical procedures
  
2. A computer that represents only 4 significant digits with chopping would calculate  $66.666 \cdot 33.333$  as
  - (A) 2220
  - (B) 2221
  - (C) 2221.17778
  - (D) 2222
  
3. A computer that represents only 4 significant digits with rounding would calculate  $66.666 \cdot 33.333$  as
  - (A) 2220
  - (B) 2221
  - (C) 2221.17778
  - (D) 2222
  
4. The truncation error in calculating  $f'(2)$  for  $f(x) = x^2$  by
$$f'(x) \approx \frac{f(x+h) - f(x)}{h}$$
with  $h = 0.2$  is
  - (A) -0.2
  - (B) 0.2
  - (C) 4.0
  - (D) 4.2
  
5. The truncation error in finding  $\int_{-3}^9 x^3 dx$  using LRAM (left end point Riemann approximation) with equally portioned points  $-3 < 0 < 3 < 6 < 9$  is
  - (A) 648
  - (B) 756
  - (C) 972

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6. The number  $1/10$  is registered in a fixed 6 bit-register with all bits used for the fractional part. The difference gets accumulated every  $1/10^{\text{th}}$  of a second for one day. The magnitude of the accumulated difference is
- (A) 0.082
  - (B) 135
  - (C) 270
  - (D) 5400

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