

PROBLEMS ON BINOMIAL SERIES

- I.25 What is the constant term in the expansion of  $(x^2 - 2/x^3)^5$ ? (a) 40 (b) -40 (c) 10 (d) -10 (e) 4
- I.29 Which of the following is the best approximation to  $(1.0013)^{1/5}$ ? (a) 1.01 (b) 1.0004 (c) 1.0001 (d) 1.00015 (e) 1.0003
- II.30 The number  $(1.001)^{100}$  is best approximated by (a) 1.010 (b) 1.101 (c) 1.111 (d) 2.0 (e) 1.0011?
- III.6 Which of the following numbers is nearest 1? (a)  $(1.01)^{10}$  (b)  $(1.001)^{100}$  (c) 1.101 (d)  $(.99)^{100}$  (e)  $(.9)^{10}$
- IV.11 Which of the following numbers is the largest? (a) 1.1 (b)  $(1.01)^{10}$  (c)  $(1.001)^{100}$  (d)  $1/.9$  (e)  $(1/.99)^{10}$
- V.11 Which of the numbers is nearest  $(1.05)^{10} - 1.5$ ? (a)  $1/920$  (b)  $1/75$  (c)  $1/54$  (d)  $1/9$  (e)  $1/2$
- VI.4 The coefficient of  $x^6$  in the expansion of  $(1 + x + x^2 + x^3 + \dots + x^{10})^3$  is (a) 12 (b) 18 (c) 24 (d) 28 (e) 36.
- VI.8 Which of the following is the best approximation for  $(1.09)^{1/2}$ ? (a) 1.03 (b) 1.045 (c) 1.3 (d) 1.003 (e) 1.081
- VII.15 If  $x, y > 0$  and  $y/x$  is large then  $(y - x)^{1/2}$  is approximately equal to (a)  $y^{1/2} - x^{1/2}$  (b)  $y - x/2y^{1/2}$  (c)  $x^{1/2}/4y^2$  (d)  $y^{1/2} - x/2y^{1/2}$  (e)  $y^{1/2} - (x/y)^{1/2}$
- VIII.14 The coefficient of  $x^8$  in the expansion of  $(x^3 + x^2 + x + 1)^4$  is (a) 10 (b) 31 (c) 38 (d) 60 (e) 120
- VIII.17 The cube of which number is closest to 8.0036? (a) 2.0012 (b) 2.0003 (c) 2.004 (d) 2.0006 (e) 2.06
- IX.29 The value  $(10^{10} + 1)^{10} - 10^{100}$  is best approximated by  $10^x$  where  $x =$  (a) 91 (b) 101 (c) 1001 (d) 11 (e) 19.
- X.30 In the expansion of  $(1 + a + a^2 + a^3 + a^4)^{10}$  the coefficient of  $a^3$  is (a) 48 (b) 64 (c) 81 (d) 127 (e) 220
- X.9 If  $a$  is a very small number then  $4(4 + a)^{1/2} - (8 + a)$  is best approximated by (a)  $-a^3/16$  (b)  $a^2/64$  (c)  $a^3/27$  (d)  $-a^2/8$  (e)  $3a/329$