



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)
Academic Year 2014/2015 – 1st Year Examination – Semester 1

EN1201: Introductory Mathematics
Multiple Choice Question Paper
13th March 2015
(TWO HOUR)

Important Instructions :

- The duration of the paper is **2(two) hours**.
- The medium of instruction and questions is English.
- The paper has 40 **questions** and **8 pages**.
- All questions are of the MCQ (Multiple Choice Questions) type.
- All questions should be answered.
- Each question will have 5 (five) choices with **one or more** correct answers.
- All questions will carry equal marks.
- There will be a penalty for incorrect responses to discourage guessing.
- The mark given for a question will vary from 0 (*All the incorrect choices are marked & no correct choices are marked*) to +1 (*All the correct choices are marked & no incorrect choices are marked*).
- Answers should be marked on the special answer sheet provided.
- Note that questions appear on both sides of the paper.
If a page is not printed, please inform the supervisor immediately.
- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**

- 1) If A and B divide Rs1500 in the ratio 2:3 respectively then what is the difference in rupees between the amount they received?

(a) 250	(b)350	(c)300	(d) 500	(e)400
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- 2) A and B divide a certain amount of money in the ratio 2:5 respectively and B shares his share equally with C. If C receives Rs 500, what is the total amount?

(a) 1400(b)1800(c)1000(d) 1500	(e) 1600
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- 3) A and B played two games. A beat B in the 1st game by 10 points and B beat A in the 2nd game by 10 points. The ratio of the total points of A and B in the two games is

(a) 1:2	(b)1:1	(c)2:3	(d) 2:2	(e)3:2
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- 4) A man bought a wooden chair and sold it for Rs 3600 keeping a profit of 20%. What was his purchase price in Rupees?

(a)2000	(b)2400	(c) 2800
(d)3200	(e)3000	

- 5) A man bought two items A and B for Rs 150 and Rs 200 respectively. He sold A for Rs 225 and B for Rs. 280. Then which of the following is true?

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| (a) Both gave the same percentage profit.
(b) Percentage profit of A is more than the percentage profit of B.
(c) Percentage profit of B is more than the percentage profit of A.
(d) Percentage profit of B is less than the percentage profit of A.
(e) The percentage profits are not comparable. |
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- 6) A shop keeper keeps a 20% profit when he displays items for sale. He has a policy of giving a 10% discount at the point of sale. Then his effective profit percentage is

(a) 15	(b)8	(c)9	(d) 10	(e)20
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- 7) An alloy statue is made of 3 materials A,B and C mixed in the ratio 2:3:4 respectively. An 18 kg statue is melted and a new statue is made by adding an extra 1 kg of A. What is the ratio of A to B to C in the mixture of the new statue?

(a) 5:6:8	(b) 3:3:4	(c) 5:6:7
(d) 3:6:8	(e) 5:3:4	

- 8) The prices of two items in a supermarket sold currently at Rs.100 and Rs.150 respectively are slashed by 15% and 10% respectively. What is the percentage saving for a customer who buys one of each product?

(a) 11%	(b) 12.5%	(c) 14%	(d) 13%	(e) 12%
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- 9) If three men can complete a job in sixteen days then how many men are needed to complete the same work in six days?

(a) 12	(b) 9	(c) 6
(d) 8	(e) 4	

- 10) A family of five, two parents and three children, went for a movie. If an adult ticket is twice the price of that of a child's ticket and the family spent Rs. 420 for the tickets, then the price of an adult ticket is rupees

(a) 120	(b) 100	(c) 90
(d) 130	(e) 110	

- 11) The next two terms of the sequence 1,1,2,3,5,8,.... are,

(a) 13 and 22	(b) 20 and 21	(c) 12 and 20
(d) 13 and 21	(e) 13 and 23	

- 12) The 57th term of the sequence 1,2,3,4,5,1,2,3,4,5,1,2,3,4,5,..... is

(a) 5	(b) 1	(c) 2
(d) 3	(e) 4	

- 13) If $1^2+2^2+3^2+4^2+\dots+n^2 = \frac{n(n+1)(2n+1)}{6}$, then
 $1^2+2^2+3^2+4^2+\dots+10^2$ is equal to;
 (a) 385 (b) 240 (c) 330 (d) 280 (e) 260
- 14) If $T_n = 2T_{n-1} + 2(-1)^n$ and $T_0 = 5$, then T_3 is equal to
 (a) 28 (b) 32 (c) 30
 (d) 34 (e) 36
- 15) The sum of $1+4+7+10+\dots+31$ is
 (a) 166 (b) 172 (c) 176 (d) 182 (e) 198
- 16) The sum of $3+6+12+24+\dots+192$ is,
 (a) 388 (b) 384 (c) 424
 (d) 381 (e) 426
- 17) $\frac{\sqrt{48.7} \times 3.6}{0.06 \times 42.06}$ is approximately equal to
 (a) 12 (b) 10 (c) 6 (d) 14 (e) 8
- 18) $2 + \frac{3}{4 + \frac{5}{6}}$ is equal to
 (a) $\frac{76}{29}$ (b) $\frac{77}{29}$ (c) $\frac{79}{24}$ (d) $\frac{76}{24}$ (e) $\frac{80}{29}$
- 19) The least common multiple of $3, x^2, x^2-1, (x+1)^2$ is
 a) $3x^2(x+1)^2(x-1)^2$
 b) $3x^2(x+1)^2(x^2-1)$
 c) $3x^2(x^2-1)(x+1)$
 d) $3x^2(x+1)(x-1)$
 e) $x^2(x+1)^2(x-1)$

- 20) When the denominator of $\frac{1}{\sqrt{2}+1}$ is rationalized in the usual way, it is equal to

(a) $\frac{\sqrt{2}-1}{2}$	(b) $\sqrt{2}-1$	(c) $\frac{\sqrt{2}-1}{3}$
(d) $\frac{\sqrt{2}+1}{3}$	(e) $\sqrt{2}-2$	

- 21) Which of the following numbers are divisible by 2,3,4 and 6?

(a) 2438	(b) 5262	(c) 2256
(d) 2846	(e) 2652	

- 22) What are the prime factors of 100?

(a) 2 and 5	(b) 2, 5 and 10	(c) 2,10 and 25	(d) 2,3 and 5	(e) 2,4 and 5
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- 23) If the perimeter of a regular hexagon and that of a square of area 36cm^2 are equal, then each side of the hexagon is of length

(a) 3 cm	(b) 2 cm	(c) 4 cm	(d) 6 cm	(e) 8 cm
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- 24) If the length l cm and breadth b cm of a rectangle satisfies $3.5 \leq l \leq 6$ and $3 \leq b \leq 4.5$, then the smallest and the largest possible areas of the rectangle are respectively

(a) 15.75cm^2 and 18cm^2	(b) 10.5cm^2 and 18cm^2	(c) 13.5cm^2 and 21cm^2
(d) 10.5cm^2 and 27cm^2	(e) 10.5cm^2 and 26cm^2	

- 25) A cylindrical container of radius 7 cm contains water to a height of 10 cm. When a sphere is completely immersed in the water, the water level rises up to $\frac{7}{6}\text{cm}$. What is the radius of the sphere?

(a) 2 cm	(b) 2.5 cm	(c) 3 cm	(d) 3.5 cm	(e) 4 cm
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- 26) A rectangular land of dimensions 12 m and 10 m has a square pond of side 5 m. What is the area of the land excluding the pond?

(a) $80m^2$ (b) $90m^2$ (c) $85m^2$ (d) $95m^2$ (e) $105 m^2$

- 27) A circular ground has a tarred path of width 1 m around the outer edge of the ground. If the outer radius of the ground including the path is 50 m, find the area of the path

(a) $99\pi m^2$ (b) $101\pi m^2$ (c) $2500\pi m^2$ (d) $2401\pi m^2$ (e) $199\pi m^2$

- 28) A cylindrical container of radius 14 cm and height 35 cm is full of water. This water is poured into glasses each of capacity 380 ml. How many glasses can be filled fully?

(a) 57 (b) 66 (c) 65 (d) 56 (e) 60

- 29) The price of a text book is Rs 200 more than the price of five 80 page books. If the price of the text book is Rs 400, what is the price of an 80 page exercise book in rupees?

(a) 50 (b) 40 (c) 45 (d) 55 (e) 60

- 30) The elements of the set $S = \{ X \in Z : 3 \leq 3x \leq 10 \}$ are

(a) 1,2,3,4 (b) 2,3 (c) 3,4,5,...,10 (d) 1,2,3,...,10 (e) 1,2,3

- 31) If $\frac{1}{4} < x \leq \frac{1}{2}$ then,

(a) $4 > x > 2$ (b) $2 < x \leq 4$ (c) $4 > x \geq 2$ (d) $2 \leq x < 4$
(e) $2 \leq x \leq 4$

- 32) The values of x satisfying $-1 < x < 2$ and $-2 < x < 1$ are

(a) $-1 < x < 2$ (b) $-1 < x < 1$ (c) $-2 < x < 2$ (d) $1 < x < 2$ (e) $-2 < x < 1$

33) If $\frac{1}{x} - x = 5$ then $\frac{1}{x^2} + x^2$ is equal to

- (a) 25 (b) 27 (c) 23 (d) 30 (e) 20

34) The recurring decimal number $0.12727\overline{27}$ equal to

- (a) $\frac{6}{55}$ (b) $\frac{9}{55}$ (c) $\frac{7}{55}$ (d) $\frac{7}{65}$ (e) $\frac{9}{65}$

35) The solutions of $x^2 - 2x = 5$ are

- (a) $\sqrt{5} + 1$ (b) $-\sqrt{5} + 1$ (c) $\sqrt{6} + 1$ (d) $-\sqrt{6} + 1$ (e) $-\sqrt{6} - 1$

36) When a number is added to the numerator and the denominator of $\frac{2}{3}$ we get $-\frac{1}{2}$.
What is the number?

- (a) $\frac{7}{3}$ (b) $-\frac{7}{3}$ (c) $\frac{2}{3}$ (d) $\frac{-5}{3}$ (e) $\frac{-2}{3}$

37) If $x - y = k$ and $xy = 2k$, then $x^2 + y^2$ equal to

- (a) $k^2 + 4k$ (b) $k(k - 4)$ (c) $k(k + 2)$ (d) $k^2 + 4$ (e) $k(k + 4)$

38) The sum of three consecutive positive integers is 243, Then the smallest of these numbers is

- (a) 79 (b) 80 (c) 81 (d) 82 (e) 78

39) The sum of the squares of three consecutive positive integers is 149. Then the largest of these numbers is

- (a) 8 (b) 9 (c) 7 (d) 10 (e) 11

40) $a(b - c) + b(c - a) + c(a - b)$ is equal to

- (a) $ab + cb$ (b) $ab + bc + ca$ (c) $ab - bc + ca$ (d) $ab + bc - ca$ (e) 0
