UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)
Academic Year 2018 –1st Year Examination – Semester 1

EN1201: Introductory Mathematics

Multiple Choice Question Paper
06th May, 2018
(ONE HOUR)

Important Instructions :

- The duration of the paper is **1(one) hour**.
- The medium of instruction and questions is English.
- The paper has **24 questions** and **06 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.**
- Calculators are **not** allowed.

1) The price of a brush, serviette and a coaster are Rs. $5x-2$, Rs. $x+4$ and Rs. $2x$, respectively. Assume that Jane purchases one unit of each of the above items, and nothing else, on her shopping trip. The average amount of her total bill is Rs. 62. Which of the following statements is/ are true?

(a.) The serviette and the coaster cost the same
(b.) The brush costs Rs. 120
(c.) The range of the 3 items' prices is 86
(d.) The lowest price is Rs. 27
(e.) The coaster costs Rs. 56.

2) The denominator of a fraction is 2 more than its numerator. The sum of the fraction and its reciprocal is $\frac{10}{3}$. What is the fraction?

(a) 3/5 (b) 5/3 (c) 1/3 (d) 3 (e) 9/11

3) If $a = 50$, then $a + a^{-1} + a^{-2}$ is equal to

(a) 50.0402 (b) 50.0024 (c) 50.24
(d) 50.0204 (e) 50.024

4) How many perfect squares are between 130 and 330?

(a) 5 (b)6 (c)7 (d) 8 (e)9

5) A rectangular vegetable plot has a length of 5 meters more than three times its width. What is the perimeter of the plot if its width is x meters.

(a) 8x+6 (b) 8x+10 (c) 10x+6
(d) 10x+10 (e) 6x+8

6) $(a+5)(a^2-5a+10)$ is equal to:

(a). a^3+5
(b). $a^3-15a+25$
(c). $a^3-15a+50$
(d). $a^3-5a^2+15a+50$
(e). $a^3-5a^2-15a+50$

7) $\frac{1}{(x-y)^2}+\frac{1}{x^2-y^2}$ is equal to

(a). $\frac{2y}{(x+y)^2)(x-y)}$
(b). $\frac{2x}{(x+y)(x-y)^2}$
(c). $\frac{x^2-y^2}{(x-y)}$
(d). $\frac{xy}{(x-y)^2(x^2-y^2)}$
(e). $\frac{2x}{(x-y)(x^2+y^2)}$

8) Jacob and David have between themselves a total of 100 marbles. If Jacob has 16 marbles less than David, how many marbles does David own?

(a) 60 (b) 58 (c) 56 (d) 54 (e) 52

9) What is the equation of the line perpendicular to the graph of the equation y+3x-2=0 and passes through the point (2,-4)?

(a). $y=\frac{-1}{2}x-3$
(b). $y=\frac{1}{2}x-5$
(c). $3y-x+14=0$
(d). $y=\frac{1}{3}x-\frac{14}{3}$
(e). $y-3x+4=0$

10) The straight line joining the points with coordinates (3,5g) and (-6g,4) has gradient 4. What is the value of g?

(a) 15/19	(b) -17/19	(c) 16/19
(d) -15/19	(e) -16/19	

11) A mother gives her children a bag of potato chips to share among themselves while they watch a movie. Afterwards, the mother realizes that the children consumed 60% of the contents, and that the remnants weighed only 50g. What was the original weight of the unopened bag?

(a) 110g	(b) 115g	(c) 120g
(d) 125g	(e) 130g	

12) How long would it take for an investment to double, if simple interest is calculated on it at 5% per annum?

(a) 15 years	(b) 18 years	(c) 20 years	(d) 25 years	(e) 30 years

13) The retail price of a pair of shoes was initially Rs.500. During the Christmas sale, 15% of the price was discounted. After the sale was over, the price was increased by 10% over the sale price. What was the final price of the pair of shoes?

(a) Rs. 467.50	(b) Rs. 475.50	(c) Rs 460.00	(d) Rs 465.00	(e) Rs. 470.00

14) The first Rs. 800000 of annual income is exempt from income tax, while there is a rate of 8% for the next Rs. 400000, 10% for the next Rs. 400000 and then 12% for the rest of the income. Then, the annual tax payable by an employee with a monthly income of Rs. 300000 is:

(a) Rs. 320,000	(b) Rs. 316,000	(c) Rs. 312,000	(d) Rs.328,000	(e) Rs. 304,000

15) The next 2 terms of the sequence $\sqrt{18}, \sqrt{50}, \sqrt{98}$, ... are:

(a) $\sqrt{162}, \sqrt{450}$ (b) $\sqrt{128}, \sqrt{162}$ (c) $\sqrt{162}, \sqrt{242}$
(d) $\sqrt{162}, \sqrt{200}$ (e) $\sqrt{200}, \sqrt{242}$

16) The sum to infinity of a geometric progression with first term 3 and common ratio of $-\frac{1}{3}$ is:

(a) 4/9 (b) - 9/4 (c) 9/4 (d) - 4/9 (e) 4/7

17) $\sum_{b=1}^{\infty} \frac{(3\times 2^{b+1})-(2\times 2^{b-1})}{2^{2b}}$ is equal to

(a) 5 (b) 10 (c) 15 (d) 20 (e) 25

18) Which term in the arithmetic progression: 3, 7, 11, ….. equals 39?

(a)10th (b) 11th (c) 12th (d) 13th (e) 14th

19) If $(x-4)(x-6) > 0$, then the possible values of x are:

(a) $x > 6$ (b) $x < 4$ (c) $4 < x < 6$ (d) $4 \leq x \leq 6$ (e) $x < 6$

20) X, Y and Z are points on a circle, with XZ being the diameter. If XY= 12cm and YZ= 4cm then the area of the circle in cm^2 is:

(a) 40π (b) 38π (c) 42π (d) 36π (e) 34π

21) A barrel contains $64m^3$ of crude oil. How many cubic centimeters of oil can it hold?

(a) 640000 cm^3 (b) 64×10^4 cm^3 (c) 6.4×10^7 cm^3 (d) 64000000 cm^3 (e) 64×10^5 cm^3

22) A solid cylindrical block of radius 16cm and height 36cm is melted and solid spheres, each with a radius of 4cm, are made. The maximum number of such spheres that can be made is:

(a) 100	(b) 102	(c) 104	(d) 106	(e) 108

23) If 3 angles of a quadrilateral are $74°, 90°$ and $65°$ to the nearest degree, then the largest possible value of the fourth angle is:

(a) $129.9°$	(b) $131.1°$	(c) $130.2°$	(d) $132.5°$	(e) $131.5°$

24) The volume, in cm^3, of a triangular prism of length 18 cm, and an equilateral triangle of side length 4 cm as its cross section is equal to:

(a) 71	(b) $72\sqrt{3}$	(c) $80\sqrt{3}$	(d) 80	(e) $88\sqrt{3}$

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