University of Colombo, Sri Lanka

University of Colombo School of Computing

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2024 — 1st Year Examination — Semester 1

EN1106 (R) — Introductory Mathematics (Repeat Paper)

Multiple Choice Question Paper

(1 Hour)

Important Instructions

- The duration of the paper is **1 Hour**.
- The medium of instructions and questions is English.
- This paper has **20 questions** on **4 pages**. Answer **all** questions.
- All questions are of the **MCQ** (Multiple Choice Questions) type.
- Each question will have **5 (five)** choices with **ONE OR MORE** correct answers.
- This paper consists of 100 marks and all the 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 -1 (All the incorrect choices are marked & no correct choices are marked) to +1 (All the correct choices are marked & no incorrect choices are marked). However, **the minimum mark per question would be zero**.
- Answers should be marked on the **special answer sheet** provided.
- Note that questions appear on both sides of the paper. If a page or part of a page is not printed, please inform the supervisor/invigilator 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.**
- Any electronic device capable of storing and retrieving text, including electronic dictionaries, smartwatches, and mobile phones and calculators are **not** allowed.
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1) The greatest common divisor (gcd) of 56, 98 and 42 is

(a) 2	(b) 7	(c) 3
(d) 14	(e) 6	

2) 0.0783×0.5 in standard form is

(a) 0.3915×10^{1}	(b) 3.915×10^{-2}	(c) 3.915×10^{-1}
(d) 0.3915×10^{-2}	(e) 0.3915×10^{2}	

3) If the sum of three (3) consecutive **even integers** is 84 then the middle integer is

(a) 24	(b) 26	(c) 28
(d) 32	(e) 30	

4) Solve the following pair of simultaneous equations. Find x and y.

$$3x + 5y = 18$$
$$2x - y = 12$$

(a) x = 5, y = 1	(b) x = 5, y = 3	(c) $x = \frac{48}{7}$, y = 1
(d) x = 6, y = 0	(e) $x = \frac{48}{7}$, y = 2	

5) Consider three consecutive integers. Add the first and third integers, then multiply the sum by 3. Subtract twice the second integer from the result. Divide the result by 6 and multiply the quotient by 7. If the final result is 210, what is the largest integer?

(a) 35	(b) 44	(c) 36
(d) 46	(e) 37	

6) Simplify, $(3a^{-2}c) \times (-2a^{4}b^{2}c^{2})$

(a) $-3a^{2}b^{-2}c^{2}$	(b) $-6a^{2}b^{2}c^{3}$	(c) $5a^{2}b^{2}c^{3}$
(d) $-6a^{-2}b^{2}c^{3}$	(e) $-6a^{2}b^{2}c^{3}$	

7) If x = 3, then the following expression is equal to,

$$\frac{x-1}{x-\dfrac{1}{\dfrac{1}{x+1}-1}}$$

(a) 2/11	(b) 6/13	(c) 6/5
(d) 4/13	(e) 9/5	

8) The ratio of the number of boys to girls in a class is 3:2. If 5 more boys and 10 more girls join the class, the ratio changes to 4:3. What is the original number of boys in the class?,

(a) 50	(b) 15	(c) 60
(d) 75	(e) 45	

9) Which of the following lines are parallel to the line $4x - 6y - 7 = 0$.

(a) $3x - 2y - 9 = 0$	(b) $6y - 4x + 5 = 0$	(c) $2x + 3y - 8 = 0$
(d) $6x + 4y + 3 = 0$	(e) $2x - 3y - 7 = 0$	

10) A cube of side 6 cm is melted and recast into smaller cubes. If the side of the smaller cube is 2 cm, how many smaller cubes can be formed?

(a) 8	(b) 36	(c) 24
(d) 4	(e) 27	

11) If $5x - 16 \leq x < 4x - 3$, then find the range of x.

(a) $1 \leq x < 2$	(b) $-1 < x \leq 5$	(c) $1 \leq x < 3$
(d) $1 < x \leq 4$	(e) $x < 1 \; or \; x \geq 3$	

12) If $2\log_x 243 - 3\log_x 27 = 1$, then x is equal to

(a) 2	(b) 4	(c) 5
(d) 3	(e) 7	

13) If the 1st term of a Geometric progression is 32 and the 6th term is 243, what is the 5th term of the Geometric Progression?

(a) 124	(b) 32	(c) 162
(d) 81	(e) 154	

14) What are the roots of the following equation?

$$x^3 - 2x^2 - 25x + 50 = 0$$

(a) 2, 5, -2	(b) 2, 5, -5	(c) 4, -5, 2
(d) -2, 5, -5	(e) 4, -2, 2	

15) The solution to the equation $\log_3(5x - 2) = 5$ is

(a) 127/5	(b) -49	(c) -127/5
(d) 81/5	(e) 49	

16) If the sum of the first n cubic numbers is $S_n = \left[\frac{n(n+1)}{2}\right]^2$, then the sum of $7^3 + 8^3 + 9^3 + 10^3$ is

(a) 2241	(b) 2584	(c) 1861
(d) 784	(e) 2324	

17) A sum of Rs. 46,000 is distributed among Saman, Namal and Kasun, such that the ratio of amounts received by Saman and Namal is 1:3, and the ratio of amounts received by Namal and Kasun is 2:5. Determine the amounts received by Saman, Namal, and Kasun in rupees respectively.

(a) (16000, 10000, 20000)	(b) (8000, 12000, 26000)	(c) (4000, 12000, 30000)
(d) (2000, 18000, 26000)	(e) (5500, 12500, 28000)	

18) A store offers a "buy three, get one free" deal on an item priced at Rs. 2,000 each. If the profit on the total cost price is 25%, what is the cost price of one item to the seller?

(a) Rs. 1,600	(b) Rs. 1,200	(c) Rs. 800
(d) Rs. 2,000	(e) Rs. 1,800	

19) If $72n$ is a positive cubic number then the least value of n is

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

20) Car A traveling at 60 km/h departs from a point one hour earlier than Car B, which starts from the same point and travels at 90 km/h. How long will it take for the Car B to overtake the Car A, assuming both cars are moving in the same direction?

(a) 1 hour	(b) 2 hours	(c) 3 hours
(d) 4 hours	(e) 1.5 hours	

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