

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**P.G. DEGREE EXAMINATION – CROSS DISCIPLINARY****SECOND SEMESTER – APRIL 2023****PMT2CD01 – QUANTITATIVE APTITUDE FOR COMBINED CIVIL SERVICES EXAMINATIONS**

Date: 12-05-2023

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION A – K1 (CO1)**Answer ALL the questions****(5 x 1 = 5)****1. Answer the following**

- a) Define composite and co-prime numbers.
- b) What least value must be assigned to * so that the number $197*5462$ is divisible by 9?
- c) Recall the concept of simple interest and compound interest.
- d) Express 0.08% as a fraction.
- e) What is the use of counting of odd days in a calendar?

SECTION A – K2 (CO1)**Answer ALL the questions****(5 x 1 = 5)****2. Choose the correct answer**

- a) 860% of 50 + 50% of 860 = ?
(i) 430 (ii) 516 (iii) 860 (iv) 960
- b) The L.C.M. of 22, 54, 108, 135 and 198 is :
(i) 330 (ii) 1980 (iii) 5940 (iv) none of the above
- c) Find the average all the numbers between 6 and 34 which are divisible by 5.
(i) 18 (ii) 20 (iii) 24 (iv) 30
- d) In a single throw of a die, what is the probability of getting a number greater than 4?
(i) $\frac{1}{2}$ (ii) $\frac{1}{3}$ (iii) $\frac{2}{3}$ (iv) $\frac{1}{4}$
- e) An athlete runs 200 meters race in 24 seconds. His speed is:
(i) 20 km/hr (ii) 24 km/hr (iii) 28.5 km/hr (iv) 30 km/hr

SECTION B – K3 (CO2)**Answer any THREE of the following****(3 x 10 = 30)**

3. (a) Find the largest number of four digits exactly divisible by 12, 15, 18 and 27. **(4 marks)**
(b) Determine the value of $100x + 200y + 300z$, by solving the simultaneous equations $2x + 3y + z = 55$, $x + z - y = 4$ and $y - x + z = 9$. **(6 marks)**
4. (a) A batsman makes a score of 87 runs in the 17th innings and thus increases his average by 3. Find his average after 17th inning. **(5 marks)**
(b) 2 men and 3 boys can do a piece of work in 10 days while 3 men and 2 boys can do the same work in 8 days. In how many days can 2 men and 1 boy do the same work? **(5 marks)**
5. (a) Find the volume, curved surface area and total surface area of a cylinder with diameter of base 7 cm and height 40 cm. **(5 marks)**

	<p>marks)</p> <p>(b) Find the number of lead balls, each 1 cm in diameter that can be made from a sphere of diameter 12 cm. (5 marks)</p>
6.	<p>(a) One of the two buses complete a journey of 300 km in $7\frac{1}{2}$ hours and the other a journey of 450 km in 9 hours. Find the ratio of their speeds. (4 marks)</p> <p>(b) If $\frac{2x}{1+\frac{1}{1+\frac{x}{1-x}}}$ = 1, then find the value of x. Also, construct a quadratic equation with this x value as a root. (6 marks)</p>
7.	Explain the important facts and formulae of calendar. In addition, find what dates of December 2025 did Saturday fall?
SECTION C – K4 (CO3)	
	<p>Answer any TWO of the following (2 x 12.5 = 25)</p>
8.	<p>(a) Utilizing the concept of decimal fraction, arrange the fractions $\frac{3}{5}, \frac{4}{7}, \frac{8}{9}$ and $\frac{9}{11}$ in their ascending and descending orders. (4.5 marks)</p> <p>(b) The sum of two numbers is 15 and the sum of their squares is 113. Find the numbers. (4 marks)</p> <p>(c) Find the cost of carpeting a room 13 m long and 9 m broad with a carpet 75 cm wide at the rate of Rs. 12. 40 square metres. (4 marks)</p>
9.	<p>(a) One third of Xavier’s marks in History exceeds a half of his marks in Tamil by 30. If he got 240 marks in the two subjects together, how many marks did he get in Tamil? (4 marks)</p> <p>(b) Find the area of a triangle whose sides measure 13 cm, 14 cm and 15 cm. (4 marks)</p> <p>(c) Explain the concepts of percentage and ratio through suitable examples. (4.5 marks)</p>
10.	Develop different real life business problems and obtain the following: <ul style="list-style-type: none"> (i) Profit Percentage (ii) Loss percentage (iii) Simple interest (iv) Compound interest
11.	<p>(a) At what time between 4.00 p.m. and 5.00 p.m. the hands of a clock will be at right angle? (6marks)</p> <p>(b) Define sequence and series. Also, determine the value of the product of the sequence of terms $(1 - \frac{1}{2}), (1 - \frac{1}{3}), (1 - \frac{1}{4}), \dots, (1 - \frac{1}{1000})$. (6.5 marks)</p>
SECTION D – K5 (CO4)	
	<p>Answer any ONE of the following (1 x 15 = 15)</p>
12.	Develop a sequence which is divisible by the 5 th smallest prime number. Also, find its general term. In addition, construct the series for such sequence and find the sum up to 100 terms.
13.	List out the divisibility rules for the numbers from 2 to 11 and illustrate with suitable examples.
SECTION E – K6 (CO5)	
	<p>Answer any ONE of the following (1 x 20 = 20)</p>
14.	Create a questionnaire with at least 10 questions on the topic “Stress and its Impact in Students”.

In addition, interpret your own sample survey results using bar graphs.

15. Create a questionnaire with at least 10 questions on the topic "Impact of Movies in Youths". Further, prepare your own sample survey result and interpret it using pie-charts.

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