SUBJECT: MATHEMATICS

CLASS : VIII

General Instructions:

(i). **All** questions are compulsory.

(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.

(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.

(iv). There is no overall choice.

(v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. Which of the following expressions always represents an even number?
(a) $3n + 1$ (b) $4n$ (c) $5n + 3$ (d) $7n + 5$

2. A number is of the form $7k + 6$. What remainder will it leave when divided by 7?
(a) 0 (b) 1 (c) 6 (d) 7

3. If a number is divisible by both 9 and 4, then it must be divisible by
(a) 18 (b) 12 (c) 36 (d) 24

4. Which number will leave the same remainder as 7245 when divided by 9?
(a) 9 (b) 0 (c) 6 (d) 9

5. Which of the following numbers is divisible by 11?
(a) 34562 (b) 45123 (c) 12144 (d) 57238

6. The digital root of 86499 is
(a) 3 (b) 6 (c) 9 (d) 8

7. Which expression represents all multiples of 6?
(a) $2n$ (b) $3n$ (c) $6n$ (d) $n + 6$

8. Which of the following numbers is divisible by both 3 and 11?
(a) 132 (b) 165 (c) 198 (d) 363

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. **Assertion (A):** Every number divisible by 8 is also divisible by 4.
Reason (R): $8 = 4 \times 2$.

10. **Assertion (A):** If the last two digits of a number are divisible by 4, the whole number is divisible by 4.
Reason (R): 100 is divisible by 4.

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Write the general form of a number divisible by 9 and give two examples.

12. Show that the sum of two odd numbers is always even.

13. Find the remainder when 456 is divided by 9.

14. Write two numbers that leave remainder 1 when divided by 5.

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. Find the smallest number that leaves remainder 2 when divided by 3 and remainder 3 when divided by 5.

16. Explain why divisibility by 6 requires divisibility by both 2 and 3.

17. Prove that the difference of two multiples of 7 is also a multiple of 7.

SECTION – D

Questions 18 carry 5 marks each.

18. Explain the divisibility test for 11 using place value with an example.

SECTION – E (Case Study Based Question)

Question 19 to 20 carry 4 mark

19. Case Study-1: Divisibility Booths

During a school math fair, students created "Divisibility Booths". One booth focused on testing divisibility by 3. Meera demonstrated that instead of dividing large numbers, adding their digits was enough to check divisibility. She showed how place values differ from their digits by multiples of 3, making digit sum a reliable method. This booth attracted many students as they could test large numbers quickly and accurately.

(a) Find the digit sum of 73956.
(b) Determine whether the number is divisible by 3.
(c) Explain why digit sum works for divisibility by 3.
(d) Give another example to support your answer.

20. Case Study-2: Classroom Challenge

A teacher asked students to identify numbers divisible by both 4 and 6. Initially, some students assumed that such numbers would always be divisible by 24. However, through examples and prime factor

discussion, the teacher showed that this is not always true. Students learned the importance of least common multiples and prime factorisation in understanding divisibility relationships.

(a) Write the prime factors of 4 and 6.
(b) Find their least common multiple.
(c) Check whether 12 is divisible by 4 and 6.
(d) Explain why 12 is not divisible by 24.