

**Date:** 16-07-2021

**Class:** 10<sup>th</sup> Genesis

**Subject:** Maths

**Test code:** SECT02(21041309)

**M. Marks: 30**

1. If HCF (a, b) = 15 and  $a \times b = 675$ , find LCM (a, b). (1 marks)
2. What is the greatest prime in the prime factorisation of 1771? (1 marks)
3. The product of a non – zero rational and an irrational number is always (1 marks)
  - (a) Positive
  - (b) Negative
  - (c) Irrational
  - (d) None of these
4. Find the prime factorization of 32760. (1 marks)
5. Do the equations  $x - y = 0$  and  $x - y = 3$  represent parallel straight line? (1 marks)
6. Express  $\sin 67^\circ + \cos 75^\circ$  in terms of t – ratios of the angles between  $0^\circ$  and  $45^\circ$ . (1 marks)
7. Find the value of  $\tan \theta$  when  $\tan \theta + \cot \theta = 2$ . (1 marks)
8. Prove that  $\cos 60^\circ = \frac{\sqrt{3}}{2}$ . (2 marks)
9. Prove that  $6^n$  can not end with the digit 0 for any natural number n. (2 marks)
10. Given examples of polynomials p (x), g (x), q (x) and r (x), which satisfy the division algorithm and (2 marks)
  - (i)  $\deg q (x) = \deg r (x)$
11. For an acute angled triangle ABC,  $\tan (A + B - C) = 1$  and  $\sec (B + C - A) = 2$ . Find the all angles of the  $\Delta ABC$ . (3 marks)
12. For which value (s) of p, do the pair of linear equations  $px + y = p^2$  and  $x + py = 1$  have (3 marks)
  - (i) No solution
  - (ii) Infinitely many solutions
  - (iii) A unique solution.
13. Sonu can row his boat at a speed of 4 km/h in still water. If takes 2 hour more to row the boat 6 km upstream than to return downstream, find the speed of the stream. (3 marks)
14. It takes 12 hours to fill a swimming pool using two pipes. If the pipe of larger diameter is used for 4 hours and the pipe of smaller diameter is used for 9 hours, only half of the pool is filled. How long would it take for each pipe to till the pool separately. (4 marks)
15. Prove the following identities: (4 marks)
  - (i)  $\frac{1 + \cos \theta + \sin \theta}{1 + \cos \theta - \sin \theta} = \frac{1 + \sin \theta}{\cos \theta}$