

Model Question Paper 2021-22

Class - 11

Subject – Agriculture Maths and Statistics

Time – 3 hrs 15 min

MM– 50

Note: First 15 minutes are allotted for the candidates to read the question paper.

Instructions :

1. There are 17 questions in all in this question paper.
2. All questions are compulsory.
3. Marks allotted to questions are given against them.
4. Give complete solution except question number 1.
5. Start from question number 1 and solve up to the last.
6. Do all the calculation and rough work in your answer sheet.

1. Solve all sections.

(a) Simplify $27^{\frac{2}{3}}$. 1

(b) Find the 10th term of the series 5, 9, 13 1

(c) If $\tan A = \frac{1}{2}$, $\tan B = \frac{1}{3}$, then find the value of $\tan (A + B)$ 1

(d) If $x \propto y$ and $z \propto w$ then prove that $xz \propto yw$. 1

(e) Prove that $\sin 2\theta = \frac{2\tan\theta}{1+\tan^2\theta}$

2. If $3^{2x-y} = 3^{x+y} = \sqrt{27}$, then find the value of x and y . 1

3. If a, b, c are in A.P then prove that $(a - c)^2 = 4(b^2 - ac)$ 1
4. Simplify $(a^{\frac{1}{3}} + b^{\frac{1}{3}})(a^{\frac{2}{3}} + b^{\frac{2}{3}} - a^{\frac{1}{3}}b^{\frac{1}{3}})$ 1
5. If the third term of a geometric series is 4 and seventh term is 64, then find the series 1
6. Prove that $\sqrt{\frac{(1+\cos\theta)}{(1-\cos\theta)}} = \operatorname{Cosec}\theta + \operatorname{Cot}\theta$ 1
7. Find the distance of the point $(a\sin\theta, a\cos\theta)$ from origin. 2
8. Find the area of triangle formed by straight lines, $5x + 4y = 20,$
 $x = 0, \quad y = 0$ 2
9. If $A + B + C = 90^\circ$ then prove that $\tan A \tan B + \tan B \tan C + \tan C \tan A = 1$ 2
10. Prove that $\frac{\sin A + \sin 3A}{\cos A + \cos 3A} \tan 2A$ 2
11. Solve the equation $2^{x+2} + 2^{x+1} = 48.$ 2
12. Find the volume of the largest Cone that can be cut from a Cube whose each edge is 18cm long. 4
13. Prove that $\sin 20^\circ \cdot \sin 40^\circ \cdot \sin 60^\circ \cdot \sin 80^\circ = \frac{3}{16}$ 4
14. The height of a Cone is 28cm and radius of the base is 21cm. Find the volume and curved surface. 4
15. The marks obtained by some students are as follows. Find the mean of the following: 6
- | | | | | | |
|--------------------|------|-------|-------|-------|-------|
| Marks obtained | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| Number of Students | 3 | 13 | 18 | 12 | 4 |
16. Find the mode from the following table: 6
- | | | | | | | | |
|----------------|-------|-------|-------|-------|-------|-------|-------|
| Class interval | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
| Frequency | 04 | 10 | 16 | 30 | 45 | 20 | 10 |

17. Find the median of the following data:

6

Marks	Number of students
0-10	2
10-20	6
20-30	10
30-40	17
40-50	30
50-60	14
60-70	10
70-80	6
80-90	4
90-100	1