SHRI VISHWAKARMA SKILL UNIVERSITY

(A State Skill University, setup by an Act of Legislature in 2016)

185032

Course	:	D.Voc. Industrial Electronics
Subject	:	Applied Mathematics I
Subject Code	:	ZDSC-103
Semester	:	First
Duration	:	3 Hours
Maximum Marks	:	70

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. **Section A** comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 2 marks.
3. **Section B** comprises 8 essay type questions out of which students need to do any 5. Each question carries 10 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled.

Roll Number

185032

SECTION –A (OBJECTIVE TYPE QUESTIONS)

(10x2=20 Marks)

1. Draw Venn diagram for $A - B$, when $A \subset B$
2. If $A \times B = \{(a,x),(a,y),(b,x),(b,y)\}$, Find A and B.
3. The 15th term of an A. P. is 34. Find the sum of its 22 terms.
4. Define the nth term of Harmonic Progression.
5. 4 boys and 3 girls are to be seated in 7 chairs, In how many ways can this be done if all boys are seated together?
6. Find the number of subsets of the set {1, 3, 5, 7, 9, 11, 13, ..., 23}each having 3 elements.
7. If $\tan\theta = \frac{1}{2}$, what is the value of $\sin\theta$ and $\cos\theta$?
8. Express $\sin 6\theta + \sin 4\theta$ as a product.
9. What is the relation between cartesian and polar coordinates ?
10. What is the slope of the line joining the points A(6, 8) and B(4, 14) ?

SECTION –B (ESSAY TYPE QUESTIONS)

(5x10=50 Marks)

1. Find the domain and range of the function $y=\sqrt{(3-x)(x-5)}$.
2. Three numbers are in A. P. The difference between the first and the last is 8 and the product of these two is 20. Find the numbers.
3. Find the sum of the sequence 8, 88, 888, ... up to n terms.
4. Find the middle term(s) in the expansion of $\left(\frac{3x}{4} - \frac{4y}{3}\right)^7$.
5. Solve for partial fraction of $\frac{2x-4}{(x+1)^2(x-3)}$.
6. Prove that: $\sin\frac{\pi}{18}\sin\frac{5\pi}{6}\sin\frac{5\pi}{18}\sin\frac{7\pi}{18} = \frac{1}{6}$.
7. Find the perpendicular distance of the point(1,2) on the straight line $3x+7y+14=0$
8. Determine x so that 4 is the slope of the line through the points $A(6,12)$ and $B(x, 8)$.

------End of Paper------