Roll No.

Candidates must write the Set No. on the title page of the answer book.

DAV PUBLIC SCHOOLS POKHARIPUT,BHUBANESWAR-21

PSVT- 2021-22

- Check that this question paper contains 4 printed pages.
- Set number given on the right hand side of the question paper should be written on the title page of the answer book by the candidate.
- Check that this question paper contains 17 questions.
- Write down the Serial Number of the question in the left side of the margin before attempting it.

CLASS- XI

SUB : APPLIED MATHEMATICS

Time : $1\frac{1}{2}$ Hours **Maximum Marks : 40**

General Instructions :

1. This question paper contains two parts A and B. Each part is compulsory. Part A carries 9 marks and part B carries 31 marks.

2. Part A has objective type questions and Part B has descriptive type questions.

3. Both Part A and B have choices.

Part-A
1. It consists of two sections I and II.
2. Section I comprises of five short answers type questions.
3. Section II comprises of one case study. Each case study comprises of 5 case based MCQs. An examinee is to attempt any 4 out of 5 MCQs.

Part-B
1. It consists of two sections III ,IV and V.

2. Section –III comprises of 5 questions of 2 marks each.
3. Section –IV comprises of 3 questions of 3 marks each.
4. Section –V comprises of 2 questions of 5 marks each
5. Internal choice is provided in 2 questions of section-III, 3 questions of Section-IV,2 questions of Section-V .You have to attempt only one of the alternatives in all such questions.

Part –A

Section-I

All questions are compulsory. In case of internal choices, attempt any one

1. Solve $5^{2x+3}=1$
2. Express $(1-i)^4$ in a+ib form

OR

Find the multiplicative inverse of $\sqrt{5}$+3i

3. Simplify $\frac{1}{2}$log36+2log8-log1.5

OR

Solve x, logx+log5=2log3

4. Convert 569 in to binary number
5. Find the mean of first twelve natural numbers..

Section-II

6. Find characteristics and mantisa of a) 0.00000002708 b)538.6

Part-B

Section-III

7. Find the real values of x and y,if (x-iy)(3+5i) is the conjugate of -6-i24

OR

If $(\frac{1+i}{1-i})^m$=1, then find the least positive integral value of m

8. If abc=1, show that $\frac{1}{1+a+b^{-1}}+\frac{1}{1+b+c^{-1}}+\frac{1}{1+c+a^{-1}}=1$

OR

If $a^x=b^y=c^z$ and b^2=ac ,prove that y=$\frac{2xz}{z+x}$

9. Evaluate $(0.009)^{1/3}$ using logarithm table

10. Themarks obtained by 15 students in a monthly test are:11,09,07,03,18,21,13,15,18,04,06,17,22,13,15
    a) Find the average marks of 15 students
    b) Find the average of their marks when the marks of each student are increased by 2.
11. Evaluate log0.00000007324
12. Using antilog table, find x if logx=1.3649.

Section-IV

13. The average of 19 observations is 54.If the average of first 10 observations ia 56 and that of last 10 observations is 53.Find the tenth observation.

OR

Average of 9 observations was found to be 35.Later on, it was detected that an observation 81 was misread as 18.Find the correct average.

14. A clock loses 5 seconds in 4 minutes and was set right at 7:00am.What time will it show at 1:00pm?

OR

A clock gain 5 seconds in 2 minutes and was set right at 9.00 am. If it shows 2:30 in the afternoon on the same day. What is the correct time?

15. Monday fell on which dates of June 2003?.

OR

If 4th October 1986 was Saturday, what would be the day on 10th 1991?

Section-V

All questions are compulsory. In case of internal choices attempt any one.

16. If $(x + iy)^3$=u+iv, then show $\frac{u}{x} + \frac{v}{y}$=4$(x^2 - y^2)$

OR

If $z = \frac{1+i}{1-i} - \frac{1-i}{1+i}$, then find Rez ,Imz , modulus(z),conjugate of Z

17. Using RSA algorithm ,where P=5, q= 7 and e=5 to decode the message "9" as some other number and decode it back.

OR

Write RSA Algorith