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**Level 3, 1st Sem/ DVOC ( Ref. & Air Cond., Auto. Servicing,  
ITM, PT, SD, AMT, FP, EMS)  
Subject : Applied Mathematics-I**

Time : 2 Hrs.

M.M. : 50

### **Section-A**

**Note:** Multiple Choice questions. All questions are compulsory. (5x1=5)

Q.1 If  $A = \{1, 3, 5, 7\}$  and  $B = \{2, 3, 4\}$  then find  $A \cap B = \underline{\hspace{2cm}}$

- (a) {3} (b) {1, 3, 5}  
(c) {2, 3} (d) None of these

Q.2  $i^{23} = \underline{\hspace{2cm}}$

- (a) 1 (b) 0  
(c) -1 (d) None of these

Q.3 If two lines are parallel then their slopes  $m_1$  and  $m_2$  are

- (a)  $m_1 = -m_2$  (b)  $m_1 \times m_2 = -1$   
(c)  $m_1 = m_2$  (d) None of these

Q.4  $6_{P_0} = \underline{\hspace{2cm}}$

- (a) 0
- (b) 1
- (c) 6
- (d) None of these

Q.5 In which quadrant the point (-5, -5) lies in the coordinate plane.

- (a) I Quadrant
- (b) II Quadrant
- (c) III Quadrant
- (d) IV Quadrant

### Section-B

**Note:** Object type questions. All question are compulsory.  $(5 \times 1 = 5)$

Q.6 Find the slope if  $\theta = 60^\circ$

Q.7  $5! - 4! = \underline{\hspace{2cm}}$

Q.8 Write the standard equation of an ellipse.

Q.9 If  $U = \{1, 2, 3, 4, 5\}$  and  $A = \{1, 3, 5\}$  Find  $A^c$

Q.10  $\frac{5!}{3!} = \underline{\hspace{2cm}}$

### Section-C

**Note:** Very Short Answer Questions. Attempt any six question out of eight questions.  $(6 \times 5 = 30)$

Q.11 Express  $Z = \frac{1}{2+3i}$  in standard form  $x + iy$ .

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Q.12 If  $(x+2)! = 60(x-1)!$  find x.

Q.13 Find radius and centre of circle having equation  
 $x^2 + y^2 + 4x + 6y - 12 = 0$

Q.14 Find equation of straight line whose intercepts are  $a = 9$  and  $b = 3$ .

Q.15 If 2<sup>nd</sup> and 5<sup>th</sup> term of G.P are 9 and 243 then find the series.

Q.16 Two unbiased coins are tossed simultaneously find the probability of getting one tail.

Q.17 In how many ways, can the word 'RAM' be arranged

Q.18 Find modulus and argument of  $z = 1 + \sqrt{3}i$

### Section-D

**Note:** Long answer questions. Attempt any one questions. out of two question.  $(1 \times 10 = 10)$

Q.19 Calculate the mode for the following distribution,

Class	0-10	10-20	20-30	30-40	40-50
Frequency	12	16	6	7	9

Q.20 Find the middle term in expansion of  $\left(x + \frac{1}{x}\right)^{12}$

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