I UNIT TEST 2017-2018

STD:XII (Com.)   MAX MARKS: 25

SUBJECT: MATHS & STATISTICS   TIME: 1HR

DATE:

Note:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Answer to every question must be written on a new page.

SECTION I

I. Attempt any three of the following: **6**

(i) If $A = \begin{bmatrix} 1 & 2 & -3 \\ 5 & 4 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 4 & 3 \\ -2 & 5 & 0 \end{bmatrix}$ then find $2A + 3B$

(ii) Write the negation of the following statements:

   (a) Chetan has black hair and blue eyes.

   (b) $\exists\, x \in$ R such that $x^2 + 3 > 0$

(iii) If $A = \begin{bmatrix} 6 & 3 \\ -4 & á \end{bmatrix}$ is a singular matrix. Find á

(iv) Draw Venn diagrams to represent the following statements, assuming them to be true.

   (a) All doctors are honest.
   (b) Some doctors are honest.

II. Attempt any two of the following: **6**

(i) By constructing the truth table, determine whether the following statement pattern is a tautology, contradiction of contingency.

   $(p \rightarrow q) \wedge (p \wedge \sim q)$ (3)

(i) Write converse, inverse and contrapositive of the statement

   "If two triangles are not congruent then their areas are not equal."

iii) Using the truth table verify the equivalence of the following logical statement.

   p (q r) = (p q) (p r)

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SECTION II

III Attempt any three of the following: **6**

1. Anandi and Rutuja invested ₹10,000 each in a business. Anandi withdrew her capital after 7 months. Rutuja continued for the year. After one year, the profit earned by them was ₹5,700. Find the profit earned by each person.

2. A car worth ₹3,80,000 is insured for ₹2,50,000. In an accident it was damaged to the extent of ₹78,000. Find the amount of compensation that can be claimed under the policy.

3. A merchant pays his agent 8% ordinary commission and 3% del credere. If the agent sells good worth ₹5,300, find the amount which the merchant receives from the agent.

4. If the present worth of a bill due six months hence is rupees 2,500 at 10% p.a, what is the sum due?

IV. Attempt any one of the following :   **3**

1. A bill of ₹ 7,500 was discounted for ₹7,290 at a bank on 28th October 2006. If the rate of the interest was 14% p.a what is the legal due date of the bill?

2. Find the true discount, banker's discount and banker's gain on a   bill of ₹ 36,600 due 4 months hence at 5% p.a.

V. Attempt any one of the following :   **4**

1. Mrs.Menon plans to save for her daughter's marriage. She wants to accumulate a sum of ₹4,00,0000 at the end of 4 years. How much should she invest at the end of each year from now, if she can get interest compounded at 10% p.a? [Given : $(1.1)^4 = 1.4641$]

2. A car valued at ₹4,00,000 is insured for ₹2,50,000. The rate of premium is 5% less 20%. How much loss does the owner bear including the premium if value of the car is reduced to 60% of its original value?