ANNEXURE – II

MODEL QUESTIONS – MATHEMATICS

1) If a point (a,a) falls between the lines $|x+y| = 4$
   1) $|a| = 2$ 2) $|a| = 3$ 3) $|a| < 2$ 4) $|a| < 3$

2) The variance of 30 observations is 3. If each of the observations is multiplied by 3, then the variance of the resulting observations is :
   1) 3 2) 9 3) 27 4) 81

3) If the sum of two positive numbers is k, then the sum of their squares will be minumum, when the numbers are
   1) k/4, k/4 2) k/3, k/3 3) k/2, k/2 4) k,k

4) If the lines 4x+3y-1=0, x-y+5=0 and kx+5y-3=0 are concurrent then k =
   1) 4 2) 5 3) 6 4) 7

5) In any ΔABC, $b^2 \sin 2C + c^2 \sin B =$
   1) Δ 2) 2Δ 3) 3Δ 4) 4Δ

MODEL QUESTIONS – PHYSICS

1. A particle starts from origin at t=0 with a velocity of 10 **i** m/s and moves in x-y plane under the action of force which produces a constant acceleration of (2i + 3j) m/s^2 . The y – coordinate in meters of the particle at the instant its x-coordinate is 24m becomes
(1) 12 (2) 6 (3) 18 (4) 3

2. When 0.2 kg of ice at 0^0 C mixed with 0.5 kg of water at 60 ^{0} C in a container , the resulting temperature is 10^0 C. The heat of fusion of ice (S_{water} = 4.186 J/kg/K)
(1) 1.31 X 10^5 J/kg (2) 2.62 X 10^5 J/kg
(3) 10.46 X 10^5 J/kg (4) 5.23 X 10^5 J/kg

3. 5 bulbs each of 100 W are connected across 220 V power supply for domestic application. If each unit costs Rs. 4 then the cost per day in Rs. is
(1) 48 (2) 24 (3) 96 (4) 12

4. A solenoid of length 1.0m has a radius of 1cm and is made up of 1000 turns. It carries a current of 2.5 A. The magnitude of the magnetic field inside the solenoid in Teslais
(1) π x 10^{-3} (2) π x 10^{-4} (3) π x 10^{-6} (4) π x 10^{-5}

MODEL QUESTIONS – CHEMISTRY

1. Which one of the following has stable electronicconfiguration?
(1) N (2) C (3) F (4) Al

2. Which one of the following exhibits acidity?
(1) R-OH (2) R-CHO (3) R-X (4) C_6H_5-OH

3. Assertion (A): Carbonyl compounds undergo nucleophilic addition reactions.

Reason (R): Carbonyl group is non-polar.
The correct answer is:

(1) Both (A) and (R) are true and (R) is the correct explanation of(A)
(2) Both (A) and (R) are true and (R) is not the correct explanation of(A)
(3) (A) is true but (R) is not true
(4) (A) is not true but (R) is true

4. Match the following:

	LIST I	**LIST II**
(A)	Packing efficiency in ccp structure	(1) 2
(B)	Number of atoms in bcc unit cell	(2) 4
(C)	Packing efficiency in simple cubic structure	(3) 52.4%
(D)	Number of atoms in fcc unit cell	(4) 68.0%
		(5) 74%

The correct answer is:

	(A)	(B)	(C)	(D)
(1)	5	4	3	2
(2)	3	2	1	4
(3)	5	1	3	2
(4)	4	1	2	3