## PHYSICS

- 1. A zero resultant cannot be obtained by combining —— vectors of different magnitude. (C) Four (A) Two (B) Three (D) Five
- 2. The gravitational force of attraction between two bodies each of mass 1 Kg and separated by 1 m is

(A) 6.675 x 10<sup>-11</sup> N (B) 6.675 x 10<sup>-8</sup> N (C) 6.675 N (D) 1 N

- 3. An oil drop placed on the surface of water spreads as a thin layer because
  - (A) Surface tension of water is greater than that of oil
  - (B) Surface tension of water is less than that of oil
  - (C) Viscosity of oil is greater than viscosity of water
  - (D) Of large difference in densities of oil and water
- 4. Two identical wires of iron and copper are joined to make a cylindrical composite wire. A load is hung from the bottom of the wire keeping its top end fixed. If  $Y_{Fe} > Y_{Cu}$  (Y is Young's modulus and  $\Delta l$  the change in length) (A) Stresses in the two wires will be unequal (B) Strainsin the wires will be equal
  - (C)  $\Delta l_{Cu} > \Delta l_{Fe}$

- (D)  $\Delta l_{Cu} < \Delta l_{Fe}$
- 5. The radius of the earth is 6400 Km and  $g = 10 \text{ ms}^{-2}$ . In order that a body of 5 Kg weighs zero at the equator, the angular speed of the earth is (B) 1 / 400 rad S<sup>-1</sup> (C) 1 / 800 rad S<sup>-1</sup> (D) 1 / 1600 rad S<sup>-1</sup> (A) 1 / 80 rad S<sup>-1</sup>
- 6. A particle of mass 2 g moves on a straight line and its time-distance relationship is  $s = 5 t + 4 t^2$ in the c g s system. The force acting on it is (C) 24 dyne (A) 16 dvne (B) 20 dyne (D) 28 dyne

## **CHEMISTRY**

1.	The pair in which two spe $(A)SiF_4$ and $SF_4$	ecies are isostructural $(B) IO_3^-$ and XeO <sub>3</sub>	? (C) BH₄ <sup>-</sup> and NH₄ <sup>+</sup>	(D) $PF_6^-$ and $SF_6$				
2.	The enthalpies of formation of $CO_2(g)$ and $CaO(s)$ are –94.0 kJ and –152 kJ respectively and the enthalpy of the reaction $CaCO_3(s) \rightarrow CO2(g) + CaO(s)$ is 42.0 kJ. The enthalpy of formation of $CaCO_3(s)$ is							
	(A) – 42 kJ	(B) –202 kJ	(C) +202 kJ	(D) –288kJ				
3.	Which is expected to be p (A) [Ni(H <sub>2</sub> O) <sub>6</sub> ] <sup>2+</sup>	aramagnetic ? (B) [Ni(CO) <sub>4</sub> ]	(C) [Zn(NH <sub>3</sub> ) <sub>4</sub> ] <sup>2+</sup>	(D) [Co(NH <sub>3</sub> ) <sub>6</sub> ] <sup>3+</sup>				
4.	The reaction, C <sub>6</sub> H₅CHO + (A) Benzoin condensatio (C) Perkin reaction	Dil. NaOH CH₃CHO n	C <sub>6</sub> H₅CH = CHCHC (B) Claisen condens (D) Cannizzaro's read	D is called sation ction				
5.	In the conversion $CH_3$ – C changes from (A) sp <sup>2</sup> to sp <sup>3</sup>	$CONH_2 \xrightarrow{P_2 O_5} CH_3$ (B) sp to sp <sup>3</sup>	CN, the hybridization s	state of the carbon (D) sp <sup>2</sup> to sp				
6. In presence of KOH, acetone reacts with $CHCl_3$ to form $\sim OH$								
	(A) $(CH_3)_2 CH CCI_3$		(B) (CH <sub>3</sub> )₂ C CCL					
	(C) (CH <sub>3</sub> ) <sub>2</sub> COOH		(D) None of these					

## **BIOLOGY**

- 1. Which photosynthetic bacteria possess both PS I and PS II ?
  - (A) Purple sulphur bacteria(C) Purple non-sulphur bacteria

(B) Cyanobacteria

- (D) Green sulphur bacteria
- Vascular bundles in dicot root are
   (A) Radial exarch
   (B) Conjoint

(C) Radial endarch (D) Conjoint exarch

- 3. A phenomenon where the food is passed twice through the alimentary canal is called (A) Holophagy (B) Coprophagy (C) Saprophagy (D) Deuterophagy
- 4. The tentacles and body surface of Cnidarians bear specialized cells that are used in capturing prey, the cell is

   (A) Flame cell
   (B) Stato cyst
   (C) Cnidoblast
   (D) Scleroblast
- 5. The shifting of Chloride ion from plasma to cell and then to plasma again is called
  - (A) Hot Dog phenomenon or Chloride shift(B) Hamburger phenomenon or Chloride shift
  - (C) Fried chicken phenomenon or Carbon shift
  - (D) All of these
- 6. Acrosome reaction is triggered by
  - (A) Influx of Na<sup>+</sup>
  - (C) Release of antifertilizin

- (B) Capacitation
- (D) Release of fertilizin

## MATHEMATICS

1. If the sum of the roots of the quadratic equation  $ax^2 + bx + c = 0$  is equal to the sum of the squares of their reciprocals, then a / c, b / a and c / b are in

	<ul><li>(A) Arithmetic - Geometric Progression</li><li>(C) Geometric Progression</li></ul>		<ul><li>(B) Arithmetic Progression</li><li>(D) Harmonic Progression</li></ul>			
2.	If cos x = tan y, cos y = ta (A) 2 cos 18°	an z, cos z = tan x, the (B) cos 18°	n the value of sin x is (C) sin 18°	(D) 2 sin 18°		
3.	3. If coordinates of the vertices of a triangle are (2,0) (6,0) and (1,5), then distance between in orthocentre and circumcentre is					
	(A) 4	(B) 6	(C) 5	(D) 8		
4.	Equation of tangent at the $(A) x = 4$	e vertex of parabola $x^2$ (B) $x = -4$	+8x+4y = 0 is (C) y = 4	(D) y = -4		
5.	The area bounded by two (A) 3/5	b branches of the curve (B) 5/4	$(y-x)^2 = x^3$ and $x = 1$ (C) 6/5	equals (D) 4/5		
6.	If A, B, C are the angles of is given by	of a triangle, then the v	alue of sin <sup>2</sup> A+ sin <sup>2</sup> B+ s	sin²C–2cos A cos B cos C		

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