

# International Science Supremo Olympiad (ISSO)

## CLASS-11 SAMPLE QUESTION PAPER

The Actual Question Paper Contains 50 Questions. The duration of the Test Paper is 60 Minutes.



**CPS OLYMPIADS**  
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- A uniform disc of radius  $R$  lies in the  $x$ - $y$  plane, with its centre at the origin, its moment of inertia about  $z$ -axis is equal to its moment of inertia about line  $y = x + c$ . The value of  $c$  will be

(A)  $\frac{R}{2}$  (B)  $\frac{R}{\sqrt{2}}$   
(C)  $\frac{R}{4}$  (D)  $R$   
(E) None of these
- A metal ball  $B_1$  (density  $3.2 \text{ g cm}^{-3}$ ) is dropped in water while another metal ball  $B_2$  (density  $6.0 \text{ g cm}^{-3}$ ) is dropped in a liquid of density  $1.6 \text{ g cm}^{-3}$ . If both the balls have the same diameter and attain the same terminal velocity, the ratio of viscosity of water to that of the liquid is

(A) 2.0 (B) 0.5  
(C) 4.0 (D) indeterminable due to insufficient data  
(E) None of these
- If  $\text{Ag}^+ + 2\text{NH}_3 \rightleftharpoons [\text{Ag}(\text{NH}_3)_2]^+$ ;  $K_1 = 1.7 \times 1.7$ ;  $\text{Ag}^+ + \text{Cl}^- \rightleftharpoons \text{AgCl}$ ;  $K_2 = 5.4 \times 10^9$  Then for  $\text{AgCl} + 2\text{NH}_3 \rightleftharpoons [\text{Ag}(\text{NH}_3)_2]^+ + \text{Cl}^-$ ; equilibrium constant will be

(A)  $0.31 \times 10^{-2}$  (B)  $3.2 \times 10^2$   
(C)  $9.18 \times 10^{16}$  (D)  $1.00 \times 10^{-17}$   
(E) None of these
- $X + C + \text{Cl}_2 \xrightarrow{\text{High temp.}} Y + \text{CO}, Y + 2\text{H}_2\text{O} \longrightarrow Z + 2\text{HCl}$

Compound  $Y$  is found in polymeric chain structure and is an electron deficient molecule. The compound  $Y$  is

(A)  $\text{BeO}$  (B)  $\text{BeCl}_2$   
(C)  $\text{Be}(\text{OH})_2$  (D)  $\text{BeO} \cdot \text{Be}(\text{OH})_2$   
(E) None of these
- Selaginella and Salvinia are considered to represent a significant step toward evolution of seed habit because

(A) Female gametophyte is free and gets dispersed like seeds.  
(B) Female gametophyte lacks archegonia.  
(C) Megaspores possess endosperm and embryo surrounded by seed coat.  
(D) Embryo develops in female gametophyte which is retained on parent sporophyte.  
(E) None of these
- Consider the following statements and select the correct option.

(i) GERL includes Golgi body and lysosomes only.  
(ii) Peroxisomes help to metabolise xenobiotics.  
(iii) Polysomes are aggregates of ribosomes.  
(iv) Mitochondria help in oxidative phosphorylation and generation of ATP.

(A) (ii), (iii) and (iv) are correct  
(B) (i) alone is correct  
(C) (ii) alone is correct  
(D) (iii) alone is correct  
(E) None of these
- The given figure shows processes occurring during gaseous-exchange in the human body. What are the phenomena  $X$  and  $Y$  called respectively?

(A)  $X$ - Hamburger's phenomenon,  $Y$ - Bohr's effect  
(B)  $X$ - Bohr's effect,  $Y$ - Haldane effect  
(C)  $x$ - Haldane effect,  $Y$ - Bohr's effect  
(D)  $X$ - Haldane effect,  $Y$ - Hamburger's phenomenon  
(E) None of these

8. Which of the following is a statement?

- (A) May you live long!
- (B) Hurrah! we have won the match
- (C) What a great fall it is !
- (D) The Quadratic Equation  $x^2 - 5x + 6 = 0$  has two real roots
- (E) None of these

9. The function  $\log_{10}[(1 - \log_{10}(x^2 - 5x + 16))]$ , has domain

- (A)  $(0, 2) \cup (2, \infty)$
- (B)  $(1, 4)$
- (C)  $(2, 3)$
- (D) All  $x$
- (E) None of these

10.  $A, B, C$  are angles of a triangle, such that

$\sin^2 A + \sin^2 B + \sin^2 C = \text{constant}$ , find  $\frac{dA}{dB}$

- (A)  $\frac{\sin A}{\sin(2A + B)}$
- (B)  $\frac{-\sin B}{\sin(2A + B)}$
- (C)  $\frac{\cos B}{\sin(2A + B)}$
- (D)  $\frac{-\cos B}{\sin(2A + B)}$
- (E) None of these