

Entrance Test (Sample Question Paper) Session 2024-25
10+2 (Non-Medical)

[Section - A (Physics)]

Time : 30 min.

Max. Marks - 20

1. Write the SI unit of work. [1]
2. Why does a gun recoil back when it is being fired? [1]
3. What is meant by angle of repose? [1]
4. Define elastic collision. [1]
5. What is the value of g at equator? [1]
6. Write formula for escape velocity. [1]
7. What is the velocity of a satellite moving in orbit very near the surface of earth? [1]
8. Define Surface Tension. [1]
9. Write the Dimensional formula of Energy. [1]
10. Define Transverse waves. [1]
11. State Bernoulli's Theorem. [2]
12. Give the conditions for a satellite to Appear Geostationary. [2]
13. What are the Advantages and Disadvantages of friction? [2]
14. State work energy Theorem. [2]
15. If a car at rest accelerates uniformly to a speed of 36 km/h in 10s. What is the distance covered it? [2]

[Section - B (Chemistry)]

Time : 30 min.

Max. Marks - 20

1. What are cathode rays ? [1]
2. Write the electronic configuration of Cu. [1]
3. Define covalent bond with example. [1]
4. Write the hybridisation in BF_3 molecule. [1]
5. What is the hybridisation of first and third C-atom in $CH_2=C=CH_2$? [1]
6. Define Catenation. [1]
7. What is acid rain? [1]
8. Define resonance. [1]
9. Bond angle in CH_4 is more than NH_3 . Give reason. [1]
10. State Boyle's law. [1]
11. Write the following name of reaction: [2]
 - a) Friedel craft alkylation. b) Wurtz Reaction.
12. Draw the Molecular orbital diagram of O_2^{2-} molecule and also write its bond order and magnetic character. [2]
13. Trans-But-2-ene has higher melting point than Cis-But-2-ene. Explain. [2]

14. Explain the shape of H₂O molecule on the basis of VSEPR Theory. [2]

15. A 100 watt bulb emits electromagnetic light of wavelength 400nm. Calculate the energy of one photon. [2]

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[Section - C (Maths)]

Time : 30 min.

Max. Marks - 20

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[Section - A]

1. Write $(1 - i) - (-1 + 6i)$ in the form of $a + ib$.

2. If $\frac{1}{8!} + \frac{1}{9!} = \frac{x}{10!}$, find x .

3. Evaluate : $\lim_{x \rightarrow 0} \frac{1 - \cos x}{x}$.

4. Find the derivative of $x + \frac{1}{x}$ w.r.t. x . [4×2=8]

[Section - B]

5. Find the modulus of $Z = \frac{1+i}{1-i}$.

6. Find 4th term in the expansion of $(x - 2y)^{12}$.

7. Find the value of $\tan \frac{13\pi}{12}$.

8. Convert 40°12' into radian measure. [4×3=12]

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[Section - D (English)]

Time : 30 min.

Max. Marks - 20

1. **Read the passage given below and answer the questions that follow:**

A proper consideration of the value of time will inspire the habit of punctuality. Punctuality is the politeness of kings, the duty of gentlemen and necessity of men of business. Nothing begets confidence in a man sooner than the practice of this virtue and nothing shakes confidence sooner than the want of it. He who holds to this appointment, and does not keep you waiting for him, shows that he has regard for your time as well as his own. Thus punctuality is one of the maps in which we show our personal respect for those whom we are called upon to meet in the business of life. It is also consciousness in a manner for an appointment or a correct and he who does not keep it, is guilty of breaching faith as well as dishonesty wasting other people's time. We naturally come to the conclusion that the person who is careless about time will be careless about business and his is not to be trusted with the transaction of matters of importance. When Washington's secretary excused himself for the lateness of his attendance and laid the blame on his watch, his

master said, "Then you must have another watch or I have another secretary."

Answer the following questions:-

- (a) How can we make punctuality a habit?
- (b) Who shows regard for time?
- (c) Who is careless about his business?
- (d) Why did Washington ask his secretary to have another watch? (4×2=8)
- (f) **Find the words that mean the following:**

(i) careful thought

(ii) courteousness

(2×1=2)

Q2. Write a paragraph on any of the following topics:

- (a) The role of media in our day to day life.
- (b) Child Labor a stigma on society.
- (c) India of my vision.

(10)