



10+2 (Non-Medical)

Entrance Test (Sample Question Paper)

[Section - A (Physics)]

Time : 30 min.

Max. Marks - 20

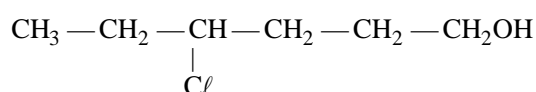
1. Write the dimensional formula of Energy. [1]
2. Plot position-time graph for positive acceleration. [1]
3. Define coplaner vectors. [1]
4. What is meant by position vector. [1]
5. Why does a gun recoil back when it is being fired? [1]
6. What is meant by angle of friction? [1]
7. Define elastic collision. [1]
8. State Hooke's law. [1]
9. Define terminal velocity. [1]
10. What is adiabatic process? [1]
11. What is meant by periodic motion. [2]
12. State work energy Theorem. [2]
13. What is Doppler effect. [2]
14. Define angle of contact. On what factors it depends? [2]
15. If a car at rest accelerates uniformly to a speed of 144 km/h in 20s. What is the distance covered it? [2]

[Section - B (Chemistry)]

Time : 30 min.

Max. Marks - 20

1. An atomic orbital has $n = 4$. Write all possible values of Azimuthal and magnetic quantum numbers? [1]
2. Write the general electronic configuration of s-block elements. [1]
3. What are isoelectronic species? [1]
4. Write the bond angle and geometry of NH_3 molecule. [1]
5. Write the I.U.P.A.C. name of the given organic compound

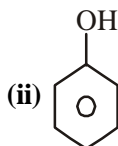
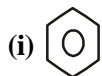


[1]

6. What are the hybridisation state of each carbon atom in the following compounds?



7. Draw the resonating structures of the following organic compound.



[1]

8. Convert Acetylene to Benzene. [1]

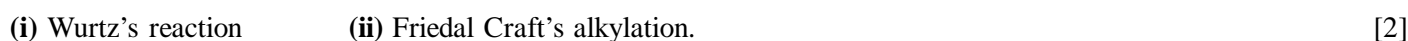
9. Out of Na^+ and Na which is having larger atomic size and why? [1]

10. What is Heisenberg's uncertainty Principle. [1]

11. Draw the Molecular orbital diagram of N_2 molecule. Calculate its bond order and magnetic character. [2]

12. What is Markownikoff's rule? Explain with the help of suitable example. [2]

13. Explain the following name reactions :



14. Explain the geometry of ammonia with the help of VSEPR Theory. [2]

15. Yellow light emitted from a sodium lamp has a wavelength (λ) of 580nm. Calculate the frequency and wave number of this light. [2]

[Section - C (Maths)]

Time : 30 min.

Max. Marks - 20

[Section - A]

1. What is the imaginary part of $Z = 2 + i3$.

2. Evaluate $\lim_{x \rightarrow 0} \frac{\sin ax}{\sin bx}$.

3. Find the value of $\frac{{}^{15}C_{12}}{{}^{15}C_{11}}$.

4. Find the derivative of $\sin x \cos x$ w.r.t.x.

[4×2=8]

[Section - B]

5. Expand $(2x - 3)^6$ using Binomial Theorem.

6. Find the modulus of $\frac{1+2i}{1-3i}$.

7. Find the value of $\sin \frac{31\pi}{3}$.

8. Solve $\text{Cosec } x = -2$.

[4×3=12]

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[Section - D (English)]
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Time : 30 min.

Max. Marks - 20
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1. Read the following passage and answer the questions that follow:-

1. Right at the beginning of the 21st century we don't need decrees of the kind issued by the Mexican leader to get lost in the world of books, periodicals and newspaper, despite the all-consuming and all-consuming and all-encompassing march of radio, cinema, the TV and the Internet. Habits die hard and those oldsters and youngsters who want to see the world beyond the idiot box and the monitor refuse to be blown off the spell cast by the electronic age. The TV and the Internet can never replace the printed word, though they are great in themselves. You should have read Mahabharata and Ramayana much before you saw the classics on the small screen. Your interest in reading the epics once more is whetted after the TV adaptation of the classics. The same thing could be said about Shakespearean classics : your reaction to the immortal characters like 'Macbeth', 'King Lear', 'Julius Caesar' and the like appearing on the large of small screens could be momentary, but dramatic personae portrayed by the playwright in his books leave an ever lasting impression on impressionable minds. People who are serious about life - and this may include housewives, professionals, students, avid readers of fiction, and non-fiction, journals, newspapers, find that the electronic media could only supplement what the printed word provides.
2. In just two decades almost every home in India has changed with hundreds of TV channels intruding into your time schedule and the young and old surfing on the net. The population of citizens has increased ; so too the population of the reading public. Lakhs of people may sit glued to tele-serials in different languages, but there is no end to the huge crowds converging on book fairs, organised from time to time in metros like Delhi, Kolkata, Mumbai, Chennai, Bangalore, Hyderabad and smaller cities like Kochi and Thiruvananthapuram. Children who are avid watches of Pogo and cartoon network are fond of boasting that they have all the series on Harry Potter. The book has been translated in different languages and has caught the imagination of children the world over. Despite the advent of visual media on an unprecedented scale, children are still interested in the fabulous past brought alive by innovation publishers who bring to children's homes illustrated small magazines on our epics, the Panchtantra and hundreds of other Indian and world classics. "Today, somewhere in the world a new book is published every 30 seconds," says Mr. Caroline Michel, publisher of Harper Press.
3. We in India can be truly proud of the fact that we are among the top publishers in the world. There are about 16,000 publishers in the country, producing around 70,000 titles. The annual turnover of the industry is estimated at Rs. 700 crore. A good 40 percent of the titles are in English, making India the largest producer of books in the English language after made India the guest of honour in the Frankfurt International Book Fair in October, 2006.
4. There is nothing called an unmitigated evil and the long period of British colonialism threw open the floodgates of opportunity for Indians to learn English and today we stand to gain on the world forum as the largest professional manpower equipped with the knowledge of an International language - English. Books in English are seen all over India and there has been a mushroom growth of publishers and the Oxford University Press in 1912. Today the mammoth

publishing world is led by the largest concentration of publishing units in Delhi. Today, both Indian and foreign publishers compete and collaborate in the Indian market. "Indeed, publishing has not changed as much in the last 200 years, as it has in the last 20 years ; it has become more globalised and integrated." Thanks to a sound printing and publishing infrastructure, publishing business is outsourced in order to reduce costs. This apart, there is number of collaborative and joint ventures in publishing. With the quality of our printing technology second to none, India has emerged as a global player in publishing.

5. The educated class in India is not satisfied with being members of a good library ; they are eager to have their own collection of books in English and in their mother tongue. They develop the habit of buying books from book depots or book fairs or by becoming members of book clubs started by different magazines. Their fascination for TV; movies and the Internet never dims their fascination for books.

Questions :-

a) 1. On the basis of our reading of the passage, answer the questions given below in your own language. Answer the questions in one or two sentences only.

a) What, according to the writer, is the impact of the electronic age on the oldsters and youngsters?

b) Can TV and the internet replace the printed word?

c) What is the feeling of the people who are serious about life?

d) What is a matter of pride for India?

e) What is the attitude of the educated class in India towards the habit of reading?

2. Find words from the above passage which convey similar meanings as the following:

a) an official order (para 1)

b) enter with adverse effect (para 2)

c) huge (para 4)

[3]

Q,2 Write a paragraph on any of the following topics :

a) Evils of smoking

b) Population Explosion

c) Rise in prices of essential commodities

[10]