ENGLISH CORE

Q1. Read the passage given below:

Cholesterol is a waxy substance that is present in our blood. It's an important component of our cell walls and other tissues, but is thought to be harmful in excess. It can lead to blockages caused by plaque formation in the heart's arteries, causing various heart diseases and even heart attacks. Such blockages can also happen in arteries in the legs, or in the brain.

Cholesterol is produced in the liver, and the amount produced is influenced by our genes. The food we consume, also has an effect on cholesterol levels. Fatty foods, especially those high in saturated fats, and food high in simple sugars such as cold drinks increase cholesterol levels. Lack of physical activity and exercise also lead to elevated levels. We can reduce or control cholesterol levels by following a heart-healthy lifestyle, which must include regular physical activity-at least 30 minutes daily-and a diet high in fruits and vegetables and low in saturated fat.

Statins are the group of drugs most recommended for those with high cholesterol. For your doctor to decide when you should start taking them will depend on your overall clinical picture, not just your cholesterol levels. In general, if you are diagnosed with heart disease and diabetes, you may need to take them. Also, if a test shows your LDL (low density lipoprotein) cholesterol — the "bad" one-to be over 190, you are likely to be prescribed statins. Anyway, the doctor will decide medicines on a case-to-case basis. The ill effects of high cholesterol take time to show, and you may not realise it until it's a bit too late.

Cholesterol, by itself is important because it insulates nerve cells and membranes. Being a fatty substance, it does not dissolve in the blood and is packaged into protein. There is the "good" HDL (high density lipoprotein) cholesterol. "Bad" LDL cholesterol can stick to the smooth lining of blood vessels, where it is absorbed, while HDL mops up excess bad cholesterol and removes it from blood vessels.

Even moderate physical activity can help increase HDL cholesterol. Exercise five days a week, whether you are overweight or underweight. Always warm up, stretch and cool down-relax-before and after any workout to avoid injuries. Lifestyle changes-including exercise in your daily routine-is important for a fitter and healthier life.

A combination of diet, exercise and lifestyle modifications work best in producing long-lasting effects. For the obese, weight reduction is the key. Red yeast rice has been shown to be effective in lowering cholesterol. Olive oil, canola oil or other oils rich in mono unsaturated fatty acids can be used for cooking in order to reduce cholesterol through food. Some foods that help manage cholesterol levels well and must be included in your diet are oats, walnuts, almonds, kidney beans, green leafy vegetables, black grapes, green tea, flaxseed, wheatgrass, garlic, and fish.

Minimize common cholesterol-rich foods, such as red meat, egg yolk, butter, cheese, ghee, cream, full cream milk and margarine and avoid junk food.

(A) On the basis of your reading of the above passage make notes on it, using headings and sub-headings. Use recognizable abbreviations (wherever necessary—minimum four) and a format you consider suitable. Also supply an appropriate title to it.

(B) Write a summary of the passage in about 80 words.

Q2.Read the passage given below:

Brian G Dyson, former President and CEO, Coca-Cola Enterprises, once said, "Imagine life as a game in which you are juggling five balls in the air namely- work, family, health, friends and spirit. You will soon understand that work is a rubber ball. If you drop it, it will bounce back. But the other four balls- family, health, friends and spirit- are made of glass. If you drop one of these, they will be irrevocably scuffed, marked, nicked, damaged or even shattered. They will never be the same. You must understand that and strive for balance in your life". Industries have realized the importance of his words. Organizations are setting up policies for maintaining a work-life balance. They are going in for innovative methods to keep their employees happy and satisfied, as it makes office a better place to work and also positively impact productivity. The Concept of Work-life balance (WLB) is not a new one. However with the changing pace of life and increase in stress levels negatively affecting the quality of work, many organizations have started thinking about the strategies for maintaining a work-life balance.

Experts say that there is a strong link between work-life balance policies and reduced absenteeism, increased productivity and job satisfaction. Other benefits include improved recruitment and retention rates with associated cost savings, a reduction in employee stress, greater levels of job satisfaction and loyalty and an improved corporate image. The work-life balance strategy offers a variety of ways to reduce stress levels and increase job satisfaction of the employees, the fundamental principle being designing activities around the topic of work and life. Companies are ready to do everything possible to keep their employees happy and are pampering them like never before with new policies like flexi timings, day care centers for kids, extended maternity leave, healthcare centers, medical insurance, fun and games at work, team outing, spas and gyms at office etc. Employees tend to feel motivated when they feel that the organisation is putting extra effort in providing a healthy balance between work and life. Motivated employees not only enhance productivity but also help create a positive work environment at office.

Work-life balance is a choice that an individual has to make. However, it is the organisation that needs to take an initiative to help the employees. Industry experts add that today, an employee is not looking at their employer just for job; they want the company to care for their work-life balance and their well-being. If a company can address these needs, in addition to providing great career opportunities, they can be very successful in providing job satisfaction to the employee. Companies are adopting new means to ensure that their employees get enough time to enjoy their personal life and spend time with family. Certain companies also support the policy of adopting a child by their employees. For this they have adoption leave policy, which allows the employees to avail eight weeks of paid leaves to spend some quality time with their newly adopted children. Another recent trend is the sabbatical. Certain companies encourage employees on completion of certain period at work to take a sabbatical for a year to rethink and re-plan his/her career or just to take a break, relax and rejuvenate. Firms are going for innovative practices to keep their employees happy. For example, a business solution providing company, promotes ROWE (Results Only Work Environment) culture within the organisation, negating the age-old dogma that equates physical presence with productivity and encouraging people to focus on working smarter rather than longer. Another attempt by the company to manage work-life balance is to encourage all employees to take a minimum of seven days annual leave in a year. It is the responsibility of the reporting managers or supervisors to ensure that the employees reporting to them take this leave. Some organisations have initiatives to provide timely assistance to the employees in a crisis situation rising out of financial or personal problems. HEAL (Honeywell Employee Assistance for Life issues) is the counselling service of Honeywell Technology Labs. HEAL has tied up with PPC Worldwide and provides round the clock advice and counselling on all issues ranging from financial, legal or emotional issues to all their employees. This service is totally confidential where the consultant respects the privacy of the employee and treats all details and issues as highly confidential. At Accenture, they believe that telecommuting is one of the key tools for attracting and retaining employees especially women employees. Our employees have the flexibility to exercise a need-based work from home option as it helps them more in maintaining balance between work and home. The benefits of telecommuting include increased productivity, lower

attrition, less number of leaves taken, cost savings on infrastructure and of course an extremely happy workforce. Firms are not leaving it at this point. They are also evaluating the results of these initiatives to ensure that all these initiatives have the desired impact. Company heads also talk informally with the staff to understand how they are balancing their personal and professional lives.

(A) On the basis of your reading of the above passage make note son it, using headings and sub-headings. Use recognizable abbreviations (wherever necessary minimum four) and a form at you consider suitable. Also supply an appropriate title to it

(B) Write a summary of the passage in about 80 words.

3. Every year in the Rose Garden, an Ikebana show is held in the month of March.
Your school has received a circular from the District collector inviting the students to visit it. Write a notice in about 50 words informing the students about the show and advising them to go and enjoy it. You are Gopal/Geeta, Head Boy/Head Girl, Saraswati Vidyalaya, Ambala.

4. Your school, Modern International School, Bangalore is looking for five security guards from some renowned security agency. On behalf of the Principal, write an advertisement in about 50 words to be published in the classified columns of a local daily. Mention the educational and professional qualifications, other qualities required in the security guards, who to apply to and the last date for the receipt of applications.

5. On Teachers Day, you read in a newspaper the low salary offered to lecturers in privately owned and managed colleges in small towns or even in the Urban of metropolitan cities. You feel that these colleges compromise on quality of teaching. Write a letter in 120-150 words to the editor of a national daily raising your voice against such exploitation. Suggest ways to solve this problem. You are Naman/Nikita, Secretary, Bhaveen International School. Bangalore.

6. You are Radhika/Naresh, Secretary, Prelude International School, Bangalore. You, along with a group of students, went on a 2-day tour through Delhi's historical monuments. You found it disheartening how the tourists abuse the available facilities and thus endanger the historical monuments. You feel that this will endanger the heritage of India. Write a letter in 120-150 words to the editor of a national daily highlighting the situation. Suggest ways through which the monuments can be saved.

7. Write a speech in 150-200 words on the importance of power in our daily life. Also suggest ways to save power at school and at home. Advice the students to use more renewable sources. Imagine you are the Principal of your school.

8. Applications like WhatsApp have become more than a means of communication.
They have become a status symbol. People are so glued to it that they don't pay proper attention to their work. It has become a new tool among gossip mongers. Write a speech in 150-200 words to be delivered in the morning assembly on this topic.

9. You are Aman/Anushka. Your nephew got admission in one of the pre-schools
Which promises direct admission of children to renowned schools. You find many parents who have come for getting their children admitted to such schools. You feel that this new trend of pre-schools is actually a way of earning money on the part of the schools. You also feel that pre-schools have mushroomed because of nuclear families and working parents. Write an article in 150-200 words giving details on this practice of pre-schools.

10. After samples of "Maggi" noodles manufactured in March 2014 were reportedly found to contain high lead content and Monosodium Glutamate (MSG), the State Food Safety and Drug Administration Department recalled many packets. Now, the ITC product Yippee is also being tested. You believe that all this is a publicity stunt on the part of such companies to promote their

goods. Write an article in150-200 words expressing how such publicity stunts are a sham and are in fact meant to trap innocent public. You are Rahul/ Kritika.

PHYSICS

1. Is electrostatic potential necessarily zero at point where electric field strength is zero. Illustrate your answer.
2. Define electric potential. Is it a vector or a scalar quantity?
3. What is the amount of work done in moving a 100 nC charge. between two points 5 cm apart on an equipotential surface ?
4. In parallel plate capacitor, the capacitance increases from 4µF to 80µF, on introducing dielectric medium between the plates. What is the dielectric constant of the medium.
5. Derive an expression for the electrostatic potential energy of a system of point charges.
6. Explain the principle of a capacitor. Derive an expression for the capacitance of a parallel plate capacitor, whose plates are separated by a dielectric medium.
7. What is dielectric? Distinguish between polar and non polar molecule.
8. Derive the relation between electric field and potential gradient, what is significance of negative sign?
9. Define equipotential surface and show that electric potential is zero at equatorial line of electric dipole.
10. Derive expression of electric potential on axial line of electric dipole.
11.
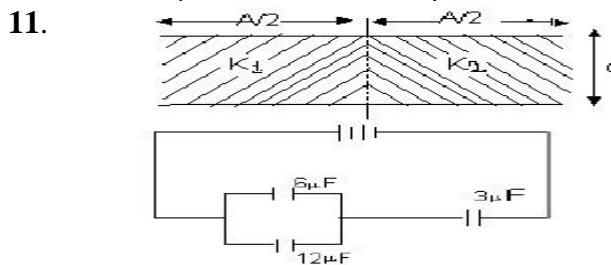
Find   a) equivalent capacitance.   b)) Energy stored in the 12µF capacitor (b) Energy stored in the 3µF capacitor (c) Total energy drawn from the battery.

12. Derive an expression for the energy stored in a capacitor. Show that whenever two conductors share charges by bringing them into electrical contact, there is a loss of energy.

CHEMISTRY

Q.1. What is primary cell? Give an example.
Q.2. Write the chemical formula of rust.
Q.3. Define the following terms:
(i) Molar conductivity
(ii) Secondary batteries
Q.4. State Kohlrausch law of independent migration of ions. Why does the conductivity of a solution decrease with dilution?
Q.5. What is galvanization?
Q.6. The molar conductivity of a 1.5 M solution of an electrolyte is found to be 138.9S cm^2mol^{-1}. Calculate the conductivity of this solution.
Q.7. State Ohm's law
Q.8. Define resistance and conductance.
Q.9. What is salt bridge? give its function.
Q.10. what is an electrochemical cell? Give examples.

BIOLOGY

1. Mention two events that are inhibited by the intake of oral contraceptive pills to prevent pregnancy in humans
2. Why do some women use "Saheli"?

3. Explain the zygote intra fallopian transfer technique (zift). How is intra uterine transfer technique (IUT) different from it?
4. Describe the lactational Amenorrhoea method of birth control.
5. In GIFT the gametes are transferred to the fallopian tube. Can gamete be transferred to the uterus to achieve the same result? Explain
6. Briefly explain IVF and ET. What are the conditions to which these methods are advised?
7. All reproductive tract infections (RTIs) are STDs, but all STDs are not RTIs. Justify with examples.
8. What do you understand by amniocentasis? Why is there a statutory ban on this? Give reasons
9. Enumerate and describe any five reasons for introducing sex education to school going children.
10. How does CuT acts as an effective contraceptive for human females?
11. A woman has certain queries about the contraceptive pills before she starts using them. Answer the questions-:
    - What do contraceptive pills contains?
    - How do they act as contraceptives?
    - What schedule should be followed for taking them.
12. What are the natural methods of contraceptions? Mention their advantages and disadvantages.
13. Describe the two methods of embryo transfers into a human female after an embryo is formed in Vitro fertilization.
14. Why the period between 10th and 17th days of menstrual cycle called fertile period.
15. Describe vasectomy and tubectomy with diagrams.
16. STDs are a threat to reproductive health. Describe any two such diseases and suggest preventive measures.
17. Why is medical termination of pregnancy (MTP) carried out?

COMPUTER SCIENCE & INFORMATICS PRAC.

1) What are the three construct that govern statement flow in python?
2) What are the similarity and difference between for and while loop?
3) What are the difference between Break and Continue statements?
4) What is the use of range () function? What would range (3, 13) return?
5) Suggest a situation where an empty loop is suitable.
6) Python Program to check if a Number is Positive, Negative or 0.
7) Python Program to check if a Number is Odd or Even.
8) Take input of age of 3 people by user and determine oldest and youngest among them.
9) Company decided to give bonus of 5% to employee if his/her year of service is more than 5 years. Ask user for their salary and year of service and print the net bonus amount.
10) A school has following rules for grading system:
    a. Below 25 - F
    b. 25 to 45 - E
    c. 45 to 50 - D
    d. 50 to 60 – C
    e. 60 to 80 - B
    f. Above 80 - A
    Ask user to enter marks and print the corresponding grade
11) Take 10 integers from keyboard using loop and print their average valueon the screen.
12) Write a program for Sum of squares of first n natural numbers
13) Program to calculate and print the sums of even and odd integers of first n natural numbers
14) Python program to check whether a number is Prime or not
15) Python Program for Fibonacci numbers
16) Python Program to check Armstrong Number.
17) Write a python program to print the square of all numbers from 0 to 1
18) Take 10 integers from keyboard using loop and print their average valueon the screen.

19) Write a python program to sum the given sequence:-
   $1^2 + 3^2 + 5^2 + \ldots\ldots\ldots + n^2$

20) Print the following patterns using loop :

MATHEMATICS

Q1. In the matrix $A = \begin{bmatrix} 2 & 5 & 19 & -7 \\ 35 & -2 & \dfrac{5}{2} & 12 \\ \sqrt{3} & 1 & 1 & 17 \end{bmatrix}$, write:

    (i)   The order of the matrix,

    (ii)   The number of elements,

    (iii)   Write the element $a_{13}, a_{21}, a_{33}, a_{23}$.

Q2. Construct a 2X2 matrix, $A = \left[a_{ij}\right]$, whose elements are given by:

    (i) $a_{ij} = \dfrac{(i+j)^2}{2}$,

    (ii) $a_{ij} = \dfrac{i}{j}$,

    (iii) $a_{ij} = \dfrac{(i+2j)^2}{2}$,

Q3. Find the values of x, y and z from the following equations:

    (i) $\begin{bmatrix} 4 & 3 \\ x & 5 \end{bmatrix} = \begin{bmatrix} y & z \\ 1 & 5 \end{bmatrix}$,   (ii) $\begin{bmatrix} x+y & 2 \\ 5+z & xy \end{bmatrix} = \begin{bmatrix} 6 & 2 \\ 5 & 8 \end{bmatrix}$,

    (iii) $\begin{bmatrix} x+y+z \\ x+z \\ y+z \end{bmatrix} = \begin{bmatrix} 9 \\ 5 \\ 7 \end{bmatrix}$,

Q4. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \end{bmatrix}$, and $B = \begin{bmatrix} 3 & -1 & 3 \\ -1 & 0 & 2 \end{bmatrix}$, then find 2A–B.

Q5. If $A = \begin{bmatrix} 8 & 0 \\ 4 & -2 \\ 3 & 6 \end{bmatrix}$, and $B = \begin{bmatrix} 2 & -2 \\ 4 & 2 \\ -5 & 1 \end{bmatrix}$, then find the matrix X, such that 2A+3X=5B.

Q6. If $A = \begin{bmatrix} 1 & 1 & -1 \\ 2 & 0 & 3 \\ 3 & -1 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 3 \\ 0 & 2 \\ -1 & 4 \end{bmatrix}$, and $C = \begin{bmatrix} 1 & 2 & 3 & -4 \\ 2 & 0 & -2 & 1 \end{bmatrix}$, find A(BC), (AB)C.

Q7. If $A = \begin{bmatrix} \dfrac{2}{3} & 1 & \dfrac{5}{3} \\ \dfrac{1}{3} & \dfrac{2}{3} & \dfrac{4}{3} \\ \dfrac{7}{3} & 2 & \dfrac{2}{3} \end{bmatrix}$, $B = \begin{bmatrix} \dfrac{2}{5} & \dfrac{2}{5} & 1 \\ \dfrac{1}{5} & \dfrac{2}{5} & \dfrac{4}{5} \\ \dfrac{7}{5} & \dfrac{6}{5} & \dfrac{2}{5} \end{bmatrix}$, then compute 3A–5B.

Q8. Find the transpose of the following matrices:

(i) $\begin{bmatrix} 5 \\ 1 \\ 2 \\ -1 \end{bmatrix}$, (ii) $\begin{bmatrix} 1 & -1 \\ 2 & 3 \end{bmatrix}$,

(iii) $\begin{bmatrix} -1 & 5 & 6 \\ \sqrt{3} & 5 & 6 \\ 2 & 3 & -1 \end{bmatrix}$,

Q9. If $A = \begin{bmatrix} -1 & 2 & 3 \\ 5 & 7 & 9 \\ -2 & 1 & 1 \end{bmatrix}$, and $B = \begin{bmatrix} -4 & 1 & -5 \\ 1 & 2 & 0 \\ 1 & 3 & 1 \end{bmatrix}$, then verify that

(i) $(A + B)' = A' + B'$, $(A - B)' = A' - B'$,

Q10. Using elementary row transformations, find the inverse of each of the following matrices, if it exists:

(i) $\begin{bmatrix} 1 & -1 \\ 2 & 3 \end{bmatrix}$, (ii) $\begin{bmatrix} 3 & 10 \\ 2 & 7 \end{bmatrix}$, (iii) $\begin{bmatrix} 6 & -3 \\ -2 & 1 \end{bmatrix}$,

(iv) $\begin{bmatrix} 2 & -3 & 3 \\ 2 & 2 & 3 \\ 3 & -2 & 2 \end{bmatrix}$, (v) $\begin{bmatrix} 2 & 0 & -1 \\ 5 & 1 & 0 \\ 0 & 1 & 3 \end{bmatrix}$, (vi) $\begin{bmatrix} 3 & -1 & -2 \\ 2 & 0 & -1 \\ 3 & -5 & 0 \end{bmatrix}$, (vii) $\begin{bmatrix} 1 & 3 \\ 2 & 7 \end{bmatrix}$,

Q11. Compute the adjoint of the matrix:

(i) $\begin{bmatrix} 1 & 4 & 5 \\ 3 & 2 & 6 \\ 0 & 1 & 0 \end{bmatrix}$, (ii) $\begin{bmatrix} 1 & 1 & 1 \\ 2 & 1 & -3 \\ -1 & 2 & 3 \end{bmatrix}$,

Q12. Find the inverse of each of the following matrices:

(i) $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 3 & 1 & 2 \end{bmatrix}$,

(ii) $\begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$,

(iii) $\begin{bmatrix} 2 & 0 & -1 \\ 5 & 1 & 0 \\ 0 & 1 & 3 \end{bmatrix}$,

(iv) $\begin{bmatrix} 0 & 0 & -1 \\ 3 & 4 & 5 \\ -2 & -4 & -7 \end{bmatrix}$,

$$(v) \begin{bmatrix} 0 & 1 & -1 \\ 4 & -3 & 4 \\ 3 & -3 & 4 \end{bmatrix},$$

$$(vi) \begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos x & \sin x \\ 0 & \sin x & -\cos x \end{bmatrix},$$

$$(vii) \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix},$$

$$(viii) \begin{bmatrix} 2 & 3 & 1 \\ 3 & 4 & 1 \\ 3 & 7 & 2 \end{bmatrix},$$

PHYSICAL EDUCATION

Q1 What do you mean by asana?
Q2 Messenger contraindications of Paschimottanasana
Q3 Discuss any two benefits of Paschimottanasana.
Q4 Discuss the two contraindications of Trikonasana.
Q5 Discuss the procedure of Pawanmuktasana.
Q6 State the contraindication of Gomukhasana and Bhujangasan.
Q7 Discuss asana and preventive measures in detail?
Q8 Explain the procedure of Paschimottanasana.
Q9 What do you mean by diabetes? Discuss the procedure, benefits and contraindications of Bhujangasana.
Q10 What is hypertension? Discuss the benefits and contraindications of Ardha Chakrasan and Vajrasana.

HINDI CORE

सभी प्रश्न अनिवार्य है-

प्रश्न- 1 निम्नलिखित में से किसी एक विषय पर लगभग 150 शब्दों में फीचर लिखिए-

1. आज की तनावपूर्ण जीवन-शैली।
2. महानगरों में बढ़ते अपराध।
3. शहरों का दमघोंटू वातावरण।

प्रश्न-2 आपके क्षेत्र में खाली पड़ी जमीन पर वन-महोत्सव के समय बहुत से पौधे लगाए गए, परंतु यह पौधे देख रेख एवं सिंचाई की कमी के कारण सूख कर आधे हो गए हैं। उद्यान विभाग के वरिष्ठ अधिकारी को पत्र लिखकर उनकी उचित देखरेख हेतु पत्र लिखिए।

प्रश्न-3 निम्नलिखित प्रश्नों के उत्तर लिखिए-

1. पत्रकारिता का मूल तत्व क्या हैं?
2. पत्रकारिता किसे कहते हैं?
3. पत्रकारिता के मूल्यों को स्पष्ट कीजिए?