



Open-Test–2076 (Falgun)

Class: XI (Science)

Time: 35 min/subject

Full marks: 20/subject

Pass marks: 10/subject

English

1. Sketch the character of Malini. 5
2. The play ends with Malini's words: "Father, forgive Kemankar". Do you think the king will forgive Kemankar? Discuss. 5
3. What is ironical about the poem 'My heart leaps up when I behold'. 5
4. Who do you think the gardener really is? 5
5. How does the writer Kipling in the story 'The Gardener' describe the contemporary society? 5
6. What popular misconception about migraine headache does Didion want to correct? What intellectual response does she have towards her own migraine? 5
7. Make two sentences for each of the following: 4
 - a. Using **too**
 - b. Using **not.....enough**
 - i) We arrived late. We could not get any dinner.
 - ii) We could not see through the windows. They were dirty.
 - iii) You'd better not sit on the ground. It's damp.
 - iv) The stream was too wide. Dad couldn't jump across it.
8. Change the following sentences using: 4
 - a. **Although/even though**
 - b. **In spite of/despite**
 - i) Video machines are expensive, but lots of people are buying them.
 - ii) Her parents objected, but she still insisted on getting married.
 - iii) Beethoven was deaf, but he continued composing until his death.
 - iv) She was 85 years old, but she still lived very active life.
9. How would you describe a person who is: 5
 - i) Vain
 - ii) Jealous
 - iii) Inquisitive
 - iv) A gossip
 - v) Pessimist

10. Music has a healing power. Explain. 6
11. "A day spent without reading is a day wasted". How far do you agree? 6

Physics

1. Explain the working of a diesel engine with the help of P-V diagram. 4
2. Explain the working of a petrol engine with the help of P-V diagram. 4
3. In adiabatic process show that $PV^\gamma = \text{constant}$. 4
4. Why does internal energy remain constant in an isothermal system? 2
5. An ideal gas slowly compressed at constant temperature of 50°C to one half of its original volume. In this process, 80 cal of heat was given. How much work was done and what was the change in the internal energy of the gas? Assume one mole of an ideal gas. 4
6. A gas is suddenly compressed to $\frac{1}{4}$ th of its original volume. Calculate the rise in temperature, the original temperature being 27°C and $\gamma = 1.5$. 4
7. A cylinder filled with a gas is being carried inside a fast moving train, what change will be there in the internal energy of the gas? 4
8. What is surface tension? Derive an expression of height of liquid risen inside capillary tube by capillary rise method. 4
9. Calculate the work done to break a liquid drop of radius 1mm into millions liquid drops of same size. Given that surface tension of water is 73 dyne cm^{-1} . 4
10. State and prove Bernoulli's Theorem. 4
11. When a smooth flowing stream of water comes out of a faucet if narrows as it falls. Explain. 4
12. A steel wire of density 7800 kgm^{-3} , initial length 250 cm and mass 20 gm stretched through length 1.2mm by applying force 80 N . Calculate Young's Modulus of elasticity and energy stored in the wire. 4
13. Which is more elastic steel or rubber, explain? 4
14. The radii of curvature of the faces of a thin converging meniscus lens of glass of refractive index 1.5 are 15 cm and 30 cm. What is the focal length of the lens when it is completely immersed in water of refractive index $\frac{4}{3}$? 4
15. What will happen when a lens is immersed in a liquid of refractive index more than that of glass? 4
16. Derive lens maker's formula $\frac{1}{f} = (\mu - 1) \left(\frac{1}{R_1} + \frac{1}{R_2} \right)$ where the symbols have their usual meanings. 4
17. It is desired to make a converging achromatic lens of mean focal length 40 cm by using two lenses of materials A and B. If dispersive power of A and B are in the 1:3, find the focal length of each lens. 4
18. What is cause of dispersion? 2
19. What is chromatic aberration? Derive an expression for longitudinal aberration in case of thin lens. 2

20. Describe the various factors on which the capacity of a parallel plate capacitor depends. 2
21. Define electric potential. Derive an expression for the potential at a point due to a point charge.
22. Define electric potential and intensity at a point due to a charge. Obtain an expression for the potential difference between two points r_1 and r_2 from charge.
23. A particle executing S.H.M. along a straight line has a velocity of 4m/s when its displacement from mean position is 3m and 3m/s when the displacement is 4m. Find the time taken to travel 2.5m from the positive extremity of its oscillation
24. Define elastic limit and Young's modulus of elasticity. How can you determine young's modulus of elasticity of a material in laboratory?
25. What is elastic collision? Show that in an elastic collision in one dimension two particles having same mass exchange their velocities?

Chemistry

1. Explain cathode rays consist of negatively charged particles. 2
2. State and explain Pauli exclusion principle. 2
3. e/m ratio of electron is different from that of proton. Explain. 2
4. Why does electron fill up in 4s orbital earlier than 3d orbital? 2
5. H-atom has only one electron but it can produce so many spectral lines explain. 2
6. Why does not electron jump into nucleus?
7. What is meant by dual nature of electron? Derive de-Broglie's equation. 5
8. Derive the expression of radius for n^{th} orbit of an H-atom. 5
9. Differentiate calcination and roasting. 2
10. What is meant by aluminothermite process? 2
11. Which process is applied for concentration of sulphide ore and why? 2
12. Define the terms flux and gangue. 2
13. Write short note on zone refining. 2
14. How is sodium extracted from sodium chloride using Down's electrolytic cell? 5
15. Describe in brief the manufacture of sodium hydroxide by Castner-Kellener's process. 5
16. Define electrophiles with two examples. 2
17. What is inductive effect? 2
18. Define gasoline additives. 2
19. What is Wurtz reaction? Give an example. 2
20. Define Octane number. 2

21. What happens when ethene gas is passed through alkaline KMnO_4 solution. 2
22. Write short notes on Markonikov's rule and peroxide effect. 5
23. How can you prepare ethane gas in laboratory? 5
24. Describe the principle and process for the manufacture of sulphuric acid with a labelled diagram by contact process? 5
25. How is bromine manufactured from carnallite? 5
26. How is Sulphur dioxide prepared in the laboratory? What happens when Sulphur dioxide is passed through acidified solution of potassium permananganate? 5
27. Why are halogens never found in free state in the nature? 2
28. What happens when KBr is heated with conc. H_2SO_4 ? 2
29. Why is conc. H_2SO_4 diluted by adding acid into water but not water into acid in the laboratory? 2
30. What is the molecular formula of 'Hypo' and also write its one use. 2
31. Give an example of reaction in which H_2SO_4 behaves as an oxidizing agent and dehydrating agent. 2
32. Write any two differences between the bleaching action of Cl_2 and SO_2 . 2

Botany

Very Short Questions

1 Marks

1. What are micronutrients?
2. Define species.
3. What is antheridiophore?
4. What is a thallus?
5. What is ecological succession?
6. Write positive effects of bacteria.
7. Mention about sori.
8. Define nitrogen fixation.
9. What do you mean by sporophytic generation?
10. Define commensalism.
11. Define eukaryotic cell.
12. Function of cell wall.
13. Define nomenclature.
14. Define cyanobacteria.
15. What is mitosis?
16. What is mycorrhiza?
17. What is protonema?
18. What is ammonification?
19. What is cruciform corolla?
20. What is taxonomy?

Short Questions

1. Explain briefly the carbon cycle.
2. List out the importance of mountain ecosystem.
3. Describe the features of gymnosperms.
4. Describe the male cone of *Pinus*.
5. Describe the sporophyte of *Funaria*.
6. Nitrogen cycle.
7. Process of succession.
8. Consequences of greenhouse effect.
9. Importance of mountain ecosystem.
10. Economic importance of bacteria.
11. Structure of *Cycas*.

3 Marks

Long Questions

1. Life cycle of *Marchantia*.
2. Pond ecosystem description with structural aspect only.
3. Hydrosere succession.
4. Life cycle of fern.
5. Grassland ecosystem with its functional aspect.
6. Reproduction str. Of *spirogyra*.
7. Structure function of mitochondria.
8. Mitosis stages.

5 Marks

Zoology

Very Short Questions

1. Define the term morphology
2. What is connecting link? Give one example.
3. Which cell in liver are phagocytic?
4. Give two characters of sporozoa.
5. Write two volant features of bat.
6. Mention the role of hormones in bird migration.
7. Write the important feature of *Archaeopteryx*.
8. What is thigmotaxis.
9. How many chambers are there in heart of frog?
10. What's the meaning of amplexus.

Short Questions

1. Write brief account of criticism of Lamarkism.
2. Differentiate between round worm and flat worm.
3. Describe the adaptive feature of birds and wall lizard.
4. Differentiate between Agnatha and Gnathostomata.
5. Discuss the working mechanism of heart in frog.

Long Questions

1. Give an account of sexual reproduction of paramecium.
2. Describe the male reproductive organ of earthworm.
3. Explain the Darwin's theory of evolution of natural selection with example.
4. What is respiration? Describe the mechanism of Pulmonary respiration in frog.

Mathematics

Group A

2 Marks

1. Let $f:R \rightarrow R$ and $g:R \rightarrow R$ be defined by $f=\{(1,2),(3,5),(4,1)\}$ and $g=\{(2,3),(5,1),(1,3)\}$, find $g \circ f$ and $f \circ g$.
2. Prove that $\log(1+2+3)=\log 1+\log 2+\log 3$
3. Define the domain and range of the following function:
 - a. $y=x^2-6x+6$
 - b. $y = \frac{|x-1|}{x-1}$
4. Define the following with example:
 - a. bijective function
 - b. Real valued function
 - c. Greatest integer function
 - d. Logarithmic function
5. Evaluate:
 - a. $\int x^2 \sin 2x \, dx$
 - b. $\int_1^e \ln x \, dx$
6. Show that the function $f(x)=4x - \frac{9}{x} + 6$ is increasing for all $x \in R$ except at $x=0$.
7. Find the absolute maximum and minimum values of the function $f(x)=2x^3-9x^2$ on the interval $[1,4]$.
8. Show that $f(x) = x^3-3x^2+6x+4$ has neither a maximum nor a minimum value.
9. Find the value of k so that the length of the tangent from $(5,4)$ to the circle $x^2+y^2+2ky=0$ is 1.
10. Prove that the line $5x+12y+78=0$ is tangent to the circle $x^2+y^2=36$.

Group B

11. Prove that the two circles $x^2+y^2+2ax+c^2=0$ and $x^2+y^2+2by+c^2=0$ touch if $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{c^2}$
12. If the line $lx + my = 1$ touches the circle $x^2+y^2=a^2$, prove that the point (l, m) lies on a circle whose radius is $\frac{1}{a}$.

13. Deduce the condition that the line $lx + my + n = 0$ may be tangent to the circle $x^2 + y^2 + 2gx + 2fy + c = 0$.
14. Find the area of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.
15. Find the area of the circle $x^2 + y^2 = 16$
16. A man who has 144 meters of fencing material wishes to enclose a rectangular garden. Find the maximum area he can enclose.
17. A closed cylindrical can is to be made so that its volume is 52 cm^3 , find its dimensions if the surface is to be minimum.

Group C 6 Marks

18. Show that $f: \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = cx + d$, where $c \neq 0$ and d are real numbers, is one to one and onto. Find f^{-1} and also show that $f(f^{-1}(x)) = f^{-1}(f(x)) = x$.
19. Let $f: \mathbb{R} - \{2\} \rightarrow \mathbb{R} - \{3\}$ be defined by $f(x) = \frac{3x}{x-2}$. Show that f is bijective. Also find f^{-1} .
20. Find the domain and range of the functions:
 - a. $y = \sqrt{x^2 - 2x - 8}$
 - b. $y = \sqrt{6 - x - x^2}$

Computer

1. Write html code to display the following list
 - m. Memory
 - Primary memory
 - RAM
 - ROM
 - Secondary memory
 - iii. Hard Disk
 - iv. Floppy disk
 - n. Hardware
 - c. Mouse
 - d. Keyboard
2. Write html code to display the following list
 - o Fruits
 - s. Banana
 - t. Apple
 - u. Mango
 - v. Pear
 - o Vegetable
 - vi. Cauliflower
 - vii. Potato
 - viii. Tomato

3. Write html code to display the following table

Class	Students		Total
	Boys	Girls	
xi	10	20	30
xii	15	16	31

4. Write html code to display the following table

Name		Address		phone
First	Last	Temporary	Permanent	
Ram	Karki	Kalanki	Kailali	122323
Hari	Thapa	Koteshwor	Sarlahi	45454
Sita	Lama	Kalopul	Jumla	454568

5. Write html code to display the following frame

a.html	b.html	
	c.html	d.html
e.html	f.html	
	g.html	h.html

6. Write html code to display the following frame

a.html		b.html	
c.html	d.html	e.html	f.html
g.html		h.html	
i.html		j.html	

7. Write html code to display the following form

Name:

Gender: Male Female

File:

8. Write html code to display the following form:

Email: Password:

Photo:

Best of Luck