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2022 III 14

1030

J-762

(E)

MATHEMATICS & STATISTICS (40)
(ARTS & SCIENCE)

Time : 3 Hrs.

(7 Pages)

Max. Marks : 80

General instructions :

The question paper is divided into **FOUR** sections.

- (1) **Section A :** Q. 1 contains **Eight** multiple choice type of questions, each carrying **Two** marks.
Q. 2 contains **Four** very short answer type questions, each carrying **one** mark.
- (2) **Section B :** Q. 3 to Q. 14 contain **Twelve** short answer type questions, each carrying **Two** marks. (Attempt any **Eight**)
- (3) **Section C :** Q. 15 to Q. 26 contain **Twelve** short answer type questions, each carrying **Three** marks. (Attempt any **Eight**)
- (4) **Section D :** Q. 27 to Q. 34 contain **Eight** long answer type questions, each carrying **Four** marks. (Attempt any **Five**)
- (5) Use of log table is allowed. Use of calculator is not allowed.
- (6) Figures to the right indicate full marks.
- (7) Use of graph paper is not necessary. Only rough sketch of graph is expected.
- (8) For each multiple choice type of question, it is mandatory to write the correct answer along with its alphabet, e.g., (a)/ (b) / (c)/ (d)....., etc. No marks shall be given, if **ONLY** the correct answer or the alphabet of correct answer is written. Only the first attempt will be considered for evaluation.
- (9) Start answer to each section on a new page.

SECTION - A

Q. 1. Select and write the correct answer for the following multiple choice type of questions :

[16]

(i) The negation of $p \wedge (q \rightarrow r)$ is _____.

- (a) $\sim p \wedge (\sim q \rightarrow \sim r)$ (b) $p \vee (\sim q \vee r)$
 (c) $\sim p \wedge (\sim q \rightarrow r)$ (d) $p \rightarrow (q \wedge \sim r)$ (2)

(ii) In ΔABC if $c^2 + a^2 - b^2 = ac$, then $\angle B =$ _____.

- (a) $\frac{\pi}{4}$ (b) $\frac{\pi}{3}$
 (c) $\frac{\pi}{2}$ (d) $\frac{\pi}{6}$ (2)

(iii) Equation of line passing through the points $(0, 0, 0)$ and $(2, 1, -3)$ is _____.

- (a) $\frac{x}{2} = \frac{y}{1} = \frac{z}{-3}$ (b) $\frac{x}{2} = \frac{y}{-1} = \frac{z}{-3}$
 (c) $\frac{x}{1} = \frac{y}{2} = \frac{z}{3}$ (d) $\frac{x}{3} = \frac{y}{1} = \frac{z}{2}$ (2)

(iv) The value of $\hat{i} \cdot (\hat{j} \times \hat{k}) + \hat{j} \cdot (\hat{k} \times \hat{i}) + \hat{k} \cdot (\hat{i} \times \hat{j})$ is _____.

- (a) 0 (b) -1
 (c) 1 (d) 3 (2)

(v) If $f(x) = x^5 + 2x - 3$, then $(f^{-1})'(-3) =$ _____.

- (a) 0 (b) -3
 (c) $-\frac{1}{3}$ (d) $\frac{1}{2}$ (2)

(vi) The maximum value of the function $f(x) = \frac{\log x}{x}$ is _____.

(a) e

(b) $\frac{1}{e}$

(c) e^2

(d) $\frac{1}{e^2}$

(2)

(vii) If $\int \frac{dx}{4x^2 - 1} = A \log \left(\frac{2x-1}{2x+1} \right) + c$, then $A =$ _____.

(a) 1

(b) $\frac{1}{2}$

(c) $\frac{1}{3}$

(d) $\frac{1}{4}$

(2)

(viii) If the p.m.f. of a r.v. X is

$$P(x) = \frac{c}{x^3}, \text{ for } x = 1, 2, 3$$

$$= 0, \text{ otherwise,}$$

then $E(X) =$ _____.

(a) $\frac{216}{251}$

(b) $\frac{294}{251}$

(c) $\frac{297}{294}$

(d) $\frac{294}{297}$

(2)

Q. 2. Answer the following questions :

[4]

(i) Find the principal value of $\cot^{-1} \left(\frac{-1}{\sqrt{3}} \right)$. (1)

(ii) Write the separate equations of lines represented by the equation $5x^2 - 9y^2 = 0$ (1)

(iii) If $f'(x) = x^{-1}$, then find $f(x)$ (1)

(iv) Write the degree of the differential equation $(y''')^2 + 3(y'') + 3xy' + 5y = 0$ (1)

SECTION – B

Attempt any EIGHT of the following questions :

[16]

Q. 3. Using truth table verify that :

$$(p \wedge q) \vee \sim q \equiv p \vee \sim q \quad (2)$$

Q. 4. Find the cofactors of the elements of the matrix $\begin{bmatrix} -1 & 2 \\ -3 & 4 \end{bmatrix}$ (2)

Q. 5. Find the principal solutions of $\cot \theta = 0$ (2)

Q. 6. Find the value of k , if $2x + y = 0$ is one of the lines represented by $3x^2 + kxy + 2y^2 = 0$ (2)

Q. 7. Find the cartesian equation of the plane passing through $A(1, 2, 3)$ and the direction ratios of whose normal are 3, 2, 5. (2)

Q. 8. Find the cartesian co-ordinates of the point whose polar

co-ordinates are $\left(\frac{1}{2}, \frac{\pi}{3}\right)$. (2)

Q. 9. Find the equation of tangent to the curve $y = 2x^3 - x^2 + 2$ at $\left(\frac{1}{2}, 2\right)$. (2)

Q. 10. Evaluate: $\int_0^{\frac{\pi}{4}} \sec^4 x \, dx$ (2)

Q. 11. Solve the differential equation $y \frac{dy}{dx} + x = 0$ (2)

Q. 12. Show that function $f(x) = \tan x$ is increasing in $\left(0, \frac{\pi}{2}\right)$. (2)

- Q. 13. Form the differential equation of all lines which makes intercept 3 on x -axis. (2)
- Q. 14. If $X \sim B(n, p)$ and $E(X) = 6$ and $\text{Var}(X) = 4.2$, then find n and p . (2)

SECTION – C

Attempt any EIGHT of the following questions : [24]

Q. 15. If $2 \tan^{-1}(\cos x) = \tan^{-1}(2 \operatorname{cosec} x)$, then find the value of x . (3)

Q. 16. If angle between the lines represented by $ax^2 + 2hxy + by^2 = 0$ is equal to the angle between the lines represented by $2x^2 - 5xy + 3y^2 = 0$, then show that $100(h^2 - ab) = (a + b)^2$. (3)

Q. 17. Find the distance between the parallel lines $\frac{x}{2} = \frac{y}{-1} = \frac{z}{2}$ and $\frac{x-1}{2} = \frac{y-1}{-1} = \frac{z-1}{2}$ (3)

Q. 18. If $A(5, 1, p)$, $B(1, q, p)$ and $C(1, -2, 3)$ are vertices of a triangle and $G\left(r, \frac{-4}{3}, \frac{1}{3}\right)$ is its centroid, then find the values of p, q, r by vector method. (3)

Q. 19. If $A(\bar{a})$ and $B(\bar{b})$ be any two points in the space and $R(\bar{r})$ be a point on the line segment AB dividing it internally in the ratio $m : n$ then prove that $\bar{r} = \frac{m\bar{b} + n\bar{a}}{m + n}$. (3)

Q. 20. Find the vector equation of the plane passing through the point $A(-1, 2, -5)$ and parallel to the vectors $4\hat{i} - \hat{j} + 3\hat{k}$ and $\hat{i} + \hat{j} - \hat{k}$. (3)

Q. 21. If $y = e^{m \tan^{-1} x}$, then show that $(1 + x^2) \frac{d^2 y}{dx^2} + (2x - m) \frac{dy}{dx} = 0$ (3)

Q. 22. Evaluate: $\int \frac{dx}{2 + \cos x - \sin x}$ (3)

Q. 23. Solve $x + y \frac{dy}{dx} = \sec(x^2 + y^2)$ (3)

Q. 24. A wire of length 36 meters is bent to form a rectangle. Find its dimensions if the area of the rectangle is maximum. (3)

Q. 25. Two dice are thrown simultaneously. If X denotes the number of sixes, find the expectation of X . (3)

Q. 26. If a fair coin is tossed 10 times. Find the probability of getting at most six heads. (3)

SECTION – D

Attempt any FIVE of the following questions : [20]

Q. 27. Without using truth table prove that
 $(p \wedge q) \vee (\sim p \wedge q) \vee (p \wedge \sim q) \equiv p \vee q$ (4)

Q. 28. Solve the following system of equations by the method of inversion
 $x - y + z = 4, 2x + y - 3z = 0, x + y + z = 2$ (4)

Q. 29. Using vectors prove that the altitudes of a triangle are concurrent. (4)

Q. 30. Solve the L. P. P. by graphical method,
 Minimize $z = 8x + 10y$
 Subject to $2x + y \geq 7,$
 $2x + 3y \geq 15,$
 $y \geq 2, x \geq 0$ (4)

Q. 31. If $x = f(t)$ and $y = g(t)$ are differentiable functions of t so that y is

differentiable function of x and $\frac{dx}{dt} \neq 0$, then prove that :

$$\frac{dy}{dx} = \frac{\frac{dy}{dt}}{\frac{dx}{dt}}$$

Hence find $\frac{dy}{dx}$ if $x = \sin t$ and $y = \cos t$. (4)

Q. 32. If u and v are differentiable functions of x , then prove that :

$$\int uv \, dx = u \int v \, dx - \int \left[\frac{du}{dx} \int v \, dx \right] dx$$

Hence evaluate $\int \log x \, dx$ (4)

Q. 33. Find the area of region between parabolas $y^2 = 4ax$ and $x^2 = 4ay$. (4)

Q. 34. Show that : $\int_0^{\frac{\pi}{4}} \log(1 + \tan x) \, dx = \frac{\pi}{8} \log 2$ (4)



DAY — 12

SEAT NUMBER

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2022	III	17	1030	J-785	(E)
Science					
BIOLOGY (56)					
Time : 3 Hrs.		(8 Pages)		Max. Marks : 70	

General Instructions :

The question paper is divided into **four** sections.

(1) **Section A :** Q. No. 1 contains **Ten multiple choice** type of questions carrying **one** mark each.

(i) For each multiple choice type of question, it is mandatory to write the correct answer along with its alphabet, e.g., (a) / (b) / (c) / (d) etc. No mark/s shall be given if **ONLY** the correct answer or alphabet of the correct answer is written.

(ii) In case of **MCQ**, evaluation will be done for the **first attempt** only.

Q. No. 2 Contains **Eight very short answer** type of questions carrying **one** mark each.

(2) **Section B :** Q. No. 3 to 14 are **short answer** type of questions carrying **two** marks each.

(3) **Section C :** Q. No. 15 to 26 are **short answer** type of questions carrying **three** marks each.

(4) **Section D :** Q. No. 27 to 31 are **long answer** type of questions carrying **four** marks each.

(5) Begin the answer of each section on a new page.

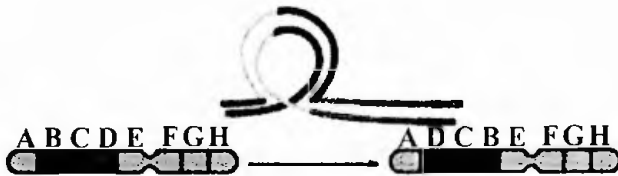
SECTION – A

Q. 1. Select and write the correct answer for the following multiple choice type of questions :

[10]

- (i) How many meiotic and mitotic divisions occur during the development of male gametophyte from the microspore mother cell?
- (a) One meiotic and two mitotic
 - (b) Two meiotic only
 - (c) Two mitotic only
 - (d) One mitotic and one meiotic.
- (ii) During replication of DNA, the separated strands are prevented from recoiling by using _____ .
- (a) single strand binding protein
 - (b) reverse transcriptase
 - (c) endonuclease
 - (d) polymerase

(iii)



Which event is represented by the above diagram, related to chromosomal aberrations?

- (a) Deletion
 - (b) Duplication
 - (c) Inversion
 - (d) Translation
- (iv) _____ hormone responsible for efflux of k^+ ions from guard cells and act as antitranspirant.
- (a) Gibberellins
 - (b) Cytokinin
 - (c) Ethylene
 - (d) Abscissic acid

- (v) Test tube baby technique is called _____ .
- (a) *In-vitro* fertilization
 - (b) *In-situ* fertilization
 - (c) *In-vivo* fertilization
 - (d) Artificial insemination
- (vi) While playing cricket Raju faces problem of severe pain and heaviness in the chest. Pain spreads from neck, lower jaw, left arm and to left shoulder. From above symptoms identify disease
- (a) Malaria
 - (b) Angina pectoris
 - (c) Kidney failure
 - (d) Typhoid
- (vii) _____ layer is in close contact of CNS in human being.
- (a) Cranium
 - (b) Dura matter
 - (c) Arachnoid matter
 - (d) Pia matter
- (viii) Cellular factors in innate immunity is provided by _____ .
- (a) phagocytes
 - (b) antibody
 - (c) T - lymphocyte
 - (d) B - lymphocyte
- (ix) Pick out the appropriate association representing brood parasitism.
- (a) Hermit crab and sea anemone
 - (b) Asian koel and common Indian crow
 - (c) Algae and fungi
 - (d) Buffalo and cattle egret

(x) Annealing step of PCR, operates at _____ °C.

(a) 90 – 98

(b) 40 – 60

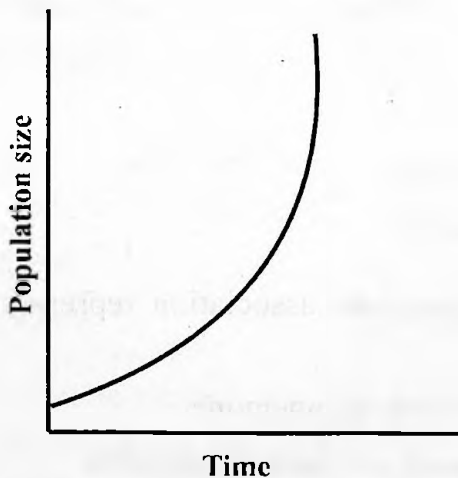
(c) 70 – 75

(d) 100 – 120

Q. 2. Answer the following questions :

[8]

- (i) Name the part of gynoecium that determines the compatibility of pollen grains.
- (ii) Which is the primary precursor of IAA in plants?
- (iii) Name the cell which is responsible for nitrogen fixation in cyanobacteria.
- (iv) How many Biodiversity hotspots have been identified around the world?
- (v) Name the plant disease caused by *Agrobacterium tumefaciens*.
- (vi) Identify the trophoblast cells which are in contact with embryonal knob during blastulation.
- (vii) From the given diagram, identify the type of population growth curve :



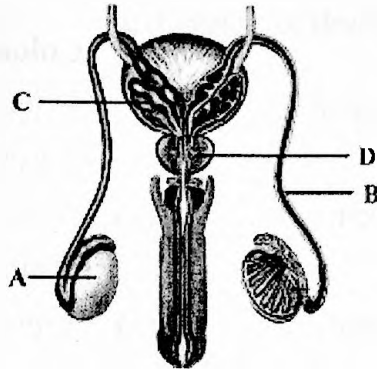
- (viii) What do you mean by Pioneer species?

SECTION – B

Attempt any EIGHT of the following questions :

[16]

Q. 3. Identify A, B, C, D, in the given diagram of human reproductive system :



Q. 4. Identify chromosomal disorder caused due to non-disjunction of 21st number of chromosome and enlist its symptoms.

Q. 5. Write the aims of human genome project.

Q. 6. Match the parts of ovule given in column I with parts of seed given in column II :

Column I	Column II
(a) egg	(1) testa
(b) nucellus	(2) tegmen
(c) outer integument	(3) perisperm
(d) inner integument	(4) embryo

Q. 7. Enlist the characteristics of Neanderthal Man.

Q. 8. Define the following :

- | | |
|-------------------------|-----------------------|
| (a) Gravitational water | (b) Hygroscopic water |
| (c) Combined water | (d) Capillary water |

Q. 9. Give different properties of water.

Q. 10. A person met with a small accident and bleeds, but very soon stops bleeding. Explain the physiological process responsible for this.

Q. 11. Match the antibiotics in column I with their microbial sources in column II :

Column I	Column II
(a) Chloromycetin	(1) <i>Streptomyces griseus</i>
(b) Erythromycin	(2) <i>Streptomyces aurifaciens</i>
(c) Streptomycin	(3) <i>Streptomyces Venezuelae</i>
(d) Terramycin	(4) <i>Streptomyces erythreus</i>

Q. 12. Abscissic acid is the common name given to two identical substances isolated separately. Name them. Give the chemical features of abscissic acid.

Q. 13. What are the effects of biotechnology with relation to human health?

Q. 14. Give the adaptations shown by desert animals.

SECTION – C

Attempt any EIGHT of the following questions :

[24]

Q. 15. Explain natural selection with example of industrial melanism.

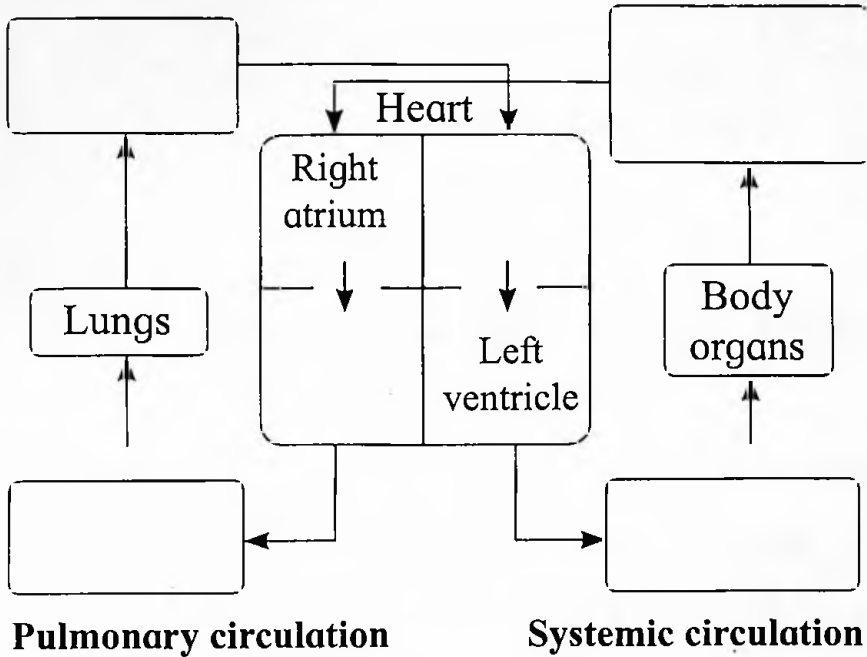
Q. 16. Describe physiological effect and applications of gaseous hormone in plants.

Q. 17. What is ecological succession?

Name various seral stages from pioneer species to climax community with suitable example in hydrarch succession.

Q. 18. With the help of a neat, labelled diagram describe the structure of root hair.

Q. 19. Complete the following flow diagram of double circulation :



Q. 20. Distinguish between hyperthyroidism and hypothyroidism.

Q. 21. Give the applications of DNA fingerprinting

Q. 22. Write a note on *In-situ* and *Ex-situ* conservation.

Q. 23. Explain the properties of nerve fibres.

Q. 24. Give the causative agent, mode of transmission and symptoms of typhoid.

Q. 25. Match the following products with their microbial sources :

<u>Products</u>	<u>Microbial Sources</u>
(a) Vitamin B ₂	(1) <i>Rhizopus arrhizus</i>
(b) Fumaric acid	(2) <i>Candida lipolytica</i>
(c) Vitamin B12	(3) <i>Trichoderma Konigii</i>
(d) Lipase	(4) <i>Neurospora gossypii</i>
(e) Cellulase	(5) <i>Psuedomonas denitrificans</i>
(f) Citric Acid	(6) <i>Aspergillus niger</i>

Q. 26. Explain any three examples of biopiracy.

SECTION – D

Attempt any **THREE** of the following questions :

[12]

Q. 27. With the help of neat and labelled diagrams, distinguish between artery and vein.

Q. 28. State the names of hormone and glands secreting them :

- (a) Growth of thyroid gland.
- (b) Controls tubular absorption of water in kidney.
- (c) Stimulates liver and muscles for glycogenesis.
- (d) Development of immune system and maturation of T-lymphocyte.

Q. 29. Describe outbreeding devices which encourage cross pollination.

Q. 30. Explain the law of dominance and compare how it differs from incomplete dominance and co-dominance.

Q. 31. Describe hormonal control in various phases of menstrual cycle.



DAY — 08

SEAT NUMBER

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2022	III	12	1030	J-752	(E)
Science					
CHEMISTRY (55)					
Time : 3 Hrs.		(7 Pages)		Max. Marks : 70	

General Instructions :

The question paper is divided into *four* sections.

(1) **Section A :** Q. No. 1 contains **Ten** multiple choice type of questions carrying **One** mark each.

Q. No. 2 contains **Eight** very short answer type of questions carrying **One** mark each.

(2) **Section B :** Q. No. 3 to Q. No. 14 are **Twelve** short answer type of questions carrying **Two** marks each. (Attempt **any Eight**)

(3) **Section C :** Q. No. 15 to Q. No. 26 are **Twelve** short answer type of questions carrying **Three** marks each. (Attempt **any Eight**)

(4) **Section D :** Q. No. 27 to Q. No. 31 are **Five** long answer type of questions carrying **Four** marks each. (Attempt **any Three**)

(5) Use of log table is allowed. Use of calculator is not allowed.

(6) Figures to the right indicate full marks.

(7) For each multiple choice type of question, it is mandatory to write the correct answer along with its alphabet e.g. (a)...../ (b) / (c) / (d)etc.

No mark (s) shall be given, if **ONLY** the correct answer or the alphabet of the correct answer is written.

Only the first attempt will be considered for evaluation.

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SECTION - A

Q. 1. Select and write the correct answer for the following multiple choice type of questions : [10]

- (i) The co-ordination number of atoms in body centred cubic structure (bcc) is _____.
(a) 4 (b) 6
(c) 8 (d) 12
- (ii) In calculating osmotic pressure, the concentration of solute is expressed in _____.
(a) molarity (b) molality
(c) mole fraction (d) percentage mass
- (iii) The enthalpy change for the chemical reaction $\text{H}_2\text{O}_{(s)} \rightarrow \text{H}_2\text{O}_{(l)}$ is called enthalpy of _____.
(a) vapourisation (b) fusion
(c) combustion (d) sublimation
- (iv) Which of the following transition element shows maximum oxidation state?
(a) Sc (b) Fe
(c) Mn (d) V
- (v) The correct formula for the complex compound, sodium hexacyanoferrate (III) is _____.
(a) $\text{Na}[\text{Fe}(\text{CN})_6]$ (b) $\text{Na}_2[\text{Fe}(\text{CN})_6]$
(c) $\text{Na}_3[\text{Fe}(\text{CN})_6]$ (d) $\text{Na}_4[\text{Fe}(\text{CN})_6]$
- (vi) Isopropylbenzene on air oxidation followed by decomposition by dilute acid gives _____.
(a) $\text{C}_6\text{H}_5\text{OH}$ (b) $\text{C}_6\text{H}_5\text{COOCH}_3$
(c) $\text{C}_6\text{H}_5\text{COOH}$ (d) $\text{C}_6\text{H}_5\text{CHO}$

- (vii) The name of metal nanoparticle which acts as highly effective bacterial disinfectant in water purification process is _____.
- (a) carbon black (b) silver
(c) gold (d) copper
- (viii) Acid anhydride on reaction with primary amine gives compound having a functional group _____.
- (a) amide (b) nitrile
(c) secondary amine (d) imine
- (ix) The standard potential of the cell in the following reaction is _____.



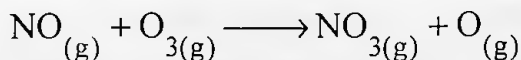
$$(E_{\text{Cd}}^{\circ} = -0.403\text{V}, E_{\text{Cu}}^{\circ} = 0.334\text{V})$$

- (a) -0.737 V (b) 0.737 V
(c) -0.069 V (d) 0.069 V
- (x) The value of $[\text{H}_3\text{O}^+]$ in mol lit^{-1} of 0.001 M acetic acid solution ($K_a = 1.8 \times 10^{-5}$) is _____.
- (a) 1.34×10^{-1} (b) 1.34×10^{-2}
(c) 1.34×10^{-3} (d) 1.34×10^{-4}

Q. 2. Answer the following questions :

[8]

- (i) Write the product formed when alkyl halide reacts with silver nitrite.
- (ii) Write the name of product formed, when acetone is treated with 2, 4-dinitrophenyl hydrazine.
- (iii) Write the name of biodegradable polyamide copolymer.
- (iv) Identify the molecularity of following elementary reaction :



- (v) What is the action of selenium on magnesium metal?
- (vi) Write the name of isomerism in the following complexes :
 $[\text{Cu}(\text{NH}_3)_4][\text{PtCl}_4]$ and $[\text{Pt}(\text{NH}_3)_4][\text{CuCl}_4]$
- (vii) Write the name of the alloy used in Fischer Tropsch process in the synthesis of gasoline.
- (viii) Henry's law constant for $\text{CH}_3\text{Br}_{(g)}$ is $0.159 \text{ mol dm}^{-3} \text{ bar}^{-1}$ at 25°C . What is solubility of $\text{CH}_3\text{Br}_{(g)}$ in water at same temperature and partial pressure of 0.164 bar ?

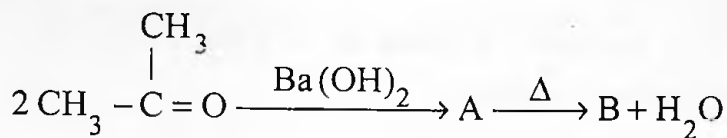
SECTION - B

Attempt any EIGHT of the following questions :

[16]

- Q. 3. Explain pseudo-first order reaction with suitable example.
- Q. 4. Write the consequences of Schottky defect with reasons.
- Q. 5. What is the action of following on ethyl bromide :
(i) Na in dry ether
(ii) Mg in dry ether
- Q. 6. Explain formation of peptide linkage in protein with an example.
- Q. 7. Derive an expression to calculate molar mass of non volatile solute by osmotic pressure measurement.
- Q. 8. Explain monodentate and ambidentate ligands with example.
- Q. 9. Explain the trends in the following atomic properties of group 16 elements :
(i) Atomic radii
(ii) Ionisation enthalpy
(iii) Electronegativity
(iv) Electron gain enthalpy

- Q. 10. Write preparation of phenol from aniline.
- Q. 11. Write chemical reactions to prepare ethanamine from :
- (i) acetonitrile
 - (ii) nitroethane
- Q. 12. Identify A and B from the following reaction :



- Q. 13. One mole of an ideal gas is expanded isothermally and reversibly from 10 L to 15 L at 300 K. Calculate the work done in the process.
- Q. 14. How many moles of electrons are required for reduction of 2 moles of Zn^{2+} to Zn? How many Faradays of electricity will be required?

SECTION - C

Attempt any EIGHT of the following questions :

[24]

- Q. 15. Write chemical composition of haematite. Write the names and electronic configurations of first two elements of group 17.
- Q. 16. Write classification of polymers on the basis of structure.
- Q. 17. Define green chemistry. Write two disadvantages of nanotechnology.
- Q. 18. Write commercial method for preparation of glucose. Write structure of adipic acid.

Q. 19. Write chemical reactions of following reagents on methoxyethane:

(i) hot HI

(ii) PCl_5

(ii) dilute H_2SO_4

Q. 20. Explain cationic, anionic and neutral sphere complexes with example.

Q. 21. Calculate spin only magnetic moment of divalent cation of transition metal with atomic number 25.

Salts of Ti^{4+} are colourless. Give reason.

Q. 22. What is lanthanoid contraction?

Write preparation of acetic acid from

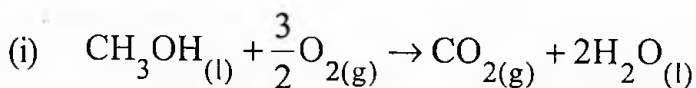
(i) dry ice

(ii) acetyl chloride.

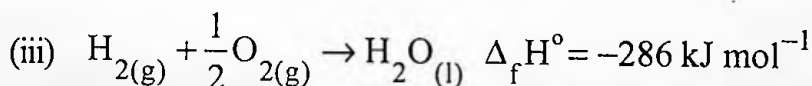
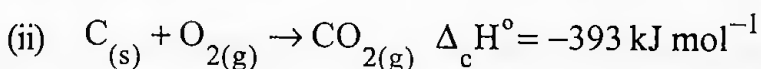
Q. 23. Write the classification of aliphatic ketones with example. What is the action of sodium hypoiodite on acetone?

Q. 24. Define half life of first order reaction. Obtain the expression for half life and rate constant of the first order reaction.

Q. 25. Calculate the standard enthalpy of formation of $\text{CH}_3\text{OH}_{(l)}$ from the following data



$$\Delta H^\circ = -726 \text{ kJ mol}^{-1}$$



Q. 26. Calculate the pH of buffer solution composed of 0.01 M weak base BOH and 0.02M of its salt BA.

[$K_b = 1.8 \times 10^{-5}$ for weak base]

SECTION - D

Attempt any THREE of the following questions :

[12]

Q. 27. Define the following terms :

- (i) Isotonic solution
- (ii) Osmosis

Gold crystallises into face-centred cubic cells. The edge length of unit cell is 4.08×10^{-8} cm. Calculate the density of gold.

[Molar mass of gold = 197 g mol^{-1}]

Q. 28. Write the mathematical equation for the first law of thermodynamics for

- (i) isothermal process
- (ii) adiabatic process

Derive the relationship between pH and pOH.

Q. 29. Define reference electrode. Write functions of salt bridge.

Draw neat, labelled diagram of standard hydrogen electrode (SHE).

Q. 30. Explain metal deficiency defect with example. Write chemical equation for preparation of sulphur dioxide from sulphur. Write uses of sulphur.

Q. 31. Write chemical reactions for the following conversions :

- (i) Ethyl bromide to ethyl methyl ether.
- (ii) Ethyl bromide to ethene.
- (iii) Bromobenzene to toluene.
- (iv) Chlorobenzene to biphenyl.



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2022	III	10	1030	J-737	(E)
Science					
PHYSICS (54)					
Time : 3 Hrs.		(8 Pages)		Max. Marks : 70	

General Instructions :

The question paper is divided into **four** sections :

- (1) **Section A :** Q. No. 1 contains **Ten multiple choice** type of questions carrying **One mark** each.
Q. No. 2 contains **Eight very short answer** type of questions carrying **One mark** each.
- (2) **Section B :** Q. No. 3 to Q. No. 14 contain **Twelve short answer** type of questions carrying **Two marks** each.
(Attempt **any Eight**).
- (3) **Section C :** Q. No. 15 to Q. No. 26 contain **Twelve short answer** type of questions carrying **Three marks** each. (Attempt **any Eight**).
- (4) **Section D :** Q. No. 27 to Q. No. 31 contain **Five long answer** type of questions carrying **Four marks** each.
(Attempt **any Three**).
- (5) Use of the log table is allowed. Use of calculator is **not** allowed.
- (6) Figures to the right indicate full marks.

(7) For each multiple choice type of question, it is mandatory to write the correct answer along with its alphabet. e.g., (a)...../(b)...../(c)...../(d)..... No marks(s) shall be given, if ONLY the correct answer or the alphabet of the correct answer is written. Only the first attempt will be considered for evaluation.

(8) Physical Constants :

(i) mass of electron $m = 9.1 \times 10^{-31}$ kg

(ii) $\epsilon_0 = 8.85 \times 10^{-12} \frac{C^2}{Nm^2}$

(iii) $\pi = 3.142$

(iv) charge on electron $e = 1.6 \times 10^{-19}$ C

(v) $\mu_0 = 4\pi \times 10^{-7}$ Wb / Am

(vi) $h = 6.63 \times 10^{-34}$ Js

(vii) $C = 3 \times 10^8$ m/s

SECTION - A

Q. 1. Select and write the correct answers for the following multiple choice type of questions :

[10]

(i) The first law of thermodynamics is concerned with the conservation of _____.

- (a) momentum (b) energy
(c) temperature (d) mass

(ii) The average value of alternating current over a full cycle is always _____.

[I_0 = Peak value of current]

- (a) zero (b) $\frac{I_0}{2}$
(c) $\frac{I_0}{\sqrt{2}}$ (d) $2 I_0$

- (iii) The angle at which maximum torque is exerted by the external uniform electric field on the electric dipole is _____.
- (a) 0° (b) 30°
(c) 45° (d) 90°
- (iv) The property of light which does not change, when it travels from one medium to another is _____.
- (a) velocity (b) wavelength
(c) frequency (d) amplitude
- (v) The root mean square speed of the molecules of a gas is proportional to _____.
- [T = Absolute temperature of gas]
- (a) \sqrt{T} (b) $\frac{1}{\sqrt{T}}$
(c) T (d) $\frac{1}{T}$
- (vi) The unit Wbm^{-2} is equal to _____.
- (a) henry (b) watt
(c) dyne (d) tesla
- (vii) When the bob performs a vertical circular motion and the string rotates in a vertical plane, the difference in the tension in the string at horizontal position and uppermost position is _____.
- (a) mg (b) 2 mg
(c) 3 mg (d) 6 mg

- (viii) A liquid rises in glass capillary tube upto a height of 2.5 cm at room temperature. If another glass capillary tube having radius half that of the earlier tube is immersed in the same liquid, the rise of liquid in it will be _____.
- (a) 1.25 cm (b) 2.5 cm
(c) 5 cm (d) 10 cm
- (ix) In young's double slit experiment the two coherent sources have different amplitudes. If the ratio of maximum intensity to minimum intensity is 16:1, then the ratio of amplitudes of the two source will be _____.
- (a) 4 : 1 (b) 5 : 3
(c) 1 : 4 (d) 1 : 16
- (x) The equation of a simple harmonic progressive wave travelling on a string is $y = 8 \sin (0.02 x - 4t)$ cm. The speed of the wave is _____.
- (a) 10 cm/s (b) 20 cm/s
(c) 100 cm/s (d) 200 cm/s

Q. 2. Answer the following questions :

[8]

- (i) Define potential gradient of the potentiometer wire.
- (ii) State the formula for critical velocity in terms of Reynold's number for a flow of a fluid.
- (iii) Is it always necessary to use red light to get photoelectric effect?
- (iv) Write the Boolean expression for Exclusive – OR (X – OR) gate.
- (v) Write the differential equation for angular S.H.M.
- (vi) What is the mathematical formula for third postulate of Bohr's atomic model?

- (vii) Two inductor coils with inductance 10 mH and 20 mH are connected in series. What is the resultant inductance of the combination of the two coils?
- (viii) Calculate the moment of inertia of a uniform disc of mass 10 kg and radius 60 cm about an axis perpendicular to its length and passing through its centre.

SECTION – B

Attempt any EIGHT questions of the following :

[16]

- Q. 3. Define moment of inertia of a rotating rigid body. State its SI unit and dimensions.
- Q. 4. What are polar dielectrics and non polar dielectrics?
- Q. 5. What is a thermodynamic process? Give any two types of it.
- Q. 6. Derive an expression for the radius of the n^{th} Bohr orbit of the electron in hydrogen atom.
- Q. 7. What are harmonics and overtones (Two points)?
- Q. 8. Distinguish between potentiometer and voltmeter.
- Q. 9. What are mechanical equilibrium and thermal equilibrium?
- Q. 10. An electron in an atom is revolving round the nucleus in a circular orbit of radius 5.3×10^{-11} m with a speed of 3×10^6 m/s. Find the angular momentum of electron.
- Q. 11. Plane wavefront of light of wavelength 6000\AA is incident on two slits on a screen perpendicular to the direction of light rays. If the total separation of 10 bright fringes on a screen 2 m away is 2 cm, find the distance between the slits.

- Q. 12. Eight droplets of water each of radius 0.2 mm coalesce into a single drop. Find the decrease in the surface area.
- Q. 13. A 0.1 H inductor, a 25×10^{-6} F capacitor and a 15Ω resistor are connected in series to a 120 V, 50 Hz AC source. Calculate the resonant frequency.
- Q. 14. The difference between the two molar specific heats of a gas is 9000 J / kg K. If the ratio of the two specific heats is 1.5, calculate the two molar specific heats.

SECTION – C

Attempt any **EIGHT** questions of the following :

[24]

- Q. 15. With the help of a neat diagram, explain the reflection of light on a plane reflecting surface.
- Q. 16. What is magnetization, magnetic intensity and magnetic susceptibility?
- Q. 17. Prove that the frequency of beats is equal to the difference between the frequencies of the two sound notes giving rise to beats.
- Q. 18. Define :
- (a) Inductive reactance
 - (b) Capacitive reactance
 - (c) Impedance
- Q. 19. Derive an expression for the kinetic energy of a body rotating with a uniform angular speed.
- Q. 20. Derive an expression for emf (e) generated in a conductor of length (l) moving in uniform magnetic field (B) with uniform velocity (v) along x-axis.

- Q. 21. Derive an expression for terminal velocity of a spherical object falling under gravity through a viscous medium.
- Q. 22. Determine the shortest wavelengths of Balmer and Paschen series. Given the limit for Lyman series is 912 \AA .
- Q. 23. Calculate the value of magnetic field at a distance of 3 cm from a very long, straight wire carrying a current of 6A.
- Q. 24. A parallel plate capacitor filled with air has an area of 6 cm^2 and plate separation of 3 mm. Calculate its capacitance.
- Q. 25. An emf of 91 mV is induced in the windings of a coil, when the current in a nearby coil is increasing at the rate of 1.3 A/s, what is the mutual inductance (M) of the two coils in mH?
- Q. 26. Two cells of emf 4V and 2V having respective internal resistance of 1Ω and 2Ω are connected in parallel, so as to send current in the same direction through an external resistance of 5Ω . Find the current through the external resistance.

SECTION – D

Attempt any **THREE** questions of the following :

[12]

- Q. 27. Derive an expression for a pressure exerted by a gas on the basis of kinetic theory of gases.
- Q. 28. What is a rectifier? With the help of a neat circuit diagram, explain the working of a half wave rectifier.
- Q. 29. Draw a neat, labelled diagram of a suspended coil type moving coil galvanometer.

The initial pressure and volume of a gas enclosed in a cylinder are $2 \times 10^5 \text{ N/m}^2$ and $6 \times 10^{-3} \text{ m}^3$ respectively. If the work done in compressing the gas at constant pressure is 150 J, find the final volume of the gas.

Q. 30. Define second's pendulum. Derive a formula for the length of second's pendulum.

A particle performing linear S.H.M. has maximum velocity 25 cm/s and maximum acceleration 100 cm/s^2 . Find period of oscillations.

Q. 31. Explain de Broglie wavelength. Obtain an expression for de Broglie wavelength of wave associated with material particles.

The photoelectric work function for a metal is 4.2 eV. Find the threshold wavelength.



DAY - ⑥

SEAT NUMBER

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2022

III

10

1030

M - 501

(E)

MCVC

GENERAL FOUNDATION COURSE (90)
ENTREPRENEURSHIP DEVELOPMENT

Time : 2½ Hours

3 Pages

Max. Marks : 60

- Instructions :** (1) All questions are compulsory.
(2) All questions carry equal marks.
(3) Figures to the right indicates full marks.

1. (A) Select the correct alternative and rewrite the sentence :

4

- (a) Questionnaire is use for _____.
- (i) Advertisement
(ii) Publicity
(iii) Market Survey
(iv) Market Planning
- (b) The Head Quarter of MITCON is at _____.
- (i) Pune
(ii) Nagpur
(iii) Aurangabad
(iv) Nasik
- (c) The stores all incoming materials are recorded in _____.
- (i) Material Receipt Book
(ii) Cash Book
(iii) Material Issue Book
(iv) Journal

(d) _____ is an art of diverting the mind of the customers to procure the goods.

- (i) Market Research
- (ii) Salesmanship
- (iii) Market Survey
- (iv) Standardisation

(B) Match the pairs :

4

Group 'A'

Group 'B'

- | | |
|--|-----------------------------|
| (a) Production of Sugar from Sugar Cane | (i) 1978 |
| (b) Financial assistance by the Bank in Rural Area | (ii) Campus Interview |
| (c) Establishment of District Industries Centre | (iii) 1982 |
| (d) Source of Recruitment | (iv) Manufacturing Business |
| | (v) NABARD |

(C) State whether following statement are **true** or **false** :

4

- (a) A new venture ideas are created through Micro-observation, immotiveness and research.
- (b) The project report is essential for procuring financial assistance from bank and financial institution.
- (c) Water transport is the fastest and costliest mode of Transport.
- (d) The project report provides all details in a new unit.

2. Define and explain : (**Any Four**)

12

- (a) Small Scale Industry
- (b) Consumer
- (c) Project
- (d) Break-even Point
- (e) Self Employment
- (f) Recruitment

3. Write short notes : (Any Four) 12
- (a) Industrial Development Bank of India (IDBI)
 - (b) Search for Business Idea.
 - (c) Maharashtra Small Scale Industries Development Corporation (MSSIDC)
 - (d) Element of Cost
 - (e) Objects of Book-keeping and Accounting
 - (f) Four P's of Marketing
4. Answer in brief : (Any Four) 12
- (a) Write qualities of Good Entrepreneur.
 - (b) Write process of Market Research.
 - (c) Write procedure in setting up an Enterprise.
 - (d) Write advantages of ABC Analysis.
 - (e) Write essentials of ideal wage payment system.
 - (f) Write means of Transport.
5. Answer the following questions :
- (A) Write determining of Project Size. 6
 - (B) Write function of Marketing. 6
- OR**
5. (A) What is the meaning of Budgetary Control and writes its advantages. 6
- (B) State advantage and disadvantage of Rail Transport. 6
-

DAY - 8

SEAT NUMBER

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2022

III

12

1030

M - 503

(E)

MCVC

ELECTRONICS TECHNOLOGY

PAPER - I (EA)

APPLIED AND INDUSTRIAL ELECTRONICS

Time : 3 Hours

4 Pages

Max. Marks : 80

- Instructions :*
- (1) All questions are compulsory.
 - (2) Figures to the right indicate full marks.
 - (3) Draw neat labelled diagrams wherever necessary.

1. (A) Select correct alternative and rewrite the following sentences :

5

- (a) The output impedance of an ideal Op-Amp is _____ Ohm.
 - (i) Infinite
 - (ii) Zero
 - (iii) One
 - (iv) None of these
- (b) In signal processor of remote control coded signal is modulated with _____ carrier.
 - (i) High Frequency
 - (ii) A.F.
 - (iii) L.F.
 - (iv) None of these
- (c) L.D.R. works on _____ effect.
 - (i) Photo emissive
 - (ii) Photo junction
 - (iii) Photo conductive
 - (iv) Photo voltaic

(d) The time constant of monostable multivibrator is $T =$ _____ second.

- (i) $0.693 RC$
- (ii) $0.693 (R_a + R_b) C$
- (iii) $1.1 RC$
- (iv) None of these

(e) Slew rate of an Op-Amp is measured in _____.

- (i) $V/\mu\text{sec}$
- (ii) mV/sec
- (iii) $\mu\text{V}/\text{sec}$
- (iv) V/sec

(B) Match the following pairs :

5

Group 'A'

Group 'B'

- | | |
|----------------------------|-----------------------------|
| (a) Inverting Op-Amp | (i) Infinite |
| (b) IC 555 Trigger Voltage | (ii) Constant Speed |
| (c) Solar Cell | (iii) Photo Volataic Effect |

(d) C.M.R.R. (iv) $-\frac{R_f}{R_i}$

(e) Shunt Motor (v) $\frac{1}{3} V_{cc}$

(vi) $\frac{2}{3} V_{cc}$

(C) State whether the following sentences are **true** or **false** :

5

- (a) The output pin of IC 555 is 6.
- (b) In FAX machine CCD devices are used for scanning.
- (c) In inverting amplifier positive feed back is used.
- (d) The speed of D.C. motor is directly proportional to applied D.C. Voltage.
- (e) The resistance of L.D.R. is directly proportional to intensity of incident light.

- (D) Answer the following in **one** sentence only : 5
- (a) What is long form of RADAR ?
 - (b) Write the names of basic building blocks of an Op-Amp.
 - (c) Which machine is used to send documents at another place via telephone line ?
 - (d) Which pin number is used for trigger in IC 555 ?
 - (e) Which feedback is used in Op-Amp as non inverting amplifier ?
2. Attempt **any four** of the following : 12
- (a) Draw the circuit diagram of astable multivibrator using IC 555.
 - (b) List any three linear applications of an Op-Amp.
 - (c) Compare : Photodiode and Phototransistor
 - (d) Explain the factors affecting the speed of D.C. Motor. (Any three)
 - (e) State types of D.C. Motor.
 - (f) Explain working of Solar Cell with diagram.
3. Attempt **any four** of the following : 12
- (a) Enlist the applications of Remote Control.
 - (b) Draw circuit diagram of an integrator using Op-Amp and give the output equation.
 - (c) Write note on Lamination Machine.
 - (d) Define any three parameters of an Op-Amp.
 - (e) State various applications of IC 555.
 - (f) Explain the use of remote control system in Satellite Communication.
4. Attempt **any three** of the following : 12
- (a) With circuit diagram explain working of bistable multivibrator using IC 555.
 - (b) What is Scanner ? Explain its principle of working.
 - (c) With the help of block diagram explain working of remote station.
 - (d) Draw labelled pin diagram of IC 741.
 - (e) Write a note on maintenance of Solar Panel.

5. Attempt **any three** of the following : 12
- (a) Draw pin diagram of IC 555 and state use of any two pins.
 - (b) Write any four applications of Solar Cell.
 - (c) Draw symbol of (i) Photodiode (ii) Photo-transistor. Write any one application of each.
 - (d) Explain with circuit diagram speed control of D.C. Motor using transistor.
 - (e) State characteristics of an Ideal Op-Amp. (Any four)
6. (A) Attempt **any one** of the following : 6
- (a) Explain principle, construction and working of Photodiode.
 - (b) With circuit diagram, explain working of Op-Amp as adder and write formula for output voltage.
- (B) Attempt **any one** of the following : 6
- (a) Explain working of FAX Machine with block diagram.
 - (b) Draw functional block diagram of IC 555 and explain function of each block.
-

DAY - 9

SEAT NUMBER

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2022	III	14	1030	M - 542	(E)
<i>mcvc</i> ELECTRONICS TECHNOLOGY PAPER - II (EB) MODERN INSTRUMENTS AND COMMUNICATION SYSTEMS					
Time : 3 Hours		4 Pages		Max. Marks : 80	

- Instructions :* (1) All questions are compulsory.
(2) Figure to the right indicate full marks.
(3) Draw suitable diagrams wherever necessary.

1. (A) Select correct alternatives and rewrite the sentence :

5

- (a) _____ is used in thermometer.
- (i) Thermistor
 - (ii) LDR
 - (iii) LVDT
 - (iv) None of these
- (b) Inner surface of CRT screen is coated with _____ material.
- (i) Silicon
 - (ii) Germanium
 - (iii) Phosphorus
 - (iv) None of these
- (c) _____ card is used in cellphone to store large data.
- (i) SIM
 - (ii) Memory
 - (iii) ATM
 - (iv) None of these

(d) _____ are primary colours in T.V. System.

- (i) RYB
- (ii) RGB
- (iii) RRB
- (iv) None of these

(e) In dead TV receiver _____ section is faulty.

- (i) VIF
- (ii) Scanning
- (iii) Power Supply
- (iv) Sound

(B) Match the pairs :

5

Group 'A'

Group 'B'

- | | |
|---------------------|---------------------------|
| (a) Solar Cell | (i) Interlace Scanning |
| (b) Cellphone | (ii) Photovoltaic Effect |
| (c) Router | (iii) Agitator |
| (d) T.V. Receiver | (iv) Multiple Connections |
| (e) Washing Machine | (v) Photoemissive Effect |
| | (vi) GPS |

(C) State whether the following sentences are 'true' or 'false' :

5

- (a) Thermocouple is used for measuring temperature.
- (b) Fiber optic cable carries light signal.
- (c) FM consists of only two side bands.
- (d) G.P.S. is primarily used for navigation.
- (e) Aspect ratio of TV Frame is 5 : 3.

- (D) Answer the following in **one** sentence : 5
- (a) Define Active Transducer.
 - (b) Write full form of CRT.
 - (c) What is the latest version of Bluetooth ?
 - (d) What is Transponder ?
 - (e) Which type of motor is used in Washing Machine ?
2. Attempt **any four** of the following : 12
- (a) Define Passive Transducer and give any two examples of it.
 - (b) State various applications of GPS.
 - (c) Write a short note on I-Pod.
 - (d) Define Frequency Modulation with neat Waveform.
 - (e) Draw front panel diagram of CRO.
 - (f) State factors which should be considered while selecting a transducer.
3. Attempt **any four** of the following : 12
- (a) Write a note on Thermistor.
 - (b) Draw block diagram of Function Generator.
 - (c) Write applications of DMM.
 - (d) Explain necessity of Modulation.
 - (e) Write short note on Bluetooth Technology.
 - (f) Write advantage of LED TV over CRT hated TV.
4. Attempt **any three** of the following : 12
- (a) Write principle of working for condensor microphone. Draw its constructional diagram with lables.
 - (b) Explain AC and DC voltage measurement using CRO.
 - (c) State various International Standards used for TV transmission as per CCIR-B in India.
 - (d) Draw block diagram of colour T.V. Receiver.
 - (e) Draw construction diagram of Solar Cell and explain its working.

5. Attempt **any three** of the following : 12
- (a) Draw construction diagram of Loudspeaker and explain its working.
 - (b) Write advantages of Digital Multimeter over Analog Multimeter.
 - (c) Write various applications of Cellphone.
 - (d) Compare AM with FM. (Four Points)
 - (e) Draw block diagram of MP3 Player and explain its working.
6. (A) Attempt **any one** of the following : 6
- (a) Draw block diagram of CRO and explain its working.
 - (b) Explain working of Washing Machine with simple study/block diagram.
- (B) Attempt **any one** of the following : 6
- (a) Draw block diagram of Fiber-optic Communication System and explain its working.
 - (b) Draw block diagram of TV Transmitter and explain its working.
-

DAY - 16

SEAT NUMBER

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2022 III 23

1030

V - 133

(E)

Science

**ELECTRONICS
PAPER - I (C-2)**

Time : 3 Hours

4 Pages

Max. Marks : 50

- Instructions :** (1) All questions are compulsory.
(2) Figures to the right indicate full marks.
(3) Draw neat labelled diagrams wherever necessary.
(4) Use of logtable is allowed.

1. (A) Select correct alternatives from the following sub-questions and rewrite the complete sentences :
- (a) The ripple factor of half-wave rectifier is _____. 1
(i) 1.12
(ii) 1.21
(iii) 0.48
(iv) 0.50
- (b) In LVDT transducer, the two secondary windings are connected _____. 1
(i) Only in series
(ii) Only in parallel
(iii) Series opposite
(iv) Series and parallel
- (c) If any one node fails, the entire network fails in _____ topology. 1
(i) Star
(ii) Ring
(iii) Bus
(iv) Tree

(d) In Monostable Multivibrator using IC 555, the output of IC switches from high to low, if threshold voltage is _____.

1

(i) Greater than $\frac{1}{3} V_{cc}$

(ii) Less than $\frac{2}{3} V_{cc}$

(iii) Greater than $\frac{2}{3} V_{cc}$

(iv) Less than $\frac{1}{3} V_{cc}$

(B) Answer **any two** of the following :

(a) Write the advantages of bridge rectifier over full wave rectifier using centre tapped transformer.

3

(b) Explain Op-Amp as an inverting amplifier using circuit diagram. Derive an expression to get output voltage.

3

(c) In Astable multivibrator using IC 555, if $R_A = 10 K\Omega$ $R_B = 6K\Omega$ and $C = 0.01 \mu F$. Calculate charging time, discharging time and duty cycle.

3

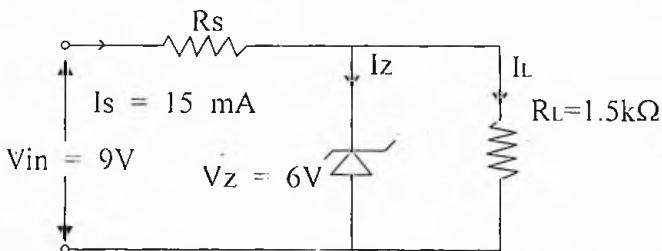
2. (A) Answer **any two** of the following :

(a) What are the advantages of DMM over analog multimeter ?

3

(b) Find I_z , I_L and R_s in given Zener Regulator Circuit :

3



(c) Draw pin configuration of IC 741, write any four specifications of IC 741.

3

(B) Attempt **any one** of the following :

(a) Explain Op-Amp as subtractor using circuit diagram. Derive an expression of its output voltage.

4

(b) Define Modulation. Explain the necessity of Modulation in Communication.

4

3. (A) Attempt **any two** of the following :

(a) With the help of diagram, explain electrostatic focussing in CRT.

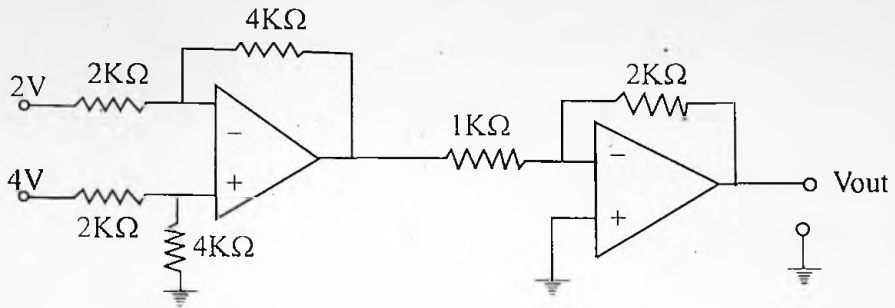
3

(b) Explain RC Filter with diagram. Write its disadvantages.

3

(c) Find out v_{out} for the diagram given below :

3



(B) Attempt **any one** of the following :

(a) Explain the working of LVDT as a Transducer. Draw neat diagram. 4

(b) What are the merites and demerits of FM Over AM ? 4

4. (A) Attempt **any two** of the following :

(a) Explain Time Base Generator with circuit diagram. 3

(b) Explain any three characteristics of Power Supply. 3

(c) Explain Op-Amp as zero reference comparator for inverting and non inverting applications. 3

(B) Attempt **any one** of the following :

(a) Draw block diagram of Op-Amp. Explain function of each block. 4

(b) Explain the use of Satellite as a Relay Station. Write merits and demerits of Geosynchronous Satellite. 4

5. (A) Attempt **any two** of the following :

(a) Draw labelled diagram of Cathode Ray Tube and explain function of each electrode. 3

(b) Explain 3-terminal fixed voltage regulator. Write its applications. 3

(c) Explain LAN, MAN and WAN in networking. 3

(B) Answer **any one** of the following :

(a) Define Active Transducer. Write a note on Piezoelectric Transducer. 4

(b) Explain the use of Op-Amp as a : 4

(i) Voltage Follower

(ii) Sign Changer with circuit diagrams

OR

5. (A) Answer **any two** of the following :
- (a) Explain the use of CRO for the measurement of AC and DC voltages. 3
 - (b) Write any six ideal characteristics of Op-Amp. 3
 - (c) Draw the internal block diagram of IC 555. Explain its working. 3
- (B) Attempt **any one** of the following :
- (a) Explain the following terms of frequency modulation : 4
 - (i) Frequency Deviation
 - (ii) Centre Frequency
 - (iii) Modulation Index
 - (iv) Guard Bands
 - (b) Draw circuit diagram of a transistorised series voltage regulator. Explain its working. 4
-

DAY - **18**

SEAT NUMBER

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2022 III 25

1030

V - 167

(E)

Science

**ELECTRONICS
PAPER - II (C-2)**

Time : 3 Hours

4 Pages

Max. Marks : 50

- Instructions :*
- (1) All questions are compulsory.
 - (2) Draw neat labelled diagrams wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Use of log tables is allowed.

1. (A) Select correct alternatives from the following sub-questions and rewrite the complete sentences :

(a) The 2's complement of binary number 1000 is _____.

- (i) 0111
- (ii) 1010
- (iii) 1001
- (iv) 1000

(b) _____ select inputs are required for construction of 1 : 32 Demultiplexer.

- (i) 3
- (ii) 4
- (iii) 5
- (iv) 6

(c) In JK-Flip-flop, if $J=K=1$, then output state is _____.

- (i) race
- (ii) toggles
- (iii) set
- (iv) reset

- (d) For the construction of 4-bit simultaneous A/D converter _____ 1
comparators are required.
- (i) 3
(ii) 7
(iii) 15
(iv) 31

(B) Attempt **any two** of the following :

- (a) Compare between Inclusive OR and Exclusive OR Gates. 3
- (b) Define Multiplexer. Explain the working of 4 : 1 MUX using rotary switch. 3
- (c) Explain the working of 3-bit asynchronous counter using logic diagram. Write its truth table. 3

2. (A) Attempt **any two** of the following :

- (a) Define following binary terms : 3
- (i) Bit
(ii) Nibble
(iii) Byte
- (b) Explain half adder using logic diagram and truth table. 3
- (c) Explain J-K Flip-flop with the help of logic diagram. 3

(B) Attempt **any one** of the following :

- (a) Implement the following multioutput combinational logic circuit using 4-line to 16-line decoder. : 4

$$F_1 = \Sigma m (3, 5, 6, 11)$$

$$F_2 = \Sigma m (2, 6, 10, 13)$$

- (b) Write a note on the following output devices : 4
- (i) COM
- (ii) Impact Printers
- (iii) Non-impact Printers
- (iv) Plotters
3. (A) Attempt **any two** of the following :
- (a) Explain 8-bit controlled inverter using EX-OR gate. 3
- (b) Write the classification of logic families. 3
- (c) Explain T-flip-flop with logic diagram and truth table. Draw Waveforms. 3
- (B) Attempt **any one** of the following :
- (a) Explain double-dabble method using suitable examples. 4
- (b) Draw block diagram of Counter Type A/D Converter. Explain its working. Write its advantages and disadvantages. 4
4. (A) Attempt **any two** of the following :
- (a) Prove the following Boolean equation using Boolean algebra : 3
- $$\overline{AB} \cdot C + \overline{A} (B + \overline{C}) = \overline{A} + \overline{B}C$$
- (b) Explain the circuit of TTL NAND gate. Write its truth table. 3
- (c) Write the concept of 1-bit memory cell using NAND gates. 3
- (B) Attempt **any one** of the following :
- (a) Implement the following logic equation using Demultiplex and gates. 4
- $$Y_1 = A \overline{B} C \overline{D} + \overline{A} \overline{B} C D + \overline{A} B \overline{C} D$$
- $$Y_2 = \overline{A} B \overline{C} D + A \overline{B} \overline{C} D + A \overline{B} C \overline{D}$$
- (b) Draw block diagram of Digital Computer. Explain the function of each block. 4

5. (A) Attempt **any two** of the following :
- (a) Draw the circuit diagram of TTL Inverter. Explain its working with truth table. 3
 - (b) Explain priority encoder using IC 74147 and write its truth table. 3
 - (c) How many Flip-flops are required to construct each of the following counters : 3
 - (i) Mod - 10
 - (ii) Mod - 22
 - (iii) Mod - 37
- (B) Attempt **any one** of the following :
- (a) Convert the following : 4
 - (i) $(110\ 11.01)_2 = (?)_{10} = (?)_{16}$
 - (ii) $(25.7)_{10} = (?)_2 = (?)_{16}$
 - (b) Explain 4-bit weighted register type D/A converter using circuit diagram. Give any two disadvantages. 4

OR

5. (A) Attempt **any two** of the following :
- (a) Write the rules of binary addition and subtraction. Solve addition and subtraction. Solve the following using binary rules : 3
 - (i)
$$\begin{array}{r} 1011 \\ + 0111 \\ \hline \end{array}$$
 - (ii)
$$\begin{array}{r} 1100 \\ - 0011 \\ \hline \end{array}$$
 - (b) Draw logic diagram of EX-OR gate using NAND gates. Write truth table of EX-OR gate : 3
 - (c) Explain R-2R ladder type D/A converter using circuit diagram. Write the formula to get output voltage. 3
- (B) Attempt **any one** of the following :
- (a) Draw BCD to Decimal decoder using basic gates. Explain the working with truth table. 4
 - (b) Explain Decade counter using logic diagram and timing diagram. Also write its truth table. 4

DAY - **18**

SEAT NUMBER

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2022	III	25	1030	V - 168	(E)
<i>Science</i> COMPUTER SCIENCE PAPER - II (D-9)					
Time : 3 Hours		4 Pages		Max. Marks : 50	

- Instructions :*
- (1) All question are compulsory.
 - (2) Figures to the right indicate full marks.
 - (3) Draw neat diagram wherever necessary.
 - (4) Use of any type of calculator is not allowed.
 - (5) Comments are must in assembly language program.

1. (A) Select the correct alternative and rewrite the following :
- (a) 8085 Microprocessor consist of _____ general purpose registers. 1
- (i) 4
 - (ii) 6
 - (iii) 8
 - (iv) 16
- (b) _____ is not an example of logical operation of 8085 Microprocessor. 1
- (i) Rotate
 - (ii) Complement
 - (iii) Increment
 - (iv) Compare
- (c) 8051 is a _____ bit microcontroller. 1
- (i) 4
 - (ii) 8
 - (iii) 32
 - (iv) 16

(d) Bandwidth of telephone line is _____

1

(i) 3 to 4 KHz

(ii) 30 to 40 KHz

(iii) 10 to 100 KHz

(iv) 50 to 80 KHz

(B) Answer **any two** of the following :

(a) Explain following registers of 8085 Microprocessor :

3

(i) Instruction Decoder

(ii) Temporary Register

(iii) Stack Pointer

(b) What do you mean by Interrupt ? Explain Software Interrupt.

3

(c) Explain the programming model for 32-bit version of x-86 family with suitable diagram.

3

2. (A) Answer **any two** of the following :

(a) Compare Microcontroller with Microprocessor.

3

(b) What do you mean by Modem ? Explain its types.

3

(c) Explain following pin's of 8085 Microprocessor :

3

(i) \overline{STB}

(ii) \overline{HOLD}

(iii) $\overline{IO/M}$

(B) Answer **any one** of the following :

(a) What do you mean by Flag Register ? Explain its bit pattern by giving an example.

4

(b) Explain any four characteristics of Co-axial Cable.

4

3. (A) Answer **any two** of the following :
- (a) Explain following instructions of 8085 Microprocessor. **3**
 - (b) Explain following addressing modes of 8085 Microprocessor : **3**
 - (i) Immediate Addressing
 - (ii) Register Indirect Addressing
 - (iii) Direct Addressing
 - (c) The Accumulator contains the data 76H and the register L contains the data A6H. What will be the contents of accumulator in hex after execution of each of the following instruction independently : **3**
 - (i) ORA L
 - (ii) ANA L
 - (iii) RRC
- (B) Answer **any one** of the following :
- (a) Compare the characteristics of UTP Cable and STP Cable. **4**
 - (b) Flag Register contains data D9H. Interpret its meaning. **4**
4. (A) Answer **any two** of the following :
- (a) Write the addressing mode of following instructions : **3**
 - (i) RAL
 - (ii) STA C500 H
 - (iii) ADD C
 - (iv) MVI B, 55 H
 - (v) MOV M, A
 - (vi) INR A
 - (b) What is Microprocessor ? Write features of 8085 Microprocessor. **3**
 - (c) Explain LAN, WAN and MAN. **3**
- (B) Answer **any one** of the following :
- (a) Explain any four advantages and four application of Microcontroller. **4**
 - (b) Explain Repeater and Router. **4**

5. Answer **any two** of the following :

(a) A block of data is stored in memory location from C101H to C10AH. Write an Assembly Language Program to transfer the block in reverse order to memory location C200H and onward. 5

(b) Write an Assembly Language Program to find the product of two numbers stored in memory location C005H and C006H. Store the result in C000H and C001H. 5

(c) Write an Assembly Language Program to add two BCD number stored at location 2500H and 2501H. Place the BCD result in location 2502H and onward starting with LSB. 5

OR

5. Answer **any two** of the following :

(a) Write a subroutine to fill the memory location 2501H to 25FF H with Hex number 01H to FFH. 5

(b) A Hex number is stored at location 2100H. Write an Assembly Language Program to interchange its digit, the new number is to be stored in 2105H. Add original number with new number and store the result at location 2105H. 5

(c) Write an ALP to count the number of odd data byte occurring in a block, starting from memory location 2501H to 25FFH. Store the result at the memory location 2600H. 5

DAY — 03

SEAT NUMBER

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2021	IX	21	1030	J-510	(M)
MARATHI (02)					
Time : 3 Hrs.		(11 Pages)		Max. Marks : 80	

कृतिपत्रिका

कृतिपत्रिकेसाठी सूचना :

- (१) आकलन कृती व व्याकरण यांमधील आकृत्या किंवा चौकटी पेनाने व्यवस्थित काढाव्यात.
- (२) स्वच्छता, नीटनेटकेपणा व लेखननियमानुसार लेखन यांकडे जाणोवपूर्वक लक्ष द्यावे.

विभाग १ - गद्य

[२०]

कृती १. (अ) पुढील उताऱ्याच्या आधारे सूचनेनुसार कृती करा : (८)

(१) कृती करा : (२)

लेखिकेने पर्यटकाच्या नजरेतून	}	→ (य)
बघितलेली ठिकाणे		→ (र)

(२) चौकटी पूर्ण करा :

(य) तोलोलिंग फत्ते करणारे शिल्पकार - (२)

(र) भारतीयत्वाचा सुगंध ल्यालेले -

लेह, नुब्रा व्हॅली, पॅगाँग लेक आणि शेवटी द्रास, कारगिल अशा अव्याहत प्रवासात सतत भेटणारे, भरभरून बोलणारे जवान. त्यांची लष्करी अदब; प्रांत, धर्म, जात, भाषा अशा कुठल्याही प्रतिबंधाचा स्पर्शही नसलेले, केवळ भारतीयत्वाचा सुगंध ल्यालेले, सरहद्दीवर ठाम उभे राहिलेले आपले जवान! त्यांच्या शौर्याची, धाडसांची, खडतर साहसांची सतत आठवण राहावी, म्हणून सुरू केलेल्या मिशन लडाखचं हे शेवटचं पाचवं वर्ष! भाग्यश्रीच्या आणि बरोबर आलेल्या प्रत्येकाच्या मनात ही संवेदना निर्माण झाली, हे त्याचंच फलित. 'याचसाठी केला होता अट्टाहास!' गेल्या पाच वर्षांत एक मात्र निश्चित जाणवला, की तिथे गेल्यावर आपला अहंकार, बडेजाव आणि प्रतिष्ठितपणाची चढलेली पुटं निखळून पडताहेत. लडाखच्या भिन्न भिन्न दऱ्याखोऱ्यांत भन्नाट एकाकी, रौद्र आणि हिरवळीचा दुरान्वयानेही संबंध नसलेल्या कठीण भूप्रदेशात राहूनही ममत्व, बंधुभाव जपणाऱ्या, नाती जोडणाऱ्या आणि ती टिकवणाऱ्या सैनिकांना भेटला, की 'आपली माणसं' भेटल्याचा गहिवर दाटून येत आहे. आपले सैनिक हे हिरे आहेत. त्यांना आपण जपलं पाहिजे. त्यांच्याबद्दल कृतज्ञ राहिलं पाहिजे. आम्ही पाच वर्षं रक्षाबंधनासाठी लडाखला ग्रुप घेऊन येत आहोत. याचं प्रचंड अप्रूप वाटून ब्रिगेडिअर कुशल ठाकूर या सोहळ्यासाठी आणि आम्हांला भेटायला आवर्जून आले होते. १९९९मधील कारगिल युद्धाच्या वेळी कर्नल असलेले कुशल ठाकूर तोलोलिंग फत्ते करण्याच्या योजनेचे शिल्पकार होते. ते आमच्यासारख्या सामान्य माणसांना भेटायला येतात, याच्यापरता मोठा सन्मान तो कोणता?

(३) स्वमत अभिव्यक्ती -

(४)

'आम्हांला सैनिक नावाचा माणूस कळू लागला,' या विधानाचा तुम्हांला कळलेला अर्थ लिहा.

किंवा

सैनिकांचे जीवन आणि सामान्य नागरिकांचे जीवन यांची तुलना तुमच्या शब्दांत करा.

(आ) खालील उताऱ्याच्या आधारे सूचनेनुसार कृती करा :

(८)

(१) कृती करा :

(२)

डायनिंग टेबलजवळच्या खिडकीतून

लेखकाने पाहिलेली दृश्ये

→ (य)
→ (र)

(२) कारणे लिहा -

(२)

(य) लेखक हलकेच खिडकी उघडतो, कारण.....

(र) पाखरांचा चिवचिवाट अजून सुरू झालेला नसतो,

कारण.....

मी हलकेच उठतो. चूळ भरतो. डायनिंग टेबलजवळ येतो. त्याच्या जवळची खिडकी हलकेच उघडतो. रात्रीच्या नीरव शांततेची निद्रा भंग होऊ नये म्हणून. बाहेर पाहतो तो आसमंतात काळाकुळकुळीत अंधार दाटलेला. बागेतल्या साऱ्या झाडांचा, साऱ्या वेलींचादेखील डोळा लागलेला. त्यांच्यावरची पाखरंदेखील गाढ झोपलेली. त्यांचा चिवचिवाट अजून सुरू झालेला नसतो, कारण आता फक्त पहाटेचे तीन-साडेतीन तर वाजलेले असतात. का कुणास ठाऊक, ही वेळ मला फार आवडते. सारं जग साखरझोपेत असतं. साऱ्या चिंता-काळज्या मिटल्या-विरलेल्या असतात. मन कसं समेवर आलेलं असतं. मला वाटतं, आपलं खरंखुरं मन हेच असतं, जे सुखदुःखांच्या पलीकडे कुठंतरी दूर दूर गेलेलं असतं. आपलंच नव्हे तर या दुधाळ सायलीचंदेखील, जांभुळसर जेंक्रांडाचं-देखील, किरमिजी-निळसर-पिवळसर इवलाल्या इंद्रधनुषी फुलांच्या घाणेरीचंदेखील, पांढऱ्याशुभ्र नि रक्तचंदनी चाप्याचंदेखील. या साऱ्यांमध्ये नि माझ्यामध्ये असं कोणतं बरं नातं आहे? कोणते रेशीमबंध आहेत? कोणती जवळीक आहे? केव्हा पहाट होते नि केव्हा मी या साऱ्यांना भेटतो, अशी असोशी मनाला का बरं लागून राहते? हे रेशीमबंध कुठं तरी आदिमत्वाकडे तर मनाला ओढून नेत नाहीत? मानवाला निसर्गाची जी ओढ युगानुयुगांपासून लागून राहिली आहे, ती या आदिम, ऋजू, स्नेहबंधनांमुळे तर नाही?.....

(३) स्वमत अभिव्यक्ती :

(४)

‘मला वाटतं, आपलं खरंखुरं मन हेच असतं’.

वरील विधानाचा तुम्हांला कळलेला अर्थ स्पष्ट करा.

किंवा

निसर्ग आणि मानव यांच्यातील परस्पर संबंध तुमच्या शब्दांत स्पष्ट करा.

(इ) खालील उतान्याच्या आधारे सूचनेनुसार कृती करा :

(४)

(१) विधाने पूर्ण करा :

(२)

(य) शाश्वत सत्य म्हणजे.....

(र) म्हणींचे पहिले वैशिष्ट्य.....

समाजाने जिवाभावाने जतन केलेले, रोजच्या जीवनाला पथदर्शक म्हणून पदोपदी उपयोगी पडणारे, समाजमन आणि समाजव्यवस्था, अभिरुची यांच्या चाळणीतून गळून खाली उरलेले शाश्वत सत्य म्हणजे आपल्या भाषेतील म्हणी होत. ते लोकधन आहे. ते लोकजीवनाचे दर्पण आहे. लोकजीवनाचा शाश्वत सारांश आहे. लोकसाहित्याला श्रीमंत करण्यात या म्हणींचे योगदान लक्षणीय आहे. अनुभवदर्शन, विचारदर्शन, स्वभावदर्शन व जीवनदर्शन घडविणाऱ्या या म्हणींचे पहिले वैशिष्ट्य असे, की या म्हणींतून त्या काळच्या समाजाचे समग्र आणि निर्दोष दर्शन घडते. गुण-अवगुण, व्यंग-विकृती, कंजूष-खर्चक, कामांध नि धनांध, भूक-भोग, दिमाख-दिवाळ, विवेक-अविवेक, खादाड नि खुनशी अशा नाना वैशिष्ट्यांनी ओतप्रोत भरलेल्या म्हणींचा मोठा खच व्यवहारात झालेला असतो आणि स्वभावाबरोबरच समाजाचे जवळ जवळ परिपूर्ण दर्शन या म्हणींतून घडते. त्याचे महत्त्वाचे कारण म्हणजे यात कल्पिताचा आधार घेतलेला नसतो.

— डॉ. द. ता. भोसले

(२) कारणे लिहा :

(२)

(य) म्हणींचे योगदान लक्षणीय आहे, कारण.....

(र) समाजाचे परिपूर्ण दर्शन म्हणींतून घडते, कारण.....

कृती २. (अ) खालील कवितेच्या आधारे सूचनेनुसार कृती करा : (८)

(१) खालील अर्थाच्या ओळी कवितेतून शोधून लिहा : (२)

(य) अतोनात कष्टानंतर हिरव्या समृद्धीच्या स्वरूपात शिल्लक राहते.

(र) स्वतःचा जीवच जणू कांद्याच्या रोपाच्या रूपात लावते.

(२) खालील चौकटी पूर्ण करा : (२)

कवितेतील स्त्री करत असलेली कामे

(य)

(र)

सरी-वाफ्यात, कांदं लावते

बाई लावते

नाही कांदं ग, जीव लावते

बाई लावते

काळ्या आईला, हिरवं गोंदते

बाई गोंदते

रोज मातीत, मी ग नांदते

बाई नांदते

फुलं सोन्याची, झेंडू तोडते

बाई तोडते

नाही फुलं ग, देह तोडते

बाई तोडते

घरादाराला, तोरण बांधते

बाई बांधते

रोज मातीत, मी ग नांदते

बाई नांदते

ऊस लावते, बेणं दाबते
बाई दाबते
नाही बेणं ग, मन दाबते
बाई दाबते
कांड्या-कांड्यांनी, संसार सांधते
बाई सांधते
रोज मातीत, मी ग नांदते
बाई नांदते

उन्हातान्हात, रोज मरते
बाई मरते
हिरवी होऊन, मार्ग उरते
बाई उरते
खोल विहिरीचं, पाणी शेंदते
बाई शेंदते
रोज मातीत, मी ग नांदते
बाई नांदते

(३) स्वमत अभिव्यक्ती : (४)

शेतकरी स्त्रियांच्या कष्टमय जीवनाचे वर्णन कवितेच्या आधारे लिहा.

(आ) खालील ओळींचा अर्थ लिहा : (४)

सत्त्व उतारा देऊन ।
अवघा सारिला तमोगुण ।
किंचित राहिली फुणफुण ।
शांत केली जनार्दनं ॥

(इ) खालीलपैकी कोणतीही एक कृती करा : (४)

काव्य सौंदर्य :

'त्याला आठवतं त्याच्याच शेजारी
पाय मुडपून कसंबसं झोपलेलं एखादं मूल,
ज्याचं बालपण स्टेशनवरल्या बाकाएवढं,
आणि त्याची त्याला कल्पना असावी किंवा नसावी.'
वरील काव्यपंक्तींतील भावसौंदर्य स्पष्ट करा.

किंवा

रसग्रहण :

'रंगुनी रंगांत सान्या रंग माझा वेगळा !

गुंतुनी गुंत्यांत सान्या पाय माझा मोकळा !

कोण जाणे कोटुनी ह्या सावल्या आल्या पुढे;

मी असा की लागतौ ह्या सावल्यांच्याही झळा !'

वरील काव्यपंक्तींचे रसग्रहण करा.

विभाग ३ - साहित्यप्रकार : कथा

[१०]

कृती ३. खालील उताऱ्याच्या आधारे सूचनेनुसार कृती करा :

(अ) (१) केवळ एका वाक्यात उत्तरे लिहा :

(२)

(य) कथेतील पात्रांचे वाचकांशी जवळीक साधण्यामागील कारण लिहा.

(र) कथानकाचे प्रयोजन लिहा.

कथाकार त्याच्या प्रतिभाशक्तीने एखाद्या घटनेत वास्तवाचे व कल्पनेचे रंग भरतो. हे करताना तो निसर्ग, समाज, सांस्कृतिक संदर्भ, वातावरण इत्यादी घटकांचे साहाय्य घेतो. या सर्व घटकांच्या मदतीने घटनामालिकेचे कथात्म साहित्यात रूपांतर होते; म्हणून कथेत 'घटना' हा महत्त्वाचा भाग ठरतो. कथेत या मूळ घटनेलाच 'कथाबीज' असे म्हणतात. कथानकात घटना, प्रसंग, पात्रांच्या कृती, स्वभाववैशिष्ट्ये, वातावरण इत्यादींचे तपशील हळुवारपणे उलगडत जातात. कथेत कथानकातील घटकांचे एकत्रीकरण केले जाते. या एकत्रीकरणातून कथेची मांडणी आकाराला येते. हे कथानक उलगडताना त्यातील प्रवाहीपणही जपले जाते. कथाकाराच्या मनात कथेच्या अनुषंगाने निर्माण झालेला भावाशय वाचकांपर्यंत पोहोचवण्यासाठी कथन करणे हे कथानकाचे प्रयोजन असते. पात्रचित्रण हा कथेचा महत्त्वपूर्ण घटक आहे. पात्रचित्रणातून कथेचा आशय पुढे पुढे जात राहतो. कथाकार एखाद्या पात्राची वृत्ती, कृती, उक्ती, भावना, विचार, कल्पना, संवेदना, जीवनदृष्टी, जीवनपद्धती इत्यादींच्या चित्रणातून त्या व्यक्तीची शब्दरूप प्रतिमा तयार

करत असतो. या शब्दरूप प्रतिमेला 'पात्र' असे म्हणतात. कथेतील पात्रांना वास्तवातील माणसांप्रमाणे रेखाटले जाते, म्हणून वाचकांची त्या पात्रांशी जवळीक साधली जाते. ही पात्रे कथाकाराची 'स्व'निर्मिती असते.

(२) कारणे लिहा :

(२)

कथेत 'घटना' हा महत्त्वाचा भाग ठरतो, कारण -

(य)

(र)

(आ) खालीलपैकी कोणत्याही दोन कृती सोडवा :

(६)

- (१) 'शोध' या कथेच्या नायिकेचे शब्दचित्र तुमच्या शब्दांत रेखाटा.
- (२) 'उत्तम डॉक्टर होण्यापेक्षा उत्तम नर्स होणे कठीण आहे,' या विधानाबाबत तुमचे मत स्पष्ट करा.
- (३) 'गढी' या शीर्षकाची समर्पकता पटवून द्या.
- (४) गावातल्या उचापती करणाऱ्या लोकांबद्दल तुमचे मत स्पष्ट करा.

विभाग ४ - उपयोजित मराठी

[१४]

कृती ४. (अ) खालीलपैकी कोणत्याही दोन कृती सोडवा :

(४)

- (१) मुलाखतीचे प्रमुख हेतू तुमच्या शब्दांत लिहा.
- (२) माहितीपत्रकाचे स्वरूप विशद करा.
- (३) अहवाल लेखनाची कोणतीही 'दोन' वैशिष्ट्ये स्पष्ट करा.
- (४) माहितीपत्रकाची भाषाशैली तुमच्या शब्दांत वर्णन करा.

(आ) खालीलपैकी कोणत्याही दोन कृती सोडवा :

(१०)

- (१) 'मुलाखतीची पूर्वतयारी' खालील मुद्द्यांच्या आधारे स्पष्ट करा :
पूर्वतयारीची गरज ज्यांची मुलाखत घ्यायची त्यांची संपूर्ण माहिती
..... मुलाखतीचे उद्दिष्टलागणारा वेळ व श्रोतृवर्ग मुलाखतीचे
माध्यम.

- (२) 'माहितीपत्रकाची गरज' खालील मुद्द्यांच्या आधारे स्पष्ट करा :
सामान्य वस्तूंपासून मोठ्या वस्तूपर्यंत विविध क्षेत्रे 'माहिती'
हा उद्देश ग्राहकांचा फायदा लोकमत आकर्षित.
- (३) 'अहवाल लेखनाची वैशिष्ट्ये' खालील मुद्द्यांना अनुसरून स्पष्ट करा :
वस्तुनिष्ठता सुस्पष्टता विश्वसनीयता सोपेपणा
शब्दमर्यादा निःपक्षपातीपणा.
- (४) 'मुलाखतीचा समारोप' खालील मुद्द्यांना अनुसरून स्पष्ट करा :
भाषिक कौशल्ये परिणामकारक निवेदन अनपेक्षित समारोप
..... श्रोत्यांचा प्रतिसाद मुलाखतीची यशस्विता.

विभाग ५ - व्याकरण व लेखन

[२०]

कृती ५. (अ) सूचनेनुसार कृती करा :

- (१) (य) योग्य पर्याय निवडा : (१)
पांढरा रंग सर्वांना आवडतो.
वरील वाक्याचे प्रश्नार्थक वाक्य ओळखा :
(१) कोणाला आवडतो पांढरा रंग?
(२) पांढरा रंग कोणाला आवडत नाही?
(३) सर्वांनाच पांढरा रंग आवडतो का?
(४) कोणाकोणाला आवडतो पांढरा रंग?
- (२) सूचनेनुसार कृती करा : (१)
दवाखान्यात मोठ्या आवाजात बोलू नये.
वरील वाक्य होकारार्थी करा.
- (२) (य) योग्य पर्याय निवडा : (१)
'यथाशक्ती' या सामासिक शब्दातील समास ओळखा :
(१) अव्ययीभाव समास
(२) तत्पुरुष समास
(३) द्वंद्व समास
(४) बहुव्रीही समास

- (र) 'नीलकमल' या सामासिक शब्दातील समासाचे नाव लिहा. (१)
- (३) (य) योग्य पर्याय निवडा : (१)
- 'आपली पाठ्यपुस्तके संस्कारांच्या खाणी असतात.'
- वरील वाक्यातील प्रयोग ओळखून लिहा.
- (१) कर्मणी प्रयोग
- (२) कर्तरी प्रयोग
- (३) भावे प्रयोग
- (४) यांपैकी नाही
- (र) योग्य पर्याय निवडा : (१)
- भावे प्रयोग असलेले वाक्य शोधून लिहा.
- (१) मुले प्रदर्शनातील चित्रे पाहतात.
- (२) सैनिकांनी शत्रूस युद्धभूमीवर घेरले.
- (३) कप्तानाने सैनिकांना सूचना दिली.
- (४) तबेल्यातून घोडा अचानक पसार झाला.
- (४) (य) योग्य पर्याय निवडा : (१)
- मुंगी उडाली आकाशी
- तिने गिळिले सूर्यासी !
- वरील काव्यपंक्तीतील अलंकार ओळखून लिहा.
- (१) अनन्वय
- (२) अतिशयोक्ती
- (३) अपन्हृती
- (४) अर्थान्तरन्यास
- (र) उपमान ओळखा : (१)
- 'अर्जुनासारखा पराक्रमी अर्जुनच.'
- वरील वाक्यातील उपमान ओळखा.

(५) (य) योग्य पर्याय निवडा :

(१)

'मन समेवर येणे'.

वरील वाक्प्रचाराचा अर्थ खालील पर्यायांतून ओळखून लिहा :

- (१) मन चंचल होणे.
- (२) मनात उलथापालथ होणे.
- (३) मन शांत व एकरूप होणे.
- (४) मन शांत व निर्विकार होणे.

(२) 'मन समेवर येणे' या वाक्प्रचाराचा वाक्यात उपयोग करा. (१)

(आ) खालीलपैकी कोणत्याही एका विषयावर सुमारे २०० ते २५० शब्दांत निबंध

लिहा :

(१०)

- (१) मी अनुभवलेली पहाट
- (२) मी शेतकरी बोलतोय
- (३) झाडे बोलू लागली तर.....
- (४) माझा आवडता कलावंत
- (५) भ्रमणध्वनी यंत्र (मोबाईल फोन) शाप की वरदान?



DAY — **01**

SEAT NUMBER

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2022	III	04	1030	J-701	(E)
Art, Sci, Comm. MOVE					
ENGLISH (01)					
Time : 3 Hrs.		(15 Pages)		Max. Marks : 80	

Important instructions :

- (1) Each activity has to be answered in complete sentence/sentences. Answers written in only one word will not be given complete credit. Only the correct activity number written in case of options will not be given any credit.
- (2) Web diagrams, flow charts, tables etc. are to be presented exactly as they are with answers.
- (3) In point 2 above, only the words written without the presentation of activity format/design, will not be given credit. Use of colour pens/pencils etc. is not allowed. (Only blue/black pens are allowed.)
- (4) Multiple answers to the same activity will be treated as wrong and will not be given any credit.
- (5) Maintain the sequence of the Sections/Question Nos./Activities throughout the activity sheet.

SECTION - I : PROSE

**(Reading for Comprehension, Language Study,
Summary and Mind Mapping)**

Q. 1. (A) Read the extract and complete the activities given below : (12) [16]

At a corner of Sixth Avenue electric lights and cunningly
displayed wares behind plateglass made a shop window

attractive. Soapy took a stone and dashed it through the glass. People came running, round the corner, a policeman in the lead. Soapy stood still with his hands in his pockets, and smiled at the sight of brass button.

“Where’s the man that done that ?” inquired the officer agitatedly.

“Don’t you think that I might have had something to do with it?” said Soapy, with a friendly voice, as one greets good fortune.

The policeman refused to accept Soapy even as a clue. Men who smash windows do not remain to chat with the police. They take to their heels. The policeman saw a man half-way down the block running to catch a car. With drawn club he joined in the pursuit. Soapy, with disgust in his heart, drifted along, twice unsuccessful.

On the opposite side of the street was a restaurant of no great pretensions. It catered to large appetites and modest purses. Its crockery and atmosphere were thick; its soup and napery thin. Into this place Soapy betook himself without challenge. At a table he sat and consumed beefsteak, flapjacks, doughnuts and pie. And then he told the waiter the fact that the minutest coin and himself were total strangers.

“Now, get busy and call a cop,” said Soapy. “And don’t keep a gentleman waiting.”

“No cop for you,” said the waiter, with a voice like butter cakes and an eye like the cherry in the Manhattan cocktail. “Hey, Con!”

Neatly upon his left ear on the callous pavement two waiters pitched Soapy. He arose, joint by joint, as a carpenter’s rule opens, and dusted his clothes. Arrest seemed

now but an elusive dream. The island seemed very far away. A policeman who stood before a drugstore two doors away laughed and walked down the street.

A1. True / False :

(2)

Read the following sentences and state whether they are true or false. Correct the false statements and rewrite them.

- (a) Soapy broke the glass of the shop window.
- (b) Nobody heard the breaking of the glass window.
- (c) The policeman chased Soapy.
- (d) Soapy did not run away from the place.

A2. Rearrange :

(2)

Rearrange the following statements in order of their occurrence in the extract.

- (a) The policeman refused to accept Soapy even as a clue.
- (b) Soapy took a stone and dashed it through the glass.
- (c) "Now, get busy and call a cop," said Soapy.
- (d) Soapy, with disgust in his heart, drifted along twice unsuccessful.

A3. Guess :

(2)

Read the following sentences and write down what it means.

- (a) "Don't you think that I might have had something to do with it?"
- (b) He told the waiter the fact that the minutest coin and himself were total strangers.

A4. Personal response : (2)

Suppose you are a manager of a hotel, a poor boy has taken dinner in the hotel and then he found, he has not enough money to pay the bill. Describe how you will react in the situation.

A5. Language study : (2)

(i) On the opposite side of the street was a restaurant of no great pretensions.

(ii) Men who smash windows do not remain to chat with the police.

(Make the above sentences simple)

A6. Vocabulary : (2)

Match the following words in column 'A' with their meanings in column 'B'.

Column 'A'

Column 'B'

(a) gibberish

(i) magic

(b) enchantment

(ii) meaningless speech

(c) arrest

(iii) threw

(d) pitched

(iv) nab

B1. Grammar / Language Study (Non-Textual Grammar) — (3)

Do as directed :

(i) We can accept our life gracefully.

(Rewrite using modal auxiliary showing 'compulsion')

(ii) As I entered the post office, the Post Master presented me with a telegram.

(Begin the sentence with "No sooner.....")

(iii) The mother looks after her child.

(Make it a rhetorical question)

B2. Spot the error in the given sentence and rewrite the correct sentence.

(i) Summers in Delhi are extreme hot. (1)

Q. 2. (A) Read the extract and complete the activities given below : (12) [18]

“I don’t believe in taking the right decisions. I take decisions, I take decisions and then make them right.” One of them make them right. One of the Ratan Tata’s inspiring words which made me dream beyond shadows. I feel fortunate that I discovered him in the early stage of my life and now I am using his teachings to mould my future the way I want.

Even though Ratan Tata was born in a very posh family of India, he never took money and power for granted. He graduated from Riverdale country from New York, Ratan Tata began his career in the Tata Group working on the shop floor of Tata Steel. After working for almost 10 years he was appointed as the director-in-charge of the National Radio and Electronics Company Limited (NEL.CO) in order to help its struggling finances. He worked hard building a better consumer electronics division but the economic recession and union strikes prevented him from achieving success and this success helped Tata to be appointed as the chairman of the Tata Group of companies. He started with a very basic job in his father’s company and today he owns a billion dollar company.

The tag of greatness does not come without making any sacrifices and this tag on Ratan Tata suits to its best.

Tata group launched its passenger car Tata Indica in the year 1998 but Tata Indica was a failure in its first year and the experiment seemed to be failing. Many people started

advising Ratan Tata that he should sell the passenger car business. Ratan Tata also agreed to this and a proposal was given to Ford, they showed interest too. The three-hour meeting at Ford headquarters in Detroit, chairman of Ford (Bill Ford) said to Ratan Tata, "Why did you enter in the passenger car business when you were not knowing of it. It will be a favour if we buy this business from you."

Ratan Tata decided to move back home. While travelling he was very tense as the feeling of being insulted was on his mind. After earlier failures, Tata Motors did well with its business of passenger cars but in the same period, Ford did very bad. In 2008 when Ford was on its way of bankruptcy, Tata Group offered Ford to buy its luxury car brand, Jaguar Land Rover. Ford arrived in Mumbai for the meeting. In the meeting, Bill Ford said to Ratan Tata, you are doing a big favour for us by buying- Jaguar-Land Rover is now owned by Tata Group and is currently making profits.

A1. Rewrite the following sentences as per their occurrence in the extract : (2)

- (a) He was appointed as the Director-in-charge of the National Radio and Electronics Company Limited.
- (b) Tata Group launched its passenger car 'Tata Indica' in the year 1998.
- (c) Bill Ford said to Ratan Tata, "You are doing a big favour for us by buying Jaguar-Land Rover."
- (d) He graduated from Riverdale country from New York.

A2. Explain : (2)

The writer says, "I don't believe in taking right decisions, I take decisions and then make them right."

A3. Give reasons : (2)

Ratan Tata decided to sell his passenger car business.

A4. Personal Response : (2)

Right decision at the right time is important success.

Express your opinion.

A5. Grammar : (2)

Do as directed.

(i) He worked hard building a better consumer electronics division.

(Rewrite the sentence using the infinitive form of the underlined word)

(ii) Tata Group launched the passenger car Tata Indica.

(Rewrite it beginning with 'The passenger car Tata Indica.....')

A6. Vocabulary : (2)

Give antonyms.

(i) Profit

(ii) Prevent

(B) Summary Writing : (3)

Write a summary of the above extract with a suitable title with the help of the given points/hints.

Ratan Tata's early career — early setback in passenger car business — his meeting with Bill Ford — his success in passenger car business — purchase of Ford's Land Rover and Jaguar.

(C) Mind Mapping :

(3)

Develop a Mind-Mapping using your ideas and concepts to develop the topic 'Proper Time Management.'

- (i) Using the title connect your thoughts
- (ii) Use your own design for branching and general structure
- (iii) Try making 2-3 main and 2-3 subbranches

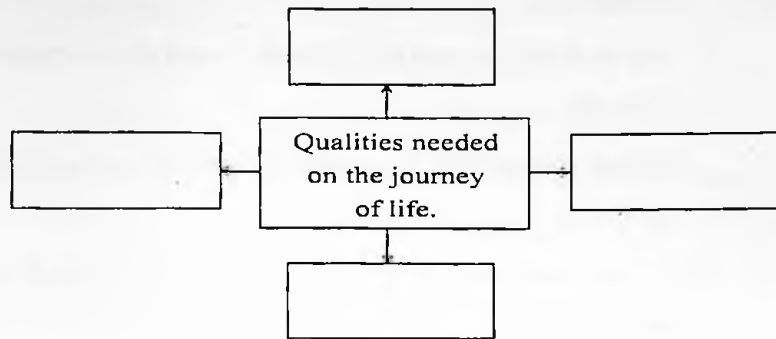
SECTION - II : POETRY

(Poetry and Appreciation)

Q. 3. (A) Read the extract and complete the activities given below : (10) [14]

Afoot and light-hearted I take to the open road,
Healthy, free, the world before me,
The long brown path before me leading wherever I choose.
Henceforth I ask not good fortune,
I myself am good fortune,
Henceforth I whimper no more, postpone no more, need nothing,
Done with indoor complaints, libraries, querulous criticisms,
Strong and content I travel the open road.
The earth, that is sufficient,
I do not want the constellations any nearer,
I know they are very well where they are,
I know they suffice for those who belong to them.
Still here I carry my old delicious burdens,
I carry them, men and women, I carry them with me
wherever I go,
I swear it is impossible for me to get rid of them in return.

- A1. Complete the web diagram about the qualities needed on the journey of life : (2)



- A2. Analyse the line- I asked not good fortune, I myself am good fortune. (2)

- A3. Personal response :

Explain the importance of long path / road in man's life. (2)

- A4. Poetic Device :

Identify and explain the figure of speech in the following line.

Still here I carry old delicious burdens. (2)

- A5. Poetic creativity :

Complete the given lines using your imagination. (2)

There is no way leading back.

I move forward

- (B) Appreciation : (4)

Read the given extract and write an appreciation of the poem using the following points.

Is anybody happier because you passed his way?

Does anyone remember that you spoke to him today?

This day is almost over, and its toiling time is through;

Is there anyone to utter now a kindly word of you?
Did you give a cheerful greeting to the friend who came
along?
Or a churlish sort of "Howdy" and then vanish in the
throng?
Were you selfish pure and simple as you rushed along
the way,
Or is someone mighty grateful for a deed you did
today?
Can you say tonight, in imparting with the days that's
slipping fast,
That you helped a single brother of the many that you
passed?

Is a single heart rejoicing over what you did or said;
Does a man whose hopes were fading now with courage
look ahead?

- Points :
- (i) Title of the poem, name of the poet.
 - (ii) Theme
 - (iii) Poetic devices, language
 - (iv) Values
 - (v) Your opinion about the poem.

SECTION - III

(Writing Skills)

Q. 4. (A) Complete the activities as per the instructions given below : (4) [16]

- (1) You are Gopal, a receptionist, in the office of a company manufacturing garments. A sales manager Mr. Deshmukh visited and handed over the sales report to

be submitted to the general manager who was busy attending a meeting.

Mr. Deshmukh : Hellow! I am here to submit the available sales report to the General Manager.

Gopal : I am sorry but the General Manager is in the meeting. Can you leave a message for him along with the reports?

Mr. Deshmukh : Sorry, I have to leave immediately to collect the other reports. Please inform the General Manager, that I had to leave immediately and I will see him in the evening at 5:30 P.M. with other reports. Thank you.

As a receptionist draft a virtual message for the General Manager.

OR

(2) Statement of Purpose :

You are so much interested in fashion designing. You have also participated in the various competitions and have shown your talent. Your friend is assisting you to make the career in fashion designing.

Draft a statement of purpose that will help you to get admission for the course in fashion designing at M. Rajeshwar College Arts, Hubli, Karnataka.

OR

(3) Group Discussion :

You along with your friends Sujit, Rohit and Kishor

discussing their likes and dislikes. But all are fascinated with the reading habit. Write a short group discussion in the form of dialogue telling the importance of reading for enhancing knowledge.

(B) Attempt 'Any One' of the following activities : (4)

E-mail writing :

- (1) Imagine that you are a shopkeeper of gift articles. A customer had given order for purchasing articles but you have some difficulties for giving delivery in time due to shortage. Write an email to him/her apologising for the delay.

OR

Report Writing :

- (2) You are a representative of the N.S.S. unit of your college. Write a brief report of the camp in which various social activities including cleanliness have been conducted by all the participants.

OR

Interview Questions :

- (3) Imagine that you have met with the topper in M.P.S.C. Examination. You wish to interview of him / her to know his/her journey of success. Prepare a set of 8 to 10 questions to be asked.

(C) Attempt 'Any One' of the following activities : (4)

Speech Writing :

- (1) You wish to take part in the elocution competition which is organised by your college cultural committee. Prepare a speech on the topic "Mask for safety".

OR

(2) Compering :

On the occasion of the inaugural function of 'Sports Day' you have been the responsibility to comperere :
Draft a script of the same. Use the following points.

- Brief introduction
- Lighting the lamp / Inauguration
- Welcome the guests
- Chief guest's address
- Vote of thanks

OR

Expansion of Idea :

(3) Expand the following idea by using the points –

'Time and tide wait for none'.

- Meaning of the proverb
- Importance of time
- Proper time management
- Add your own points

(D) Attempt 'Any One' of the following activities :

(4)

Film Review :

(1) Write a review of a film which you liked most with the help of following points.

- Story / Theme
- Producer / Director
- Special features of direction
- Characters : Conflict
- Music / Dance / Songs / Photography etc.
- Your opinion

OR

Blog writing :

- (2) Write a blog in appropriate format on "Necessity of Social awareness" regarding cleanliness /Hygiene in about 100 to 150 words .

OR

Appeal :

- (3) Prepare an appeal to inculcate the habit :
- Slogans
 - Use persuasive appeal
 - Its necessity for development

SECTION - IV

(LITERARY GENRE - NOVEL)

Q. 5. (A) Complete the activities given below as per the instructions : (4) [16]

- (i) Match the following items from column-A with those from the column-B : (2)

Column 'A'

Column 'B'

- | | |
|----------------------------------|----------------------------|
| (a) Murasaki Sikibu | (i) The Pilgrim's Progress |
| (b) Jonathan Swift | (ii) Gulliver's Travels |
| (c) John Bunyan | (iii) Raja Mohan's Wife |
| (d) Bankim Chandra Chattopadhyay | (iv) Tale of Genji |

- (ii) Pick the odd word out : (2)

- (a) Amit Ghosh, Vikram Seth, Henry Fielding, Amita Desai.
- (b) plot, novella, setting, theme

(c) place, time, climate, epistolary

(d) horror, mystery, picaresque, thriller

(B) Answer in about 50 words the questions given below: **(4)**

(i) Describe how Ricky Braithwaite manage to bring about a change in the behaviour of his students. **(2)**

(ii) How does Mr. Braithwaite manage to increase the cultural exposure of the class? **(2)**

(C) Answer the following : **(4)**

(i) Describe how Fix, the detective creates problems for Mr. Fogg arresting him for bank robbery and how Mr. Fogg tries to solve the problem. **(2)**

(ii) In what way was Mr. Fogg's final winning the wager connected with Aouda? **(2)**

(D) Answer the questions given below : **(4)**

(i) Describe how Sherlock Holmes discovered the connection between Miss Morstan receiving precious pearls with Major Sholto. **(2)**

(ii) How does the mystery of Bartholomew's murder lead Holmes to track down small? **(2)**



DAY — 02

SEAT NUMBER

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2021 IX 18

1030

J-502

(H)

HINDI (04)

Time : 3 Hrs.

(12 Pages)

Max. Marks : 80

कृतिपत्रिका

कृतिपत्रिका के लिए सूचनाएँ :

- (१) सूचना के अनुसार गद्य, पद्य, विशेष अध्ययन तथा व्यावहारिक हिंदी की कृतियों में आवश्यकता के अनुसार आकृतियों में ही उत्तर लिखना अपेक्षित है।
- (२) सभी आकृतियों के लिए पेन का ही उपयोग कीजिए।
- (३) आकृतियों में उत्तर पेन से ही लिखना आवश्यक है।
- (४) व्याकरण विभाग में पूछी गई कृतियों के उत्तरों के लिए आकृतियों की आवश्यकता नहीं है।

विभाग -१. गद्य (अंक-२०)

कृति १ (अ) निम्नलिखित गद्यांश पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए : (६)

ऊपर की घटना को बारह बरस बीत गए। जगत में बहुत-से परिवर्तन हो गए। कई बस्तियाँ उजड़ गईं। कई वन बस गए। बूढ़े मर गए। जो जवान थे; उनके बाल सफेद हो गए।

अब बैजू बावरा जवान था और राग विद्या में दिन-ब-दिन आगे बढ़ रहा था। उसके स्वर में जादू था और तान में एक आश्चर्यमयी मोहिनी थी। गाता था तो पत्थर तक पिघल जाते थे और पशु-पंछी तक मुग्ध हो जाते थे। लोग सुनते थे और झूमते थे तथा वाह-वाह करते थे। हवा रुक जाती थी। एक समौँ बँध जाता था।

एक दिन गुरु हरिदास ने हँसकर कहा- “वत्स! मेरे पास जो कुछ था, वह मैंने तुझे दे डाला। अब तू पूर्ण गंधर्व हो गया है। अब मेरे पास और कुछ नहीं, जो तुझे दूँ।”

बैजू हाथ बाँधकर खड़ा हो गया। कृतज्ञता का भाव आँसुओं के रूप में बह निकला। चरणों पर सिर रखकर बोला-“महाराज! आपका उपकार जन्मभर सिर से न उतरेगा।”

हरिदास सिर हिलाकर बोले-“यह नहीं- बेटा! कुछ और कहो। मैं तुम्हारे मुँह से कुछ और सुनना चाहता हूँ।”

बैजू -“आज्ञा कौजिए।”

हरिदास -“तुम पहले प्रतिज्ञा करो।”

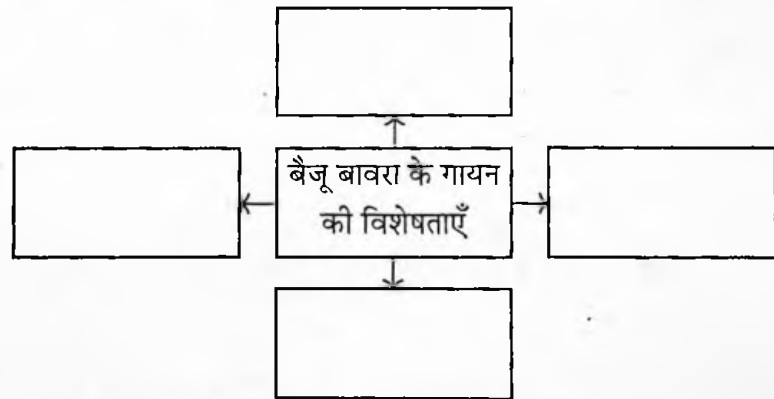
बैजू ने बिना सोच-विचार किए कह दिया -“मैं प्रतिज्ञा करता हूँ कि....”

हरिदास ने वाक्य को पूरा किया -“इस राग विद्या से किसी को हानि न पहुँचाऊँगा।”

बैजू का लहू सूख गया। उसके पैर लड़खड़ाने लगे। सफलता के बाग परे भागते हुए दिखाई दिए। बारह वर्ष की तपस्या पर एक क्षण में पानी फिर गया। प्रतिहिंसा की छुरी हाथ आई तो गुरु ने प्रतिज्ञा लेकर कुंद कर दी। बैजू ने होंठ काटे, दाँत पीसे और रक्त का घूँट पीकर रह गया। मगर गुरु के सामने उसके मुँह से एक शब्द भी न निकला। गुरु गुरु था, शिष्य शिष्य था। शिष्य गुरु से विवाद नहीं करता।

(१) संजाल पूर्ण कीजिए:

(२)



(२) (i) उपर्युक्त परिच्छेद से शब्द युग्म ढूँढकर लिखिए :

(१)

(१) —

(२) —

(ii) निम्नलिखित शब्द समूह के लिए परिच्छेद में से एक शब्द ढूँढकर लिखिए: (१)

(१) किसी अभीष्ट सिद्धि के लिए

किया जाने वाला कठोर व्रत —

(२) देवलोक में देवताओं के गायक —

(३) 'जीवन में गुरु का महत्त्व' इस विषय पर ४० से ५० शब्दों में अपने विचार लिखिए। (२)

(आ) निम्नलिखित गद्यांश पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए : (६)

एक अच्छी सहेली के नाते तुम उसकी पारिवारिक पृष्ठभूमि का अध्ययन करो। अगर लगे कि वह अपने परिवार से कटी हुई है तो उसकी इस टूटी कड़ी को जोड़ने का प्रयास करो। जैसे तुम मुझे पत्र लिखती हो, उससे भी कहो; वह अपनी माँ को पत्र लिखे। अपने घर की, भाई-बहनों की बातों में रुचि लें। अपनी समस्याओं पर माँ से खुलकर बात करें और उनसे सलाह लें। यदि उसकी माँ इस योग्य न हो तो वह अपनी बड़ी बहन या भाभी से भी बातचीत का सिलसिला जोड़कर वह अपनी समस्या से अकेले जूझने से निजात पा सकती है। नहीं तो तुम तो हो ही। ऐसे समय वह तुम्हारी बात न सुने, तुम्हें झटक दे, तब भी उसकी वर्तमान मनोदशा देखकर तुम्हें उसकी बात का बुरा नहीं मानना है। उसका मूड देखकर उसका मन टटोलो और उसे प्यार से समझाओ।

एक शुभचिंतक सहेली के नाते ऐसे समय तुम्हें उसे इसलिए अकेला नहीं छोड़ देना है कि वह तुम्हारी बात नहीं सुनती या तुम्हारी बात का बुरा मानती है। तुम साथ छोड़ दोगी तो वह और टूट जाएगी। अकेली पड़कर वह उधर ही जाने के लिए कदम बढ़ा लेगी, जिधर जाने से तुम उसे रोकना चाहती हो। यहीं पर तुम्हारे धैर्य और संयम की परीक्षा है।

(१) कृति पूर्ण कीजिए : (२)

सुगंधा की सहेली को यह करना चाहिए :

(i) →

(ii) →

(iii) →

(iv) →

- (२) निम्नलिखित शब्दों के लिए गद्यांश में आए हुए समानार्थी शब्द ढूँढकर लिखिए : (२)
- (i) कोशिश —
- (ii) छुटकारा —
- (iii) सखी —
- (iv) प्रेम —

- (३) 'भाई-बहन का रिश्ता अनूठा होता है' इस विषय पर ४० से ५० शब्दों में अपने विचार लिखिए। (२)

- (इ) निम्नलिखित प्रश्नों के उत्तर लगभग ८० से १०० शब्दों में लिखिए (कोई दो): (६)

- (१) 'आदर्श बदला' कहानी के शीर्षक की सार्थकता स्पष्ट कीजिए।
- (२) 'पाप के चार हथियार' निबंध का उद्देश्य स्पष्ट कीजिए।
- (३) 'क्लोरो फ्लोरो कार्बन (सी.एफ.सी.) नामक यौगिक की खोज प्रशीतन के क्षेत्र में क्रांतिकारी उपलब्धि रही।' स्पष्ट कीजिए।

- (ई) निम्नलिखित प्रत्येक प्रश्न का मात्र एक वाक्य में उत्तर लिखिए (कोई दो): (२)

- (१) सुदर्शन जी का मूल नाम लिखिए।
- (२) कन्हैयालाल मिश्र 'प्रभाकर' जी के निबंध संग्रहों के नाम लिखिए।
- (३) कन्हैयालाल मिश्र 'प्रभाकर' जी की भाषाशैली।
- (४) आशारानी व्होरा जी के लेखन कार्य का प्रमुख उद्देश्य लिखिए।

विभाग -२. पद्य (अंक-२०)

- कृति २ (अ) निम्नलिखित पद्यांश पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए : (६)

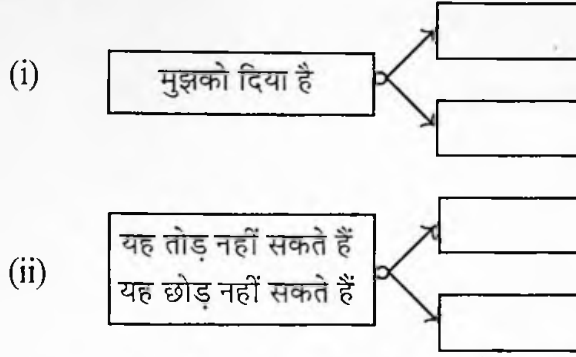
तुमने विश्वास दिया है मुझको,
मन का उच्छ्वास दिया है मुझको।
मैं इसे भूमि पर सँभालूँगा,
तुमने आकाश दिया है मुझको।

सूत्र यह तोड़ नहीं सकते हैं,
तोड़कर जोड़ नहीं सकते हैं।
व्योम में जाएँ, कहीं भी उड़ जाएँ,
भूमि को छोड़ नहीं सकते हैं।

सत्य है, राह में अँधेरा है,
 रोक देने के लिए घेरा है।
 काम भी और तुम करोगे क्या,
 बढ़ चलो, सामने अँधेरा है।

(१) कृति पूर्ण कीजिए :

(२)



(२) निम्नलिखित शब्दों के लिए पद्यांश में आए हुए विलोम शब्द ढूँढ़कर लिखिए :

(२)

- (i) अविश्वास —
- (ii) जोड़ —
- (iii) असत्य —
- (iv) उजाला —

(३) 'आत्मविश्वास ही मनुष्य की सफलता की कुँजी है' इस कथन के बारे में अपने विचार ४० से ५० शब्दों में लिखिए।

(२)

(आ) निम्नलिखित पद्यांश पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए :

(६)

जो पावै अति उच्च पद, ताको पतन निदान।

ज्यों तपि-तपि मध्याह्न लौं, अस्त होतु है भान॥

जो जाको गुन जान ही, सो तिहि आदर देत।

कोकिल अंबहि लेत हैं, काग निबोरी लेत॥

आप अकारज आपनो, करत कुबुध के साथ।

पाय कुल्हाडी आपने, मारत मूरख हाथ॥

कुल कपूत जान्यो परै, लखि सुभ लच्छन गात ।

होनहार बिरवान के, होत चीकने पात ।।

(१) कारण लिखिए : (२)

(i) अविवेक के साथ किया गया कार्य स्वयं के लिए हानिकर सिद्ध होता है-

(ii) कोयल को आम और कौए को निबौरी मिलती है -

(२) निम्नलिखित शब्दों में उपसर्ग लगाकर नया शब्द तैयार कीजिए : (२)

(i) पूत -

(ii) बुध -

(iii) कारज -

(iv) आदर -

(३) 'ज्ञान की पूँजी बढ़ानी चाहिए' इस विषय पर ४० से ५० शब्दों में अपने विचार लिखिए। (२)

(इ) निम्नलिखित मुद्दों के आधार पर 'पेड़ होने का अर्थ' कविता का रसास्वादन कीजिए : (६)

(१) रचनाकार का नाम (१)

(२) पसंद की पंक्तियाँ (१)

(३) पसंद आने के कारण (२)

(४) कविता का केंद्रीय भाव (२)

अथवा

'गुरुनिष्ठा और भक्तिभाव से ही मानव श्रेष्ठ बनता है' इस कथन के आधार पर 'गुरुबानी' कविता का रसास्वादन कीजिए।

(ई) निम्नलिखित प्रत्येक प्रश्न का केवल एक वाक्य में उत्तर लिखिए (कोई दो) : (२)

(१) त्रिलोचन जी के कोई दो काव्य संग्रहों के नाम लिखिए।

(२) दोहा छंद की विशेषता बताइए।

(३) गुरुनानक जी की भाषाशैली की कोई एक विशेषता लिखिए।

(४) डॉ. मुकेश गौतम जी की किसी एक रचना का नाम लिखिए।

विभाग - ३. विशेष अध्ययन (अंक-१०)

कृति ३ (अ) निम्नलिखित काव्य पंक्तियों को पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए : (६)

मैं इन्हें सुनकर कुछ भी नहीं पाती प्रिय,
सिर्फ राह में ठिठककर
तुम्हारे उन अधरों की कल्पना करती हूँ
जिनसे तुमने ये शब्द पहली बार कहे होंगे
मैं कल्पना करती हूँ कि
अर्जुन की जगह मैं हूँ
और मेरे मन में मोह उत्पन्न हो गया है
और मैं नहीं जानती कि युद्ध कौन-सा है
और मैं किसके पक्ष में हूँ

और समस्या क्या है

और लड़ाई किस बात की है

लेकिन मेरे मन में मोह उत्पन्न हो गया है

(१) आकृति पूर्ण कीजिए :

(२)

कनुप्रिया युद्ध के बारे में यह नहीं जानती है	→ (i)	<input type="text"/>
	→ (ii)	<input type="text"/>
	→ (iii)	<input type="text"/>
	→ (iv)	<input type="text"/>

(२) निम्नलिखित शब्दों के लिए गद्यांश में प्रयुक्त समानार्थी शब्द ढूँढ़कर

लिखिए :

(२)

(i) युद्ध	→	<input type="text"/>
(ii) प्यारा	→	<input type="text"/>
(iii) चित्त	→	<input type="text"/>
(iv) पथ	→	<input type="text"/>

(३) 'स्त्री-पुरुष समानता' के बारे में अपने विचार ४० से ५० शब्दों में लिखिए। (२)

(आ) निम्नलिखित में से किसी एक प्रश्न का उत्तर लगभग ८० से १०० शब्दों में लिखिए :

(४)

- (१) कनुप्रिया के मन में मोह उत्पन्न होने के कारण लिखिए।
- (२) राधा की दृष्टि से जीवन की सार्थकता को स्पष्ट कीजिए।

विभाग -४. व्यावहारिक हिंदी, अपठित गद्यांश और पारिभाषिक शब्दावली (अंक-२०)

कृति ४ (अ) निम्नलिखित का उत्तर लगभग १०० से १२० शब्दों में लिखिए :

(६)

- (१) नेता द्वारा किए गए चुनाव प्रचार के दौरान चुनावी वचनों पर फीचर लेखन कीजिए।

अथवा

निम्नलिखित संवाद पढ़कर सूचना के अनुसार कृतियाँ पूर्ण कीजिए:

रिदिम : सर, पल्लवन में क्या विचार के साथ-साथ भाषा विस्तार पर भी ध्यान देना होता है?

अध्यापक : हाँ, बिल्कुल सही प्रश्न पूछा! मैं इस पर आ ही रहा था। वैसे भी भाषा का विस्तार करना एक कला है। इसके लिए भाषा के ज्ञान के अलावा विश्लेषण, संश्लेषण, तार्किक क्षमता के साथ-साथ अभिव्यक्तिगत कौशल की आवश्यकता होती है। इसमें भी आख्याता के प्रत्येक अंश को विषयवस्तु की गरिमा के अनुकूल विस्तारित करना होता है। भाव विस्तार को भी पल्लवन कहा जाता है।

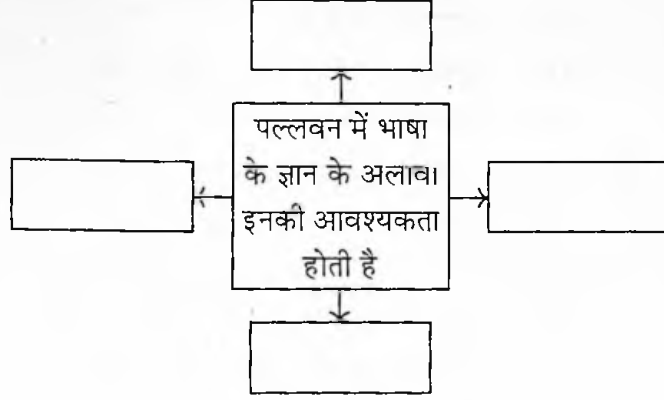
तन्वी : सर जी, क्या पल्लवन में भाव विस्तार के साथ-साथ चिंतन भी होता है?

अध्यापक : अच्छा प्रश्न पूछा तुमने। पल्लवन में भाव विस्तार के साथ चिंतन का स्थान भी महत्त्वपूर्ण होता है। संसार में जितने महान चिंतक, साहित्यिक विचारक हैं; उनके गहन चिंतन के क्षणों में जिन विचारों और अनुभूतियों का जन्म होता है; उसमें सूत्रात्मकता आ जाती है। सरसरी दृष्टि से पढ़ने पर उसका सामान्य अर्थ ही समझ में आता है, किंतु उसके सम्यक अर्थबोध एवं अर्थ विस्तार को समझने के लिए हमें उसकी गहराई में उतरना पड़ता है! ज्यों-ज्यों हम उस

गंभीर भाववाले वाक्यखंड, वाक्य या वाक्य समूह में गोता लगाते हैं, त्यों-त्यों हम उसके मर्मस्पर्शी भावों को समझने लगते हैं। अर्थात् छोटे-छोटे वाक्यों या वाक्य खंडों में बंद विचारों को खोल देना, फैला देना, विस्तृत कर देना ही पल्लवन है।

(१) संजाल पूर्ण कीजिए :

(२)



(२) निम्नलिखित शब्दों के वचन बदलकर लिखिए :

(२)

- (i) अच्छा —
- (ii) बच्चा —
- (iii) कहानी—
- (iv) कला —

(३) 'संघर्ष करनेवाला ही जीवन का लक्ष्य प्राप्त करता है।' इस विषय पर ४० से ५० शब्दों में अपने विचार स्पष्ट कीजिए।

(२)

(आ) निम्नलिखित में से किसी एक का उत्तर ८० से १०० शब्दों में लिखिए :

(४)

- (१) सूत्र संचालन के विविध प्रकारों पर प्रकाश डालिए।
- (२) ब्लॉग लेखन से तात्पर्य लिखिए।

अथवा

सही विकल्प चुनकर वाक्य फिर से लिखिए :

(१) पल्लवन : विवेक, बुद्धि और ज्ञान मानव की संपदा है।

(१)

- (i) शारीरिक
- (ii) सामाजिक
- (iii) बौद्धिक
- (iv) आर्थिक

- (२) स्नेहा ने..... के पाठ्यक्रम के लिए प्रवेश लिया। (१)
- (i) चित्रकारिता (ii) पत्रकारिता
(iii) संगणक (iv) अभिनय
- (३) कार्यक्रम की सफलता के हाथ में होती है। (१)
- (i) सूत्र संचालक (ii) वक्ता
(iii) श्रोताओं (iv) दर्शकों
- (४) आलेख (ब्लॉग) लेखन में इस बात का ध्यान रखना पड़ता है कि उसमें (१)
..... भाषा का प्रयोग हो।
- (i) विख्यात (ii) क्लिष्ट
(iii) आक्रामक (iv) मानक

(इ) निम्नलिखित अपठित गद्यांश पढ़कर कृतियाँ पूर्ण कीजिए : (६)

वार्तालाप सुनकर वह लेटा हुआ लड़का खट से उठ बैठा। उसका चेहरा धूल और पसीने से म्लान और मलिन हो गया था, भूख और प्यास से निर्जीव।

वह एकदम बात करने वालों के पास आकर खड़ा हुआ। हाथ जोड़े, माथा जमीन पर टेका। चेहरे पर आश्चर्य और प्रार्थना के दयनीय भाव! कहने लगा, “हे विद्वानों! मैं मूर्ख हूँ। अनपढ़ देहाती हूँ। किंतु ज्ञान प्राप्ति की महत्वाकांक्षा रखता हूँ। हे महाभागो! आप विद्यार्थी प्रतीत होते हैं। मुझे विद्वान गुरु के घर की राह बताओ।”

पेड़-तले बैठे हुए दो बटुक विद्यार्थी उस देहाती को देखकर हँसने लगे। पूछा, “कहाँ से आया है?”

“दक्षिण के एक देहात से। पढ़ने-लिखने से मैंने बैर किया तो विद्वान पिताजी ने घर से निकाल दिया। तब मैंने पक्का निश्चय कर लिया कि काशी जाकर विद्याध्ययन करूँगा। जंगल-जंगल घूमता, राह पूछता, मैं आज ही काशी पहुँचा। कृपा करके गुरु का दर्शन करवाइये।”

अब दोनों विद्यार्थी जोर-जोर से हँसने लगे। उनमें से एक जो विदूषक था, कहने लगा, “देख बे, वो सामने सिंह द्वार है। उसमें घुस जा, तुझे गुरु मिल जायेगा।” कहकर वह ठठाकर हँस पड़ा।

(१) निम्नलिखित कृति पूर्ण कीजिए : (२)

लड़का वार्तालाप करनेवालों
के पास इस तरह खड़ा हुआ → (i)
(ii)
(iii)
(iv)

- (२) निम्नलिखित शब्दों के लिंग बदलकर लिखिए : (२)
- (i) माताजी — (ii) विदुषी —
- (iii) लड़की — (iv) विद्यार्थिनी —
- (३) 'छात्र जीवन में अनुशासन का महत्त्व' इस विषय पर ४० से ५० शब्दों में अपने विचार लिखिए। (२)
- (ई) निम्नलिखित में से किन्हीं चार पारिभाषिक शब्दों के हिन्दी शब्द लिखिए : (४)
- (१) Judge
 (२) Bond
 (३) Bye-law
 (४) Pay order
 (५) Record
 (६) Speed
 (७) Optic fibre
 (८) Auxiliary memory

विभाग -५. व्याकरण (अंक-१०)

- कृति ५ (अ) निम्नलिखित वाक्यों का कोष्ठक में दी गई सूचनाओं के अनुसार काल परिवर्तन कीजिए (कोई दो): (२)
- (१) इसकी भी मौत आ गई।
 (पूर्ण वर्तमानकाल)
- (२) कौन मुझे कहानियाँ सुनाता है।
 (सामान्य भविष्यकाल)
- (३) उद्विग्नता और अधीरता से गानयुद्ध के समय की प्रतीक्षा की है।
 (अपूर्ण भूतकाल)
- (४) साँस लेने के लिए स्वच्छ हवा मिलना मुश्किल होता है।
 (अपूर्ण वर्तमानकाल)
- (आ) निम्नलिखित पंक्तियों में उद्धृत अलंकारों के नाम पहचानकर लिखिए (कोई दो): (२)
- (१) उधो, मेरा हृदयतल था एक उद्यान - न्यारा।
 शोभा देतीं अमित उसमें कल्पना-क्यारियाँ भी ॥
- (२) मोती की लड़ियों से सुंदर, झरते हैं झाग भरे निर्झर।

- (३) जान पड़ता है नेत्र देख बड़े-बड़े।
हीरकों में गोल नीलम हैं जड़े।।
- (४) एक म्यान में दो तलवारें, कभी नहीं रह सकती हैं
किसी और पर प्रेम पति का, नारियाँ नहीं सह सकती हैं।।
- (इ) निम्नलिखित पंक्तियों में उद्धृत रस पहचानकर उनके नाम लिखिए (कोई दो): (२)
- (१) सुडुक, सुडुक घाव से पिल्लू (मवाद) निकाल रहा है,
नासिका से श्वेत पदार्थ निकाल रहा है।
- (२) कहत, नटत, रीझत, खिझत, मिलत, खिलत, लजियात।
भरे भौन में करत हैं, नैननु ही सौं बात।।
- (३) माला फेरत जुग भया, गया न मन का फेर।
कर का मनका डारि कै, मन का मनका फेर।।
- (४) बिनु-पग चलै, सुनै बिनु काना।
कर बिनु कर्म करै, विधि नाना।
आनन रहित सकल रस भोगी।
बिनु वाणी वक्ता, बड़ जोगी।।
- (ई) निम्नलिखित मुहावरों के अर्थ लिखकर वाक्यों में प्रयोग कीजिए (कोई दो): (२)
- (१) आँखें बिछाना
(२) मुट्ठी गर्म करना
(३) उल्टी गंगा बहाना
(४) चाँदी काटना
- (उ) निम्नलिखित वाक्यों को शुद्ध करके वाक्य फिर से लिखिए (कोई दो): (२)
- (१) सत्य की मार्ग सरल हैं।
(२) वर्तमान युग विग्यान और प्राद्योगिकी का युग है।
(३) यह मानव स्वास्थ्य के लिए हानीकारक होती है।
(४) वह स्वर्ग का अमरित है।

