KENDRIYA VIDYALAYA SANGATHAN, KOLKATA REGION

SESSION ENDING EXAMINATION (2018-19)

SUBJECT: BIOLOGY

CLASS- XI

MAX. MARKS : 70 **TIME : 3 HRS.**

General Instructions :

- *All questions are compulsory*
- *The question paper contains four sections , viz. Section A, B, C & D*
- *Internal choice is given in section A,B, C & D. Students need to attempt only one of the alternatives in all such questions.*
- *Section-A contains five questions of 1 mark each.*
- *Section-B contains seven questions of 2 marks each.*
- *Section- C contains twelve questions of 3 marks each.*
- *Section- D contains three questions of 5 marks each.*

SECTION-A

Q1. What enables the cyanobacteria like *Nostoc*to fix atmospheric Nitrogen? (1)

Or

Explain the term Archebacteria with one example.

Q2. Name the dinoflagellates that causes red tide. (1)

Q3. What is a staminode ? (1)

Q4. Expand the concept-*'Omnis cellula-e cellula'*. (1)

Q5. What happens to a plant cell if it is placed in a hypertonic solution. (1)

Or

If there are Two solutions A& Bof concentration 5% and 3% respectively and there is a selectively permeable membrane between them . Write the direction of water movement.

SECTION-B

Q6. Explain a dikaryon condition with example. (1+1)

Q7. Give biological inputs on the following : (1+1)

a) pneumatophore b) pulvinus

Or

Pea flower exhibits vexillary aestivation –justify with sketch. (2)

Q8. Define solute potential. Why the value of solute potential is always negative? (2)

Q9. Give one salient distinguishing feature between a symplast and apoplast system. (2)

Q10. Identify the elements on the basis of the following information . (2)

a) The element is essential for meristematic tissues and also used for the synthesis of cell wall by plants.

b) The element is an essential constituent of chlorophyll and also acts as enzyme activator.

c) The element is present in amino acids like cysteine and methionine.

d) The element plays pivotal role in opening and closing of stomata.

Q11. Comment on the following: (1+1)

a) Occupational respiratory disorder b) Rh factor incompatibility disorder

Q12. Name the secretions from basophils responsible for inflammatory reactions. Give example of one such inflammatory reaction. (1.5+0.5)

Or

Describe the process of blood coagulation.

SECTION-C

Q13. Elucidate the following citing biological reasons : (1+1+1)

a) Euglenoids represent case of taxonomic enigma.

b) Viroids are biologically different from viruses.

c) Lichens are more abundant in forests than in city like Kolkata.

Or

Give biological explanation for the following : (1+1+1)

a) Ctenophores exhibit bioluminescence.

b) Members of the class Aves show volant adaptations.

c) Water Vascular System is of immense importance for the echinoderms.

Q14. What do you mean by inflorescence?Distinguish between the two major types of inflorescence with examples. (1+2)

Q15. Briefly comment on : (1+1+1)

a) Aleurone layer, b) conjoint vascular bundle, c) hypogynous flower

Q16. a) How can you distinguish a male cockroach from a female one ?

b) Mention the function of gap junction.

c) Distinguish between tendons and ligaments.

Q17. Draw a neat, labelled diagram of fluid mosaic model of plasma membrane

OR

that of a L.S. of mitochondrion. (Depict at least three correct labelling). (1.5×2)

Q18. a) Diagrammatically represent a pentose sugar. (1+1+1)

b) Give example of any two secondary metabolites.

c) Compare the primary and secondary structure of proteins.

Q19. a) Graphically represent the impact of substrate concentration on enzyme activity.

b) Give example of acompetitive enzyme inhibition. (2+1)

Q20. Schematically represent the 'Z' scheme of light reaction in photosynthesis. (3)

Or

Write the function of a) Progesterone b) ACTH c) Melatonin

Q21. Name the plantgrowth regulators with reference to: (0.5×6)

a) Apical dominance, b) bolting in rosette plant, c) stress tolerance d) flowering in pineapples, e) promotion of senescence and abscission f) weed and herb control in agriculture.

Q22. a) Mention the role of saliva and bile in digestion.

b) Why pepsin is present as pepsinogen in stomach ? (2+1)

Q23. a) Distinguish between tidal volume and vital capacity.

b) Mention the role of different factors in the dissociation of Oxy-haemoglobin in the tissue. (3)

Q24. a) What does 'P' wave, 'QRS' complex and 'T' wave signify in an ECG ?

b) Comment on the role of ECG in treating CAD. (2+1)

Or

Describe the synaptic transmission across the synaptic cleft.

SECTION-D

Q25. a) 'Chromosomes are nucleo-protein in nature'-justify.

b) Classify chromosomes on the basis of centromere. (2+3)

Or

a) With the help of labelled diagram enumerate the different sub-phases of meiosis prophase-I.

b) 'Meiosis is essential for all sexually reproducing organisms.'-justify (4+1)

Q26. Compare and contrast Calvin cycle with Hatch-Slack pathway. (Mention four salient features and a brief note of comparison)

Or

Draw a labelled diagram of digestive system of cockroach.

Q27. a) Briefly mention the various steps of hypertonic urine formation in man. Substantiate your answer with the help of diagram.

b) Expand the following acronym- a) ADH, b) JGA, c) RAAS & d) ANF (3+2)

Or

a) With reference to conduction of nerve impulse comment on the following :

i) resting potential, ii) action potential, iii) neurotransmitters

b) Name the three ossicles of the middle ear.

c) What are rhodopsins ? (3+1.5+0.5)

Total Number of Pages =5

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KENDRIYA VIDYALAYA SANGATHAN, KOLKATA REGION

SESSION ENDING EXAMINATION (2018-19)

SUBJECT: CHEMISTRY (043)

CLASS- XI

Time allowed: 3 Hours **Max. Marks: 70**

General Instructions :

(a) All questions are compulsory.

(b) Section A: Q.no. 1 to 5 are very short answer questions and carry 1 mark each.

(c) Section B: Q.no. 6 to 12 are short answer questions and carry 2 marks each.

(d) Section C: Q.no. 13 to 24 are also short answer questions and carry 3 marks each.

(e) Section D: Q.no. 25 to 27 are long answer questions and carry 5 marks each.

(f) There is no overall choice. However an internal choice has been provided in two questions of one mark, two questions of two marks, four questions of three marks and all the three questions of five marks weightage. You have to attempt only one of the choices in such questions.

(g) Use of log tables if necessary, use of calculators is not allowed.

	SECTION-A	
1.	Pressure cooker is used for cooking food on hills. Why ? **OR** Why are old glass windows thicker at the bottom?	1
2.	Name the phenomenon as a reason of which water has unusual boiling point.	1
3.	An alkene 'A' on ozonolysis gives a mixture of ethanal and pentan-3-one. Write structure and IUPAC name of 'A'.	1
4.	Why is benzene extra ordinarily stable though it contains three double bonds?	1
5.	What are intensive properties ? Give one example.	1

	OR Under what condition ΔH becomes equal to ΔU ?	
	SECTION-B	
6.	(i) Write the electronic configuration of Cu + ion.(at no =29). (ii) Applying Hund's rule write the ground-state electronic configuration for: N	2
7.	Arrange the following in order of (a) Ionisation Enthalpy : B, C, O, N (b) Electronegativity : O, F , Cl, Br **OR** Arrange the following in order of (a) increasing ionic radius: O^{2-}, F^-, Na^+, Mg^{2+}. (b) increasing electron gain enthalpy : F , Cl, Br, I	2
8.	(i) An element has valence shell electronic configuration $3s^2 3p^4$. In which group and which period the element is located ? (ii) The electronegativity of a given element is constant. Is it correct? Justify your answer.	2
9.	(i) Explain why there is no hydrogen bonding in hydrogen chloride. (ii) BF_3 is non polar where as NH_3 is polar. Explain.	2
10.	Write down the conjugate acid and conjugate base of the following : i) H_2O ii) HSO_4^- **OR** How are the equilibrium constants K_p and K_c related for the reaction $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$	2
11.	(i) What is the oxidation state of K in KO_2 ? (ii) LiCl is soluble in organic solvent. Why ?	2
12.	(i) How many σ and π bonds are there in given organic compound: CH_3-CH_2-C≡C-CN (ii) Draw the structure of : Pent-3-enoic acid	2
	SECTION-C	
13.	Calculate the number of moles in each of the following : (i) 392 g of sulphuric acid (O = 16 u , S = 32 u)	3

(ii) 6.022×10^{23} molecules of oxygen

(iii) 9.0 g of Al (Al = 27 u)

14. Find out 6 errors in the table below and write it with correct data. 3

Principal Energy Level (PEL)	Sub shell available	Number of orbitals per sub shell	Total number of orbitals per PEL	Number of electrons per sub shell	Total number of electrons perPEL
1	s	2	2	2	4
2	s	1	4	2	8
	p	3		6	
3	s	1	14	2	8
	p	3		6	
	d	10		10	

15. (i) On the basis of VSEPR theory, deduce and draw the shape of SF_6 molecule. 3

(ii) On the basis of molecular orbital theory, explain the relatively inert nature of N_2

OR

(i) Draw the shape of SF_4 as per VSEPR theory

(ii) Use molecular orbital theory to explain why the Be_2 molecule does not exist.

16. (i) State third law of thermodynamics. 3

(ii) What will be the work done when 2 mole of an ideal gas are compressed reversibly from 10.00 bar to 50.00 bar at a constant temperature of 300 K. (log 5 = 0.69)

OR

(i) What is entropy ?

(ii) For the reaction at 298 K, $2A + B \rightarrow C$, $\Delta H = 400$ kJ mol^{-1} and $\Delta S = 0.2$ kJ K^{-1} mol^{-1}

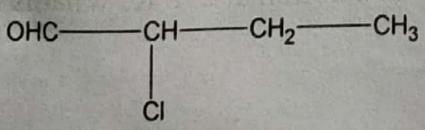
At what temperature will the reaction become spontaneous considering ΔH and ΔS to be constant over the temperature range.

17. If 0.56 g of KOH is dissolved in water to give 200 mL of solution at 298 K. What is its pH ? 3

(log 2 = 0.30 , log 5 = 0.69)

OR

Calculate the solubility of A_2X_3 in pure water, assuming that neither kind of ion reacts with water. The solubility product of A_2X_3, $K_{sp} = 1.1 \times 10^{-23}$.

18.	(i) What is the oxidation number of chromium in (a)Na_2CrO_4 (b) $Cr_2O_7^{2-}$ (ii) Balance the redox reaction in basic medium : (Write steps of any one method used) $MnO_4^-(aq) + I^-(aq) \rightarrow MnO_2(s) + I_2(s)$ [In basic medium]	3
19.	(i) What causes the permanent hardness of water ? (ii) What is the basic principle of hydrogen economy ? (iii) Give the composition of water gas.	3
20.	(i) Discuss the various reactions that occur in Solvay process. (ii) Why is K_2CO_3 not prepared by Solvay Process? **OR** Arrange the following in order of property mentioned against each : (i) $BaCl_2$, $MgCl_2$, $BeCl_2$, $CaCl_2$ (Increasing ionic character) (ii) $Mg(OH)_2$, $Sr(OH)_2$, $Ba(OH)_2$, $Ca(OH)_2$ (Increasing solubility in water) (iii) BeO, MgO, BaO, CaO (Increasing basic strength)	3
21.	Give reason: (i) N-N bond dissociation enthalpy is less than P-P bond dissociation enthalpy. (ii) Aluminium is better than copper for making electric transmission cable. Justify. (iii) $PbCl_4$ is good oxidising agent	3
22.	(i) What are nucleophiles ? Give one example. (ii) Select the group giving + I effect and – I effect from the following list : (a) $-NO_2$ (b) $-CN$ (c) $-Cl$ (d) $-CH_3$	3
23.	(i) What do you mean by Biochemical oxygen demand (BOD)? (ii) Rain damages the monuments like Taj Mahal when industries are present nearby. Why ? (iii) Name any two green house gases.	3
24.	(i) Write the IUPAC name  (ii) Explain functional group isomerism with an example. (iii) Give reason $(CH_3)_3C^+$ is more stable than $CH_3CH_2^+$	3

SECTION-D

25.	(i) Calculate number of atoms per unit cell of each of the following lattice (a) FCC (b) BCC (ii) Calculate the total pressure in a mixture of 8 g of dioxygen and 4 g of dihydrogen confined in a vessel of 1 dm^3 at 27°C. R = 0.083 bar dm^3 K^{-1} mol^{-1}. **OR** (i) Gold (atomic radius = 0.144 nm) crystallises in a face-centred unit cell. What is the length of a side of the cell? (ii) What will be the pressure of the gaseous mixture when 0.5 L of H_2 at 0.8 bar and 2.0 L of dioxygen at 0.7 bar are introduced in a 1L vessel at 27°C?	5
26.	(a) Complete the reactions : (i) $Cu + HNO_3$ (Conc.)→ (ii) $I_2 + HNO_3$ (Conc.) → (b) Draw the structure of N_2O_5 , $H_4P_2O_7$ and PCl_5 **OR** (a) Complete the reactions: (i) $Zn + HNO_3$ (Conc.)→ (ii) $P_4 + HNO_3$ (Conc.) → (b) Draw the structure of N_2O_4 , PCl_3 and H_3PO_2	5
27.	(i) Why is Wurtz reaction not preferred for the preparation of alkanes containing odd number of carbon atoms ? (ii) How would you convert ethyne into benzene ? (iii) Cyclopenta-1,3-diene is not aromatic. Why ? (iv) Draw the cis and trans structures of but-2-ene. Which isomer will have higher b.p. and why ? **OR** (i) Give an example of Friedel-Craft's alkylation. (ii) How would you convert ethyne into ethanol ? (iii) State Hückel Rule. (iv) Draw eclipsed and staggered conformations of C_2H_6. Which one is more stable and why ?	5

KENDRIYA VIDYALAYA SANGATHAN, KOLKATA REGION

SESSION ENDING EXAMINATION (2018-19)

SUBJECT : MATHEMATICS(041)

CLASS- XI

TIME: 3 Hours **MM: 100 Marks**

General Instructions :

1. *All questions are compulsory.*
2. *This question paper consists of 29 questions divided into four sections A, B C and D. Section A comprises of 4 questions of one mark each, section B comprises of 8 questions of two marks each, section C comprises of 11 questions of four marks each and section D comprises of 6 questions of six marks each.*
3. *All questions in Section A are to be answered in one word, one sentence or as per the exact requirement of the question.*
4. *There is no overall choice. However, internal choices has been provided in 01 question of one mark each, 03 questions of two marks each, 03 questions of four marks each and 03 questions of six marks each. You have to attempt only one of the alternatives in all such questions.*
5. *Use of calculators is not permitted. You may ask for logarithmic tables, if required.*

SECTION - A

1. Find the length of an arc of a circle of radius 3cm, if the angle subtended at the centre is 30^{o} [use $\pi = 3.14$].

2. Find the value of $\dfrac{i^{4n+1} - i^{4n-1}}{2}$

3. Find the centre and radius of the circle $x^2+y^2-2x-3=0$.

OR

Find the coordinate of the focus and the length of latus rectum of the parabola $x^2 = -ay$.

4. Write down the contrapositive of the statement :

"If a number is divisible by 9, then it is divisible by 3."

SECTION - B

5, Let $f = \{(1,1), (2,3), (0,-1)\}$ be a function describe by the formula $f(x) = ax + b$ for some integers a, b. Determine a and b.

6. Prove that $\cos\left(\frac{3\pi}{4}+x\right)-\cos\left(\frac{3\pi}{4}-x\right)=-\sqrt{2}\sin x$

7. Find the value of $\tan 75^o + \cot 15^o$.

8. Using binomial theorem expand the expression $\left(x-\frac{1}{2x}\right)^5$.

OR

Find the middle term in the expansion of $(x+2y)^8$

9. Find the sum of the series $9^{\frac{1}{3}}, 9^{\frac{1}{9}}, 9^{\frac{1}{27}}.....\infty$

OR

Find four geometric mean between 3 and 96.

10. (i) Write the converse of the statement : If you go to Agra, then you must visit Tajmahal.

(ii) Write the negation of the statement : If I become a doctor, then I will open a hospital.

11. Evaluate $\lim_{x\to 0}\frac{x\left(e^x-1\right)}{1-\cos x}$

OR

Differentiate, $\frac{4x-5\sin x}{3x+7\cos x}$ with respect to x .

12. If A and B are two events such that $P(A)=\frac{1}{4}, P(B)=\frac{1}{2}$ and $P(A\cap B)=\frac{1}{8}$ then find P (neither A nor B).

SECTION - C

13. If U={a,b,c,d,e,f,g,h}, A={a,b,c,d,e}, B={a,c,e,g} and C={b,e,f,g}, then verify that

(i) $(A\cap B)' = A'\cup B'$ (ii) $A-(B\cap C)=(A-B)\cup(A-C)$

14. Find the domain and range of the function $f(x)=\frac{x+2}{3-x}, x \in R$.

15. Prove that $\cos 20^{\circ} \cos 40^{\circ} \cos 60^{\circ} \cos 80^{\circ}=1/16$

16. Solve : $\sec x-\tan x=\sqrt{3}$.

17. Convert the complex number $\frac{1+7i}{(2-i)^2}$ in polar form.

OR

Find the square root of the complex number –8 –6i.

18. Find the number of 4-digit numbers that can be formed using the digits 1, 2, 3, 4, 5, 6 if no digit is repeated. How many of these will be even ?

OR

Find the number of arrangements of the letter of the word INDEPENDENCE. In how many of these arrangements do all vowels always occur together ?

19. Two lines passing through the point (2, 3) intersects each other at angle of 60°. If slope of one line is 2, find the equation of other line.

OR

Find the equation of a line drawn perpendicular to the line $\frac{x}{4}+\frac{y}{6}=1$ through the point, where it meets the y-axis.

20. Find the equation of hyperbola whose foci are (0, ±12) and the length of latus rectum is 36.

21. Using section formula, prove that the three points (–4, 6, 10), (2, 4, 6) and (14, 0, –2) are collinear.

22. Find the derivative of the function $f(x)=\cot(x+2)$ from the first principle.

23. In an interview for a job in call center, 5 boys and 3 girls appeared. If 4 persons are to be selected at random from this group, then find the probability that 3 boys and 1 girl or 1 boy and 3 girls are selected ?

SECTION - D

24. In a survey of 25 students, it was found that 15 had taken Mathematics, 12 had taken Physics and 11 had taken Chemistry, 5 had taken Mathematics and Chemistry, 9 had taken

Mathematics and Physics, 4 had taken Physics and Chemistry and 3 had taken all the three subjects. Find the number of students who had taken :

a) at least one of the three subjects.

b) only one of the subjects.

c) none of the three subjects.

25. By principle of mathematical induction, prove that

$$\frac{1}{1.2.3}+\frac{1}{2.3.4}+\frac{1}{3.4.5}+\ldots\ldots\ldots\ldots+\frac{1}{n(n+1)(n+2)}=\frac{n(n+3)}{4(n+1)(n+2)}$$

OR

Prove that : $1^2+2^2+3^2+\ldots\ldots\ldots\ldots+n^2>\frac{n^3}{3}, \forall n\in N$

26. Solve the following system of linear inequalities graphically :

$x+2y\leq 10,\ x+y\geq 1,\ x-y\leq 0,\ x\geq 0,\ y\geq 0$

27. The coefficients of three consecutive terms in the expansion of $(1+x)^n$ are in the ratio $1:7:42$. Find n and r.

OR

Find n, if the ratio of the fifth term from the beginning to the fifth term from the end in the expansion of $\left(\sqrt[4]{2}+\frac{1}{\sqrt[4]{3}}\right)^n$ is $\sqrt{6}:1$

28. Find the sum to n terms of the following series :

$1+3+6+10+$ .....up to n terms.

OR

If a and b are the roots of $x^2-3x+p=0$ and c, d are the roots of $x^2-12x+q=0$ where a, b, c, d form a G.P. Prove that (q + p) : (q−p) = 17 : 15.

29. Find the mean, Variance and standard deviation for the following data :

Classes	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequencies	3	6	13	15	10	4	9

KENDRIYA VIDYALAYA SANGATHAN (KOLKATA REGION)

SESSION ENDING EXAMINATION: 2018-2019

CLASS-XI

SUBJECT-PHYSICS

Time Allowed : 3Hrs **Max. Marks : 70**

General instructions :

1. *All questions are compulsory*
2. *There are 27 questions in total; questions 1 to 5 carry one mark each.*
3. *Questions 6 to 12 carry two marks each,*
4. *Questions 13 to 24 carry three marks each and questions 25 to 27 carry five marks each.*
5. *There is no overall choice. However internal choice has been provided in two questions of one mark, in two questions of two marks, four questions of three marks and all three questions of five marks each. You have to attempt only one of the given choices in such questions*
6. *Use of log table if necessary. Use of calculator is not permitted.*

SECTION-A (1×5=5)

1. Plot the variation of g with distance r from the center of the earth. 1

2. What are mechanical waves ? 1

OR

Define forced oscillation.

3. A simple harmonic motion is described by a= -16 x, where ais acceleration and x is displacement. What is the time period ? 1

OR

A Simple pendulum is mounted inside a space craft. What should be its time period of Oscillation ?

4. Write the expression for coefficient of linear expansion. 1

5. A body is moving along a circular path. How much work is done by the centripetal force ? 1

SECTION-B (2×7=14)

6. Explain why should the beams used in construction of bridge have large depth and small breadth ? 2

7. Rain is falling vertically with the speed of $30ms^{-1}$. A woman on a bicycle is travelling with a speed of $10ms^{-1}$ in the north to south direction. In what direction should she hold her umbrella in order to protect herself from rain ? Explain with diagram. 2

8. A light body and a heavy body have same linear momentum, which one has greater kinetic energy. Explain ? 2

OR

A light body and a heavy body have same kinetic energy, which one has greater linear momentum. Explain ?

9. Given the moment of Inertia of a disc of mass M and radius R about any of its diameter to be $MR^2/4$, Find its moment of Inertia about an axis normal to the disc and passing through a point on its rim. 2

10. State first law of thermodynamics. What are its limitations ? 2

OR

An engine has been designed to work between source and sink at temperatures 177^0C and 27^0C respectively. If energy input is 3600J. What is the work done by the engine ?

11. State and prove work energy theorem for a variable force ? 2

12. A Progressive Wave is given by $\mathbf{y\ (x, t) = 8Cos(300t - 0.15x)}$, Where x in meter,y in cm and t in second. What is the 2

(i) Wavelength (ii) Frequency of the wave.

SECTION-C (3×12=36)

13. What are beats? Prove that the number of beats produced per second by the two sound sources is equal to the difference between their frequencies. 3

OR

Write Newton's formula for the speed of sound in air. What was wrong with this formula? What correction was made by Laplace in this formula?

14. A bullet of mass 0.012 kg and horizontal speed 70 m/s strikes a block of wood of mass 0.4 kg and instantly comes to rest with respect to the block. The block is suspended from the ceiling by means of thin wires. Calculate the height to which the block rises. 3

15. The frequency 'f' of vibration of a stretched string depends upon- 3

(i) its length 'l'

(ii) the mass per unit length 'm'

(iii) The Tension 'T' in the string.

Obtain dimensionally an expression for frequency 'f'

OR

What do you mean by errors in the measurement, Briefly, explain the different types of errors and their causes. How can these errors be minimized ?

16. A liquid is in streamlined flow through a tube non-uniform cross-section. Prove that the sum of its kinetic energy, pressure energy and potential energy per unit volume remains constant. 3

17. Read each statement carefully and state, with reasons and examples, if it is true or false :

A particle in one dimensional motion :-

(a) With zero speed at an instant may have non-zero acceleration at that instant?

(b) With positive value of acceleration must be speeding up,

(c) With constant speed must have zero acceleration ?

18. Obtain an expression for the acceleration due to gravity at a depth 'd' from the surface of earth of mass 'M' and radius 'R'. Using the expression find the weight of a body of mass 'm' at the centre of earth ? 3

19. State law of conservation of linear momentum. Derive the law of conservation of momentum from Newton's third law of motion. 3

20. What is the need for banking of a road? With the help of suitable diagram, Obtain an expression for the maximum safe speed with which a vehicle can safely negotiate a curved road banked at an angle θ, the co-efficient of friction between the wheels and the road is μ. 3

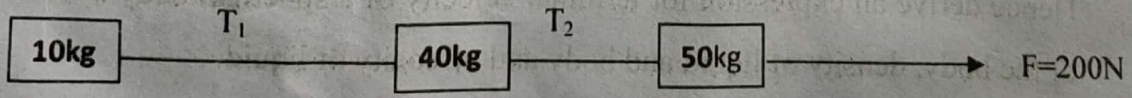
21. A man runs across the roof-top of a tall building and jumps horizontally with the hope of landing on the roof of next building which is of lower height than the first. If his speed is 9 m/s, the horizontal distance between the two buildings is 10 m and the height difference is 9m, will he able to land on the next building ? Substantiate your answer, Take $g=10\ m/s^2$. 3

22. A mild steel wire of length 1 m and cross-sectional area $0.50 \times 10^{-2}\ cm^2$ is stretched, well within its elastic limit, horizontally between two pillars. A mass of 100g is suspended from the mid-point of the wire. Calculate the depression at the mid-point ? (Given Young's modulus of Steel=$2 \times 10^{11} N/m^2$) 3

OR

Derive the expression for pressure exerted by an ideal gas using kinetic theory of gases.

23. Find acceleration and tensions in the system given below--- 3



24. State and prove Kepler's second law of planetary motion. 3

OR

Define escape velocity. Obtain expression for escape velocity of a body from the surface of the earth ?

SECTION-D (5×3=15)

25. (a) Draw a ray diagram of an astronomical telescope for the final image formed at least distance of distinct vision? Write the expression for magnifying power.

(b) Write any two advantages of reflecting type telescope over refracting type telescope 5

OR

What do you mean by total internal reflection of light, what are necessary condition for total internal reflection, derive the relation for critical angle and refractive index if the medium. Give two applications of total internal reflection of light ?

26. Derive the expression for refractive index of a prism at minimum deviation condition ?
A ray of light passing through an equilateral triangular glass prism from air undergoes minimum deviation when angle of incidence is **3/4th** of the angle of prism. Calculate the speed of light in the prism.

OR

(a) What is Doppler Effect in sound ?

(b) Derive an expression for apparent frequency of sound, when both the source and the observer are moving towards each other.

27. (i) Derive an expression for the rise of liquid in capillary tube of uniform diameter and sufficient length.
What happens, when the length of a capillary tube is less than the height up to which the liquid may rise in it ?

(ii) A drop of mercury of radius 2mm is split into 8 identical droplets. Find the increase in surface energy, if the surface tension of mercury =0.465N/m. 5

OR

(a) What do you mean by terminal velocity ?

(b) Write an expression for viscous force on the basis of Stoke's Formula.

(c) Hence derive an expression for terminal velocity of a spherical body in terms of radius of the body, density of liquid and body and viscosity of liquid.

(d) Why does a hot liquid move faster than cold liquid ?

KENDRIYA VIDYALAYA SANGATHAN, KOLKATA REGION

SESSION ENDING EXAMINATION (2018-19)

SUBJECT: COMPUTER SCIENCE

CLASS- XI

MAX. MARKS :-70 **TIME :- 3 HRS.**

General Instructions :

1) *Please write down Serial Number of the question before attempting it.*
2) *Section-A refers to Programing and Computational Thinking-1*
3) *Section-B refers to Computer Systems and Organisation*
4) *Section-C refers to Data Management-1 and Society, Law and Ethics-1*
5) *All questions are compulsory within each section. However question number 2(a), 2(b), 3(e), 4(c), 4(d) and 5 (b) have internal choices.*

SECTION-A

1. (a) What is the use of id function in Python. 1

(b) Identify the type of Token : i) D_o_b ii) True iii) * iv) % 2

(c) State one difference between Source code and Object code. 1

(d) Write following arithmetic expressions using operators in Python : 2

i) $c=a^2 + |b|$

ii) $x=\sqrt{b^2 - 4ac}$

(e) What is // operator known as ? Find the value of 6.25//0.625 2

(f) Write a program in Python to check whether the entered number is Even or Odd. 2

2. (a) Write Python statements to perform the following : 2

i. To read name and mobile number of a person and store into different variables.

ii. To display name and mobile number in same line.

OR

(a) Write a program to print the first n (entered by the user) even natural numbers. 2

(b) How are comments written in a Python program ? 1

OR

(b) Find the output of the given code in Python 1

```
a= 9.0//4.0
b='HI' * 3
print('Values are', a, b)
```

(c) Rewrite the following program after correcting errors if any and underline the correction: 2

```
for i in range(10, 0,1)
   if i%2=0 :
print(i)
     c=+1
print(c)
```

d) Write a Python program to find the largest of three numbers. 2

e) Rewrite the following code fragment using while loop. 2

```
sum=0
for i in range(10,20):
  sum+=i
  print(i)
print(sum)
```

f) Evaluate the following expression with precedence of operator: 1

$x = 2* 3/ 5 + 10 //3 – 1$

3. a) Write a python program to check whether the number input is prime or not. 3

b) Find the output: 3

```
str = "KENDRIYA VIDYALAYA"
print(str[4:6], str[-1], str[2]*2 )
```

c) If a=[4,3,2,5,6] and S = “WELCOME”, write the output of the following: 3

(i) print(a[:-3:-1])

(ii) print(a[-3:4])

(iii) print(S[::-1])

d) Write the output of the following code : 2

```
t=(10,22,3,6)
s=(11,3,10,35)
```

```
for i in t:
  if i in s:
    print(i)
```

e) Rearrange the following numbers in ascending order using Bubble Sort algorithm. Show each step of transition. 2

11, 66, 33, 9, 5, 22

OR

e) Consider the following randomly ordered numbers stored in a list. 2

786, 234, 526, 132, 345, 467,

Show the content of list after the First, Second and Third pass of the bubble sort method used for arranging in ascending order ?

Note: Show the status of all the elements after each pass very clearly underlining the changes.

f) Find and write the output of the following python code :

```
Data = ["P",20,"R",10,"S",30]
Times = 0
Alpha = ""
Add = 0
for C in range(1,6,2):
    Times= Times + C
    Alpha= Alpha + Data[C-1]+"$"
    Add = Add + Data[C]
    print Times,Add,Alpha
```

SECTION-B

4. (a) Convert the binary number 110001101 to Octal. 1

(b) Draw the logic circuit for the Boolean expression X'Y+XZ. 2

(c) Expand EPROM. 1

OR

(c) Give an example of a utility software. 1

(d) What is Booting a computer ? 1

OR

(d) What is Cloud computing ? 1

(e) State one difference between Compiler and Interpreter. 1

(f) Arrange the following in ascending order of memory capacity : 1

TB , Byte, KB, Nibble, PB, MB, GB

(g) State De Morgan's laws of Boolean Algebra and prove any one of them using truth table. 2

(h) Add the following Binary Numbers : 1

11100.011 + 111.11

SECTION-C

5. (a) In the table "Student", Priya wanted to increase the Marks(Column Name:Marks) of those students by 5 who have got Marks below 33. Help her to write the correct MySQL statement. 1

(b) Name the Data type that should be used to store AccountCodes like "A1001" of Customers. 1

OR

(b) Write MySQL statement to add a new column PRICE as float in the table PRODUCT. 1

(c) Identify the following SQL commands as DDL or DML commands. 3

CREATE, SELECT, UPDATE, ALTER, INSERT, DROP

(d) Write the MySQL command to create the table "ALBUM" as per the following structure. 2

Table: ALBUM

Column Name	Data Type (Size)	Constraints
AlbumID	Char (5)	Primary Key
Name	Char (5)	Not Null
SingerName	Varchar (40)	
Price	Decimal (8,2)	

(e) Differentiate Primary key and Alternate Key. 2

6. a) Consider the following tables write the SQL queries for the Questions i-iv and the output of the Queries v-viii. 6

Table 1: Employees

Empno	Name	Dept	Salary	Bonus	Gender
101	RAJ	SALES	10000	2000	M
102	RAVI	ADMIN	25000	3000	M
103	RAMYA	ADMIN	15000	4500	F
104	AARTHI	SALES	30000	2500	F
105	SANDEEP	SERVICES	27000	3000	M
106	MALINI	ADMIN	20000	3000	F

Table 2 : Personal

Empno	FName	DOB	Qualification
101	SINGH	1-1-1992	MCA
102	RAJEEV	13-3-1985	BCA
103	SHIKA	5-11-1989	BA
104	SURYA	31-3-1990	Btech
105	ITTY	15-12-1984	Mtech
106	GUPTA	5-6-1993	BCA

i. To display Empno, Name of all the female employee

ii. To display all the departments from the table Employee without repeatition.

iii. To display Empno, DOB, Qualification from Employee, and Personal whose Salary is between 20000 and 30000.

iv. To display FName, DOB and Qualification of the table Personal in descending order of age.

v. SELECT COUNT(*) FROM EMPLOYEE WHERE GENDER= 'M' AND DEPT= "ADMIN";

vi. SELECT MAX(SALARY) FROM EMPLOYEE;

vii. SELECT NAME, SALARY + BONUS AS TOTAL SALARY FROM EMPLOYEE WHERE DEPT='ADMIN';

viii. SELECT NAME, DOB FROM EMPLOYEES E, PERSONAL P
WHERE E.EMPNO=P.EMPNO AND P.QUALIFICATION = "MTECH";

b) Define the terms : SPAM and Eavesdropping 2

c) Mr. Shivam wants to prevent unauthorized access to/from his company's local area network. Write the name of a system (software/hardware), which he should install to do the same. 1

d) What is cyber law ? 1

7. a) What is Mongo DB. List any 2 characteristics of it. 2

b) Explain the terms: Adware and Malware. 2

c) Dear XYZ Email user, 2

To create space for more users we're deleting all inactive email accounts. Here's what you have to send to save your account from getting deleted :

- Name (first and last):
- Email Login:
- Password:
- Date of birth:
- Alternate email

If we don't receive above information from you by the end of the week, your email account will be terminated.

If you're a user what do you do ? Justify your answer.

केंद्रीय विद्यालय संगठन

कोलकाता संभाग

सत्रांत परीक्षा, 2018-19

विषय- हिंदी (केंद्रिक)

कक्षा- ग्यारह

समय- तीन घंटे

पूर्णांक- 80

खंड क

1. निम्नलिखित गदयांश को पढ़कर पूछे गए प्रश्नों के उत्तर दीजिए। 10

बोलने का विवेक, बोलने की कला और पटुता व्यक्ति की शोभा है, उसका आकर्षण है। सुबुद्ध वक्ता अपार जनसमूह का मन मोह लेता है, मित्रों के बीच सम्मान और प्रेम का केंद्र-बिंदु बन जाता है। जो लोग अपनी बात को राई का पहाड़ बनाकर उपस्थित करते हैं, वे एक ओर जहाँ सुननेवाले के धैर्य की परीक्षा लिया करते हैं, वहीं अपना और दूसरे का समय भी अकारण नष्ट किया करते हैं। विषय से हटकर बोलनेवालों से, अपनी बात को अकारण खींचते चले जानेवालों से तथा ऐसे मुहावरों और कहावतों का प्रयोग करनेवालों से जो उस प्रसंग में ठीक ही न बैठ रहे हों, लोग ऊब जाते हैं। वाणी का अनुशासन, वाणी का संयम और संतुलन तथा वाणी की मिठास ऐसी शक्ति है जो हर कठिन स्थिति में हमारे अनुकूल ही रहती है, जो मरने के पश्चात् भी लोगों की स्मृतियों में हमें अमर बनाए रहती है। हाँ, बहुत कम बोलना या सदैव चुप लगाकर बैठे रहना भी बुरा है। यह हमारी प्रतिभा और तेज को कुंद कर देता है। ऐसा व्यक्ति गुफा में रहनेवाले उस व्यक्ति की तरह होता है, जिसे बहुत दिनों के बाद प्रकाश में आने पर भय लगने लगता है। अतएव कम बोलो, सार्थक और हितकारक बोलो। यही वाणी का तप है।

(क) इस गद्यांश में व्यक्ति की शोभा और आकर्षण किसे बताया गया है और क्यों ? 2

(ख) किस प्रकार का बोलना पसंद नहीं किया जाता है ? 2

(ग) किस प्रकार की भाषा हमें जीवन में लोकप्रिय और जीवन के बाद अमर बनाए रखती है ? 2

(घ) बहुत कम बोलना भी अच्छा क्यों नहीं है ? 2

(ङ) 'राई का पहाड़ बनाना' मुहावरे का अपने वाक्य में प्रयोग कीजिए। 1

(च) एक उपयुक्त शीर्षक लिखिए। 1

2. निम्नलिखित काव्यांश को पढ़कर पूछे गए प्रश्नों के उत्तर दीजिए : 1×6=6

देखकर बाधा विविध बहु विघ्न घबराते नहीं
रह भरोसे भाग्य के दुख भोग पछताते नहीं।
काम कितना ही कठिन हो किंतु उकताते नहीं
भीड़ में चंचल बने जो वीर दिखलाते नहीं।
हो गए इक आन में उनके बुरे दिन भी भले,
सब जगह सब काल में वे ही मिले फूले-फले।

व्योम को छूते हुए दुर्गम पहाड़ों के शिखर,
वे घने जंगल जहाँ रहता है तम आठों पहर।
गरजती जल-राशि की उठती हुई ऊँची लहर,
आग की भयदायिनी फैली दिशाओं में लहर।
ये कँपा सकती कभी जिसके कलेजे को नहीं,
भूलकर भी वह नहीं नाकाम रहता है कहीं।

(क) कर्मवीर की क्या विशेषता बताई गई है ? 1

(ख) किस प्रकार के लोगों को हर जगह और हर समय में फलते-फूलते देखा जाता है ? 1

(ग) वीर व्यक्ति किस प्रकार की जगह को भी पार कर जाते हैं ? 1

(घ) काव्यांश का क्या संदेश है ? 1

(ङ) कठिन काम की स्थिति में भी वीर व्यक्ति क्या करते हैं ? 1

(च) वीर व्यक्ति भीड़ में किस तरह दिखते हैं ? 1

3. निम्नलिखित में से किसी एक विषय पर निबंध लिखिए : 8

(क) भारत की बदलती तस्वीर

(ख) वैश्वीकरण

(ग) कमरतोड़ महँगाई : समस्या और समाधान

(घ) नर हो न निराश करो मन को

4. आप किसी पर्यटक स्थल पर भ्रमण के लिए गए, किन्तु वहाँ की अस्वच्छता देखकर खिन्न हुए। इस पर अपने विचार व्यक्त करते हुए उक्त स्थल के पर्यटन अधिकारी को एक पत्र लिखिए और सुधार का अनुरोध कीजिए। 5

अथवा

बैरकपुर में निरंतर बढ़ते जा रहे बिजली संकट की ओर सरकार का ध्यान आकर्षित करने के लिए 'दैनिक जागरण', कोलकाता के संपादक को एक पत्र लिखिए।

5. निम्नलिखित प्रश्नों के उत्तर संक्षेप में लिखिए- 1+1+1+1=4

(क) स्वतंत्रतापूर्व के किन्ही दो हिंदी पत्रों के नाम लिखिए ।

(ख) समाचार के कोई चार तत्त्व बताइए।

(ग) संवाददाता किसे कहते हैं ?

(घ) समाचार-पत्र क्या होता है?

6. "राष्ट्रीय एकता में हिंदी की भूमिका" विषय पर एक आलेख लिखिए। 3

अथवा

'जल ही जीवन है' विषय पर एक फीचर लिखिए।

7. निम्नलिखित काव्यांश के आधार पर प्रश्नों के उत्तर दीजिए : 2+2+2=6

आओ मिलकर बचाएँ
अपनी बस्तियों को
नंगी होने से
शहर की आबो-हवा से बचाएँ उसे
बचाएँ डूबने से
पूरी की पूरी बस्ती को

(क) कवयित्री किस बात पर चिंता प्रकट करती है ?

(ख) बस्तियाँ कैसी होती जा रही हैं ? कैसे ?

(ग) बस्तियों को किससे बचाना होगा ?

अथवा

अंधकार की गुहा सरीखी
उन आँखों से डरता है मन
भरा दूर तक उनमें दारुण
दैन्य दुख का नीरव रोदन।

वह स्वाधीन किसान रहा
अभिमान भरा आँखों में इसका
छोड़ उसे मँझधार आज
संसार कगार सदृश बह खिसका।

(क) इस काव्यांश में कवि को किससे डर लगता है और क्यों ?

(ख) किसान कभी क्या था ?

(ग) किसान को मँझधार में कौन छोड़ गया ?

8. निम्नलिखित काव्यांश के आधार पर किन्हीं दो प्रश्नों के उत्तर दीजिए : 3+3=6

चंपा काले-काले अच्छर नहीं चीन्हती
मैं जब पढ़ने लगता हूँ वह आ जाती है
खड़ी-खड़ी चुपचाप सुना करती है
उसे बड़ा अचरज होता है
इन काले चीन्हों से कैसे ये सब स्वर
निकला करते हैं

(क) काव्यांश में प्रयुक्त भाषा पर विचार कीजिए।

(ख) काव्यांश का शिल्प-सौंदर्य स्पष्ट कीजिए।

(ग) काव्यांश का भाव-सौंदर्य स्पष्ट कीजिए।

अथवा

अंसुवन जल सींचि-सींचि, प्रेम-बेलि बोयी
अब त बेलि फैलि गई, आणंद-फल होयी

(क) काव्यांश के भाव सौंदर्य पर प्रकाश डालिए।

(ख) काव्यांश में प्रयुक्त अलंकारों को स्पष्ट कीजिए।

(ग) काव्यांश की भाषा की विशेषताएँ बताइए।

9. निम्नलिखित में से किन्ही दो प्रश्नों के उत्तर दीजिए : 2+2=4

(क) कबीर ने नियम और धर्म का पालन करने वाले लोगों की किन कमियों की ओर संकेत किया है ?

(ख) मीरा जगत को देखकर रोती क्यों हैं ?

(ग) मायके आई बहन के लिए कवि ने घर को परिताप का घर क्यों कहा है ?

10. निम्नलिखित गदयांश के आधार पर प्रश्नों के उत्तर दीजिए : 2+2+2+1=7

दूसरे दिन जब फॉरेस्ट डिपार्टमेंट के आदमी आरी-कुल्हाड़ी लेकर पहुँचे तो उनको पेड़ काटने से रोक दिया गया। मालूम हुआ कि विदेश विभाग से हुक्म आया था कि इस पेड़ को न काटा जाए। कारण यह था कि इस पेड़ को दस साल पहले पीटोनिया राज्य के प्रधानमंत्री ने सेक्रेटेरिएट के लॉन में लगाया था। अब अगर यह पेड़ काटा गया तो इस बात का काफी अंदेशा था कि पीटोनिया सरकार से हमारे संबंध सदा के लिए बिगड़ जाएँगे।

(क) कौन, कहाँ और क्यों पहुँचे ?

(ख) उन्हें काम करने से किसने रोक दिया ?

(ग) काम रोकने के पीछे क्या तर्क दिया गया ?

(घ) पीटोनिया के प्रधानमंत्री किस बात का बुरा मान सकते थे ?

अथवा

इस देश के हाकिम आपकी ताल पर नाचते थे, राजा-महाराजा डोरी हिलाने से सामने हाथ बाँधे हाजिर होते थे। आपके एक इशारे में प्रलय होती थी। कितने ही राजों को मिट्टी के खिलौने की भाँति आपने तोड़-फोड़ डाला। कितने ही मिट्टी-काठ के खिलौने आपकी कृपा के जादू से बड़े-बड़े पदाधिकारी बन गए। आपके एक इशारे में इस देश की शिक्षा पायमाल हो गई, स्वाधीनता उजड़ गई। बंग देश के सिर पर आरह रखा गया। आह, इतने बड़े माई लॉर्ड का यह दर्जा हुआ कि फौजी अफसर उनके इच्छित पद पर नियत न हो सका और उनको उसी गुस्से के मारे इस्तीफा दाखिल करना पड़ा, वह भी मंजूर हो गया। उनका रखाया एक आदमी नौकर न रखा, उल्टा उन्हीं को निकल जाने का हुक्म मिला।

(क) लॉर्ड कर्जन की क्या हैसियत थी ?

(ख) लॉर्ड कर्जन ने क्या-क्या बुरे काम किए ?

(ग) लॉर्ड कर्जन का अपमान किस प्रकार हुआ ?

(घ) लॉर्ड कर्जन ने इस्तीफा क्यों दाखिल किया ?

11. निम्नलिखित में से किन्ही तीन प्रश्नों के उत्तर दीजिए : 3+3+3=9

(क) मोहन के लखनऊ आने के बाद के समय को लेखक ने उसके जीवन का एक नया अध्याय क्यों कहा है ?

(ख) बिचारिए तो, क्या शान आपकी इस देश में थी और अब क्या हो गई ! कितने ऊँचे होकर आप कितने नीचे गिरे ! - आशय स्पष्ट कीजिए।

(ग) धनराम को मोहन के किस व्यवहार पर आश्चर्य होता है और क्यों ?

(घ) दबा हुआ आदमी एक कवि है, यह बात कैसे पता चली और इस जानकारी का फ़ाइल की यात्रा पर क्या असर पड़ा ?

12. आलो-आँधारि रचना बेबी की व्यक्तिगत समस्याओं के साथ-साथ कई सामाजिक मुद्दों को समेटे है। किन्हीं दो मुख्य समस्याओं पर अपने विचार प्रकट कीजिए।

अथवा

राजस्थान में कुईं किसे कहते हैं ? इसकी गहराई और व्यास तथा सामान्य कुओं की गहराई और व्यास में क्या अंतर होता है ? 4

13. निम्नलिखित में से किन्ही दो प्रश्नों के उत्तर दीजिए : 4+4=8

(क) चित्रपट संगीत ने लोगों के कान बिगाड़ दिए- अक्सर यह आरोप लगाया जाता रहा है। इस संदर्भ में कुमार गंधर्व की राय और अपनी राय लिखिए।

(ख) चेजारों के साथ गाँव-समाज के व्यवहार में पहले की तुलना में आज क्या फ़र्क आया है ? पाठ के आधार पर बताइए।

(ग) तुम दूसरी आशापूर्णा देवी बन सकती हो- जेठू का यह कथन रचना संसार के किस सत्य को उद्घाटित करता है ?

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1. 20 अंकों की परीक्षा (श्रवण एवं वाचन- 10 अंक तथा परियोजना- 10 अंक) विद्यालय स्तर पर होगी।
