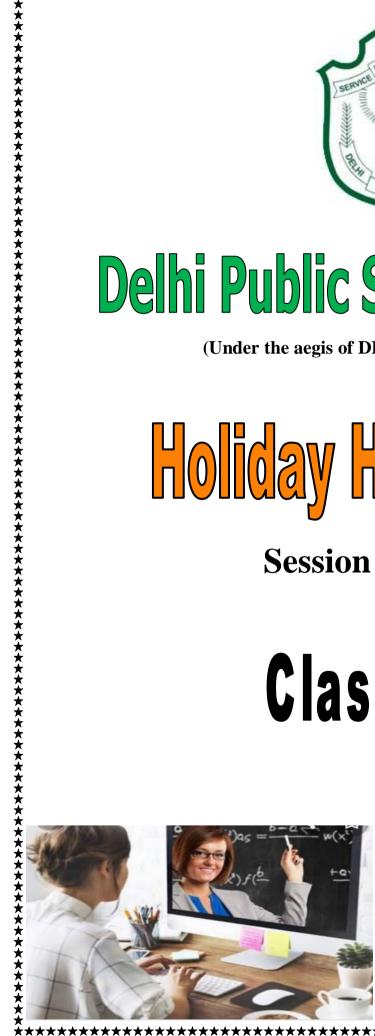# Delhi Public School Gwalior

(Under the aegis of DPS Society, New Delhi)

Holiday Homework

Session 2020–21

Class-XII

Dear Children,

It's time for strengthening family bond, cherishing old memories and having a good time together during this Lockdown Period. Keeping this in mind, here is your Holiday Assignment through which you can keep your energies well directed and spend quality time with your Family. Don't forget to take good care of your health and hygiene and bring out a totally new concept of C.O.V.I.D. i.e. Create, Observe, Visualise, Initiate and Dream Big while working enthusiastically.

Here are few things which if you practice along with your Holiday Assignment, will help you stay connected to your roots:

- _Listen to the Unspeakable_: Start observing things around you meticulously and try to connect and relate them.

- _Adopt/grow a plant_: You can also plant a few seeds, Water them regularly.

- _Try out as many new cuisines as you can_: All foodies are going to love this point and be in complete agreement, rather than caring about calories and fats, vacations are a great time to throw caution to the wind and try out as many new cuisines as you like.

- Try out a new fitness regime: Exercise daily and keep yourself fit and healthy.

- _Unravel the artist in you_: Create anything of your interest. Learn a new song, play a new instrument or enact.

- _Good manners is the key_: Don't forget to Respect your parents, grandparents and all elders. Reduce the usage of Mobile Phone and TV time and increase the time you spend with your family, spend moments together and create memories.

- _Save nature_: Contribute to save our previous environment by minimizing the wastage of resources like water, fuel and electricity.

<p align="center">Wishing you an innovative Quarantine!</p>

Class Educator

SUBJECT – ENGLISH

"Words have Power, words are Power, words could be your POWER also".

– Mohammad Qahtani

Q.1   Read the passage carefully:

The scope of democracy needs to be widened and deepened for people to have a real voice to influence decisions that shape their lives, and the power to hold decision- makers accountable, not only through elections but in the periods between elections. While formal institutions of democracy have become a universal norm, it is important to develop and sustain the core values of inclusiveness, participation and accountability, before institutions can be seen as truly democratic.

It has been seen that a lasting solution for eradicating poverty and shaping human progress can be found much through politics as through economics. Politics matters in a large way; because it is through this mechanism that the rights of the citizen in any country are determined it decides whether the people should be allowed to participate in the decision making process that impacts their lives.

In the last two decades, the politics has witnessed a sea change. There are innumerable instances across the world, of the opening up of political systems and increased rights and power to the people. The world can be labeled as much more democratic, but there are several underlying problems to be dealt with. According to a UN report, 140 countries hold multi-party elections, out of which only 81 have taken significant steps towards democracy, out of the nearly 200 countries, people still do not enjoy their rights in the rest and their freedom is also curbed.

The democratic system of voting in the elections had added crucial element of governance from the human development stand point, because elections symbolize enforceable accountability. When a government fails to live up to the needs and desires of the people, they can simply vote it out of the office the next time. There can be no stricter form of

accountability, no more egalitarian form of participation. The right to vote itself has given every individual a choice.

However, it would be a grim mistake if one equated democracy with regular ritual of elections. A vibrant democracy requires functioning institutions- for instance a legislature that does not do a specific individual's bidding; a judiciary that is independent and understands the importance of equal treatment of all through the eyes of the law; a free, independent and unbiased media and security forces that carry out their duties without specific political allegiances. It also requires an active and alert civil society that can ensure that the government works in the general public interest, and also keeps giving its inputs wherever required. An independent judiciary provides the necessary checks and balances between the democratic institutions of governance. The UN report emphasizes accountability at national and international level Accountability is central to democratic governance. It ensures the holders of public trust are acting effectively and fairly. In the presence of a free press and an active civil society, people have several ways of participating in the policy decisions and debates.

Questions:
a) **On the basis of your reading of the above passage, make notes on it in points only using headings and sub-headings. Use abbreviations (minimum 4) wherever necessary. Supply a suitable title to it.**

b) **Write a summary of the above passage in about 80 words.**

Q.2   You are Kshitiz / Khushi of India International School, Jaipur. Your school is organizing a workshop on 'Prevention of Drug Abuse' in the coming week. Prepare a poster with complete information for the students of class X-XII. (50 words)

Q.3   You are Arymaan / Amrita of India International School, Jaipur. Your school has decided to contribute in controlling traffic near your school and requires the names of volunteers from IX to XII. Write a notice to be displayed on the notice board. (50 words)

Q.4   Public demonstration causes a lot of disturbance in daily routine of common man. You almost missed your important entrance examination as people blocked the highway. As Tarun / Taruna, a student aspiring to be a doctor, write a letter to the Editor of The Times of India highlighting the need to discourage such demonstrations and disturbance by public on highways which cause a great loss of time and opportunity for many. (100-125 words)

Q.5   You are Tarun / Tarika who bought a new Refrigerator for your home from Sai Electronics, Noida but found many functional problems as the charging is not done properly and battery water is getting leaked. Write a letter of complaint to the proprietor to take care of the same. (100-125 words)

Q.6   As Niharka/ Nikhar of Delhi Public School, write a speech to be delivered in school assembly highlighting the importance of cleanliness suggesting that the state of cleanliness reflects the character of its citizens. (150-200 words)

SUBJECT - PHYSICS

Choose the correct answer

Q.1   Electric current is due to motion of:
(a) Molecules   (b) Free electrons   (c) Positive ions   (d) None of these

Q.2   The resistance of which of the following decreases with increase in temperature.
(a) Metals   (b) Insulators   (c) Semiconductor   (d) None of these

Q.3   The length of two copper wires are L and 2L and their cross-sectional areas are 2A and A respectively. The ratio of their specific resistances will be:
(a) 1:2   (b) 8: 1   (c) 1:8   (d) 1:1

Q.4   Sensitivity of a potentiometer can be increased by:
(a) Increasing emf of the cell.   (b) Increasing length of potentiometer wire.
(c) Decreasing length of potentiometer wire.   (d) None of these

Q.5   The force acting between sodium and chloride ions kept 1cm apart in air is 'F'. If sodium and chloride ions are kept at 1cm in water of dielectric constant *'K'* then force acting in between them will be:

(a) $\dfrac{F}{K}$ (b) $\dfrac{FK}{\varepsilon_0}$ (c) $\dfrac{F}{K\varepsilon_0}$ (d) $\dfrac{F\varepsilon_0}{K}$

Q.6   S. I. unit of permittivity is:
(a) $C^2N^{-1}m^{-2}$ (b) Nm^2C^2 (c) $C. \, m^{-1}$ (d) N. C.

Q.7   An uncharged small metallic sphere has been kept in between two charges of equal magnitude and opposite in nature. If the small sphere is being placed towards the positive charge   and   then   released,   then:
(a) It will undergo simple harmonic motion about its mean position.
(b) It will always move towards positive charge.
(c) Its electrostatic energy will decrease but kinetic energy increases.
(d) Its total energy will remain constant but not zero.

Q.8   Electron and proton are $1\overset{0}{A}$ apart. So the dipole moment must be:
(a) 1.6×10^{-19} coulomb x metre   (b) 1.6×10^{-29} coulomb x metre
(c) 3.2×10^{-19} coulomb x metre   (d) 3.2×10^{-29} coulomb x metre.

Q.9   Two equal negative charges (*-q*) are located on Y-axis at (0, *a*) and (0, *-a*). A positive charge + *Q* is released from rest from the point (2*a*, 0). The charge + *Q* will:

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(a) Do simple harmonic motion about the origin (0, 0)

(b) Move towards the origin and will stop at rest

(c) Will go to infinity

(d) Vibrate, but not in S. H. M.

Q.10 Electric field intensity at a point in between the two parallel sheets with like charges of same surface charge densities σ is :

(a) $\dfrac{\sigma}{2\varepsilon_0}$ (b) $\dfrac{\sigma}{\varepsilon_0}$ (c) Zero   (d) $\dfrac{2\sigma}{\varepsilon_0}$

Practice problems questions

Q.11 An electric dipole is formed by + 4 μC and -4μC charges at 5 mm distance. Calculate the dipole moment and give its direction.

Q.12 An electric dipole of dipole moment 4 x 10^{-5} C m is placed in a uniform electric field of 10^{-3} N C^{-1} making an angle of 30^0 with the direction of the field. Determine the torque exerted by the electric field on the dipole.

Q.13 A dipole consisting of an electron and a proton separated by a distance of 4 x 10^{-10} m is situated in an electric field of intensity 3 x 10^5 N C^{-1} at an angle of 30° with the field. Calculate the dipole moment and the torque acting on it. Charge on an electron = 1.602 x 10^{-19} C.

Q.14 An electric dipole is placed at an angle of 60° with an electric field of magnitude 4 x 10^5 NC^{-1}. It experiences a torque of $8\sqrt{3}$ Nm. If the length of the dipole is 4 cm, determine the magnitude of either charge of the dipole.

Q.15 An electric dipole consists of two opposite charges of magnitude 2 x 10^{-6} C each and separated by a distance of 3 cm. It is placed in an electric field of 2 x 10^5 NC^{-1}. Determine the maximum
torque on the dipole.

Q.16 Two points *A* and *B* are located in diametrically opposite directions of a point charge of + 2 μC at distances 2.0 m and 1.0 m respectively from it. Determine the potential difference V_A - V_B.

Q.17 A hollow metal sphere is charged with 0.4 1μC of charge and has a radius of 0.1 m. Find the potential (i) at the surface (ii) inside the sphere (iii) at a distance of 0.6 m from the centre. The sphere is placed in air.

Q.18 Two point charges of +10μC and +20μC are placed in free space 2 cm apart. Find the electric potential at the middle point of the line joining the two charges.

Q.19 Two point charges *q* and -2*q* are kept '*d*' distance apart. Find the location of the point relative to charge '*q*' at which potential due to this system of charges is zero.

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Q.20 Two point charges, one of + 100 μC and another of - 400 μC, are kept 30 cm apart. Find the points of zero potential on the line joining the two charges (assume the potential at infinity to be zero).

Q.21 The storage battery of a car has an emf of 12 V If the internal resistance of the battery is 0.4Ω, what is the maximum current that can be drawn from the battery?

Q.22 A battery of emf 10 V and internal resistance 3 Ω is connected in a resistor. If die current in the circuit is 0.5 A, what is the resistance of the resistor? What is the terminal voltage of the battery when the circuit is closed?

Q.23 Three resistors 1Ω , 2Ω and 3Ω are combined in series. What is the total resistance the combination? If the combination is connected to a battery of emf 12 V and negligible internal resistance, obtain the potential drop across each resistor.

Q.24 Three resistors 2Ω , 4Ω and 5Ω are combined in parallel. What is the total resistance of the combination? If the combination is connected to a battery of emf 20 V and negligible internal resistance, determine the current through each resistor, and total current drawn from the battery.

Q.25 A negligibly small current is passed through a wire of length 15 m and uniform cross-section 6.0 x 10^{-7} m^2, and its resistance is measured to be 5.0 Ω. What is the resistivity of the material at the temperature of the experiment?

Q.26 A parallel plate capacitor with air between the plates has a capacitance of 8pF (1pF =10^{-12} F). What will be the capacitance if the distance between the plates is reduced by half, and the space between them is filled with a substance of dielectric constant 6?

Q.27 Three capacitors each of capacitance 9pF are connected in serried.

What is the total capacitance of the combination?

What is the potential difference across each capacitor if the combination is connected to a 120 V supply?

Q.28 Three capacitors of capacitances 2pF, 3pF and 4pF are connected in parallel.

What is the total capacitance of the combination?

Determine the charge on each capacitor if the combination is connected to a 100 V supply.

Q.29 In a parallel plate capacitor with air between the plates, each plate has an area of 6 x 10^{-3} m^2 and the distance between the plates is 3 mm. Calculate the capacitance of the capacitor. If this capacitor is connected to a 100 V supply, what is the charge on each plate of the capacitor?

Q.30 Explain what would happen if in the capacitor given in Q.29, a 3 mm thick mica sheet (of dielectric constant = 3) were inserted between the plates.

What is the voltage supply remained connected.

After the supply was disconnected.

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SUBJECT – CHEMISRY

General Instructions
1. **Homework should be presented in good handwriting.**
2. **It is mandatory to submit the homework within given time limit.**
3. **Mention your name, class and section on the cover page.**
4. **Use available sheets to answer the questions.**

PART A

MULTIPLE CHOICE QUESTIONS

1. Which is the correct statement about birth and control pills ?
    (a) Contain estrogen only
    (b) Contain progesterone only
    (c) Progesterone increases ovulation
    (d) Contains a mixture of estrogen & progesterone derivatives

2. Which of the following is used for the treatment of tuberculosis ?
    (a) Penicillin   (b) Aspirin   (c) Chloamphenicol   (d) Streptomycin

3. Glycerol is added to soap. Its function is :
    (a) As a filler   (b) To increase lathering
    (c) To prevent rapiddrying   (d) To make soap granules

4. Which of the following is not a target molecule for drug function in body ?
    (a) Vitamins   (b) Lipids   (c) Carbohydrates   (d) Proteins

5. Which of the following can act as an antiseptic as well as disinfectant ?
    (a) Aspirin   (b) Chlorine   (c) Phenol   (d) Dettol

6. Which of the following is/are addition polymer/s?
    (a) PVC   (b) Nylon-6   (c) Teflon   (d) Terylene

7. Nylon-6 6 is formed by heating
    (a) Adipic acid and methane   (b) Succinic acid and 1,3-butadiene
    (c) Adipic acid and hexamethylene   (d) none

8. Terylene (Dacron) is a condensation polymer of
    (a) Formaldehyde and urea
    (b) Ethylene glycol and ethylene diisocyanate
    (c) Ethylene glycol and terephthalic acid
    (d) Maleic anhydride and methyelene glycol

9. Polystyrene is a
    (a) Copolymer   (b) Addition polymer
    (c) Condensation polymer   (d) None

10. The polymer having strongest intermolecular forces is
    (a) Fibres   (b) Elastomer
    (c) Thermoplastic   (d) Thermosetting polymer

PART B

Q. 1. Answer the following questions
    a. What is the role of Bithional in toilet soaps ?

b. Why is sodium benzoate added to packed containers of jams and pickles ?

c. With reference to which classification has the statement 'Ranitidine is anantacid' been given ?

d. Give the name of medicine used for the treatment of syphilis.

e. Give the composition of tincture of iodine.

Q.2. Answer the following questions

a. Explain why aspirin find use in prevention of heart attacks ?

b. Mention one use of drug meprobamate.

c. Name the derivative of sucrose which tastes like sugar and can be safely used by weight conscious people.

d. Why synthetic detergents are preferred over soaps for use in washing machines ?

e. How is acidity cured with cimetidine ?

Q.3. Answer the following questions

a. While antacids and antiallergic drugs interfere with the function of histamines, why do these not interfere with the function of each other ?

b. Which of the following two compounds can be used as a surface agent and why ?

c. What type of drug is chloramphenicol ?

d. Name a chemical used as an antiseptic as well as disinfectant.

e. Give two examples of antidepressants.

Q.4. Answer the following questions

a. Name the antioxidants commonly used to increase the storage of butter.

b. Give the name of medicine having – As = As – linkage.

c. Which antibiotic is supposed to be toxic towards certain strains of cancercells ?

d. Hair shampoos belong to which class of synthetic detergent ?

e. Dishwashing soaps are synthetic detergents. What is their chemical nature ?

Q.5. (i) What are antihistamines ? Give two examples

(ii) What are narcotic and non-narcotic analgesics ? Give one example of each.

(iii) What are antibiotics ?What is meant by the term broad spectrum antibiotic ?

(iv) State the main difference between bacteriostatic and bactericidal antibiotics. Give one example of each.

Q.6. (i) What are antifertility drugs ? Name the constituents of an oral contraceptive.

(ii) What do you mean by non-biodegradable detergents ? How can we make biodegradable detergents ?

(iii) If water contains dissolved calcium hydrogencarbonate, which out of soap and detergent, will you prefer to use ? Why ?

(iv) What are barbiturates ? What is the action of barbiturates on human body ?

Q.7. (i) Why are artificial sweetening agents harmless when taken ? Name one such artificial sweeting agent.

(ii) Why is the use of aspartame as an artificial sweetener limited to cold foods ?

(iii) Identify the class of drug : (a) Phenelzine (Nardin) (b) Aspirin (c) Cimetidine

(iv) Give the pharmacological function of the following type of drugs :
(a) Analgesics (b) Tranquilizers (c) Antifertility drugs

Q.8. a. Give the name of medicine used in the treatment of following diseases :
(i) Typhoid (ii) Join pain (in Arthritis) (iii) Hypertension

b. Give the class of drugs to which these substances belong :
(i) Bithional (ii) Amoxycillin (iii) Salvarsan

c. How are antiseptics different from disinfectants ? How does an antibiotic

Q.9. Explain the following terms with suitable examples :
(i) Cationic detergents (ii) Anionic detergents (iii) Non-ionic detergents

Q.10. (i) What are antibiotics? Distinguish between narrow spectrum and broadspectrum antibiotics.
(ii) Classify the following into bactericidal bacteriostaticantibiotics :Tetracycline, Penicillin, Ofloxacin and Chloramphenicol.

Q.11. Is (NH-CHR-CO)n, a homopolymer or copolymer?

Q.12. What is a biodegradable polymer? Give an example of biodegradable aliphaticpolyester.

Q. 13. Which of the following polymers are condensation polymers?
(i) Bakelite (ii) Teflon (iii) Butyl rubber (iv) Melamine formaldehyde resin

Q.14. Which of the following are addition polymers?
(i) Nylon (ii) Melamine formaldehyde resin (iii) Orlon (iv) Polystyrene

Q.15. Explain the term copolymerisation and give two examples.

Q.16. Write the free radical mechanism for the polymerisation of ethene.

Q.17. What is vulcanization? How does vulcanization improves the quality of rubber?

Q.18. What are the monomeric repeating units of Nylon-6 and Nylon-6,6? Write their structure.

Q.19 Write the names and structures of the monomers of the following polymers:
(i) Buna-S   (ii) Buna-N   (iii) Dacron   (iv) Neoprene

Q. 20. Write the name & structure of the monomers of
i. PHBV   ii. Nylon 2–nylon 6   iii. Bakelite

SUBJECT - MATHEMATICS

General Instructions:
1) **Solve the sums in a separate notebook or any diary.**
2) **Use the stuff which is available at home.**
3) **Do the questions in sequence.**
4) **Work should be neat.**
5) **Do the questions systematically.**

Q.1 If $A + B + C = \pi$ then find the value of

$$\begin{vmatrix} \sin(A+B+C) & \sin(A+C) & \cos C \\ -\sin B & 0 & \tan A \\ \cos(A+B) & \tan(B+C) & 0 \end{vmatrix}$$

Q.2 If A is a square matrix of order 3 and $|2A| = k|A|$, then find the value of k.

Q.3 If for the matrix A, $A^3 = I$, then find A^{-1}.

Q.4   For what value of x the following matrix is singular?

$$\begin{bmatrix} 5-x & x+1 \\ 2 & 4 \end{bmatrix}$$

Q.5   What will be number of all possible matrices of order 3x3 with each entry 0 and 1?

Q.6   If $f^{1}(1) = 2$ and $y = f(\log_e x)$, find $\dfrac{dy}{dx}$ at $x = e$.

Q.7   Write the value of the determinant $\begin{vmatrix} a & 1 & b+c \\ b & 1 & a+c \\ c & 1 & b+a \end{vmatrix}$

Q.8   If $A = \begin{bmatrix} i & 0 \\ 0 & i \end{bmatrix}$, $n \in N$ find A^{4n}.

Q.9   If a and B are two matrices such that $AB = A$ and $BA = B$ then B^2 is equal to
(a) B   (b) A   (c) 1   (d) 0

Q.10   The slope of the curve $2y^2 = ax^2 + b$ at $(1, -1)$ is (-1). Find a, b.

Q.11   Find the values of x, if
$$\begin{vmatrix} x+1 & x-1 \\ x-3 & x+2 \end{vmatrix} = \begin{vmatrix} 4 & -1 \\ 1 & 3 \end{vmatrix}$$

Q.12   If a, b, c are in A.P. then the determinant
$$\begin{vmatrix} x+2 & x+3 & x+2a \\ x+3 & x+4 & x+2b \\ x+4 & x+5 & x+2c \end{vmatrix}$$

(a) 0   (b) 1   (c) x (d) $2x$

Q.13   The distance moved by the particle in time t is given by $x = t^3 - 12t^2 + 6t + 8$. At the instant when its acceleration is zero, the velocity is –

(a)   42   (b) -42   (c) 48   (d) none of these

Q.14   If $f(x) = e^x \sin x$ in $[0, \pi]$, then c in Rolle's theorem is

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

Q.15   Determine   the   value   of   the   constant m so   that   the   function
$f(x) = \begin{cases} m(x^2 - 2x) & , if\ x < 0 \\ \cos x & if\ x \ge 0 \end{cases}$ is continuous.

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Q.16 Prove that the determinant $\begin{vmatrix} x & \sin\theta & \cos\theta \\ -\sin\theta & -x & 1 \\ \cos\theta & 1 & x \end{vmatrix}$ is independent of θ

Q.17 Show that $f(x) = x^2$ is differentiable at $x = 1$.

Q.18 If $(\cos x)^y = (\sin y)^x$, find $\dfrac{dy}{dx}$.

Q.19 Differentiate $\tan^{-1}\left(\dfrac{1+\cos x}{\sin x}\right)$ w.r.t x.

Q.20 Differentiate w.r.t. x
$\log_{10} x + \log_x 10 + \log_x x + \log_{10} 10$.

Q.21 Prove that the inverse of an invertible symmetric matrix is a symmetric matrix.

Q.22 $A = \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$. If $A + A' = I$, find the value of α.

Q.23 If $y = e^x + e^{-x}$, then prove that
$$\frac{dy}{dx} = \sqrt{y^2 - 4}$$

Q.24 Show that the matrix $B^T A B$ is symmetric or skew-symmetric according as A is symmetric or skew-symmetric.

Q.25 Discuss the continuity of the function $f(x)$ given by $f(x) = \begin{cases} 2x-1 & ,x<0 \\ 2x+1 & ,x\geq 0 \end{cases}$

Q.26 Show that $f(x) = |x|$ is not differentiable at $x=0$.

Q.27 If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ a & 2 & b \end{bmatrix}$ is a matrix satisfying $A A^T = 9I_3$, then find the values of a and b.

Q.28 A water tank has the slope of an inverted right circular cone with its axis vertical and vertex lower most. Its semi-vertical angle is $\tan^{-1}$ (0.5). Water is poured into it at a constant rate of $5m^3/h$. Find the rate at which the water level is rising at the instant when the depth of water in the tank is 4m.

Q.29 The two equal sides of an isosceles triangle with fixed base b are decreasing at the rate of 3cm/sec. How fast is the area decreasing when the two equal sides are equal to the base?

Q.30 Verify Rolle's theorem for the function $f(x) = x^3 - 6x^2 + 11x - 6$ on the interval [1, 3].

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Q.31 Use Lagrange's mean value theorem, find out a point on the curve $y = \sqrt{x-2}$ defined on the interval [2, 3] where the tangent is parallel to the chord joining the end points of the curve.

Q.32 Find the points on the curve $9y^2 = x^3$ where normal to the curve makes equal intercepts with the axes.

Q.33 If $x \sin(a+y) + \sin a \cos(a+y) = 0$ then prove that
$$\frac{dy}{dx} = \frac{\sin^2(a+y)}{\sin a}$$

Q.34 If $y = x^x$, then prove that $\frac{d^2y}{dx^2} - \frac{1}{y}\left(\frac{dy}{dx}\right)^2 - \frac{y}{x} = 0$

Q.35 If $f(x) = \begin{cases} 1, & \text{if } x \le 3 \\ ax+b & \text{if } 3 < x < 5 \\ 7 & \text{if } x \ge 5 \end{cases}$

Determine the values of a and b so that $f(x)$ is continuous.

Q.36 For the matrix $A = \begin{bmatrix} 3 & 1 \\ 7 & 5 \end{bmatrix}$, find x any y so that $A^2 + xI = yA$. Hence, find A^{-1}.

Q.37 Discuss the differentiability of the function.
$$f(x) = \begin{cases} 2x-1 & x < \frac{1}{2} \\ 3-6x & x \ge \frac{1}{2} \end{cases} \text{ at } x = \frac{1}{2}$$

Q.38 Find the equation of the tangent to the curve $y = (x^3-1)(x-2)$ at the points where the curve cuts the x-axis.

Q.39 If $x \ne y \ne z$ and $\begin{vmatrix} x & x^2 & 1+x^3 \\ y & y^2 & 1+y^3 \\ z & z^2 & 1+z^3 \end{vmatrix} = 0$, then prove that $xyz = -1$

Q.40 Find $\frac{dy}{dx}$ if $y = (\sin x)^x + \sin^{-1}\sqrt{x}$

Q.41 Prove that $\begin{vmatrix} a^2+1 & ab & ac \\ ab & b^2+1 & bc \\ ca & cb & c^2+1 \end{vmatrix} = 1+a^2+b^2+c^2$

Q.42 If $x = a \sec^3\theta$ and $y = a \tan^3\theta$, then find $\frac{dy}{dx}$ at $\theta = \frac{\pi}{3}$

Q.43 Differentiate $\tan^{-1}(\sec x + \tan x)$ w.r.t x.

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Q.44 Differentiate x^x w.r.t $x \log x$.

Q.45 A man is walking at the rate of 6.5 km/hr towards the foot of a tower 120m high. At what rate is he approaching the top of the tower when he is 50m away from the tower?

Q.46 Sand is pouring from a pipe at the rate of 12cm^3/sec. The falling sand forms a cone on the ground in such a way that the height of the cone is always one-sixth of the radius of the base. How fast is the height of the sand-cone increasing when the height is 4cm?

Q.47 Verify Lagrange's mean value theorem for the function $f(x) = (x-3)(x-6)(x-9)$ on the interval [3.5]

Q.48 Find matrix X so that

$$X \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} = \begin{bmatrix} -7 & -8 & -9 \\ 2 & 4 & 6 \end{bmatrix}$$

Q.49 If $f(x) = \begin{cases} \dfrac{\cos^2 x - \sin^2 x - 1}{\left(\sqrt{x^2+1}\right) - 1} & , x \neq 0 \\ k \, , & x=0 \end{cases}$

is continuous at $x = 0$, find the value of k.

Q.50 Given $f(x) = \begin{cases} x^2 + 3x + a & , if \ x \leq 1 \\ bx + 2 & , if \ x > 1 \end{cases}$ is everywhere differentiable, find values of a and b.

Q.51 If $y = \sin(\sin x)$, show that
$$\frac{d^2 y}{dx^2} + \tan x \frac{dy}{dx} + y \cos^2 x = 0$$

Q.52 Find the points on the curve $y = x^3$ at which the slope of tangent is equal to the ordinate of that point.

Q.53 Find the values of x, y, z if the matrix
$$A = \begin{bmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{bmatrix}$$ satisfy the equation. $A^T A = I_3$.

Q.54 If a, b, c are positive and unequal, show that the value of the determinant
$$\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix}$$ is always negative.

Q.55 If $x\sqrt{1+y} + y\sqrt{1+x} = 0 \ \ x \neq y$, prove that $\dfrac{dy}{dx} = \dfrac{-1}{(1+x)^2}$

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Q.56   A ladder 5m long is leaning against a wall. The bottom of the ladder is pulled along the ground away from the wall at the rate of 2*m/sec*. How fast its height on the wall decreasing when the foot of the ladder is 4m away from the wall?

Q.57   Verify Rolle's theorem for the function
$$f(x)=\sqrt{4-x^2} \text{ on } [-2, 2]$$

Q.58   Find the equations of the normals to the curve $y = x^3 + 2x + 6$ which are parallel to the line *x+14y+4 = 0*.

Q.59   Show that the curves $xy = a^2$ and $x^2 + y^2 = 2a^2$ touch each other.

Q.60   If $y = Ae^{-kt} \cos (pt + c)$, prove that
$$\frac{d^2y}{dt^2}+2k\frac{dy}{dt}+n^2y=0, \text{ where } n^2= p^2 + k^2.$$

Q.61   Let A $= \begin{bmatrix} 2 & 3 \\ -1 & 2 \end{bmatrix}$ and $f(x) = x^2 - 4x + 7$. Show that $f(A) = 0$. Use this result to find A^5.

Q.62   A kite is 120m high and 130m of string is out. If the kite is moving away horizontally at the rate of   52 m/sec. Find the rate at which the string is being paid out.

Q.63   Two institutions decided to award their employees for the three values of resourcefulness, competence and determination in the form of prizes at the rate `x, `y *and* `z respectively per person. The first institution decided to award respectively 4,3 and 2 employees with a total prize money of `37,000 and the second institution decided to award respectively 5,3 and 4 employees with a total prize money of `47,000. If all the three prizes per person together amount to `12,000, then using matrix method find the value of *x, y* and *z*.

Q.64   Using properties of determinants, prove that
$$\begin{vmatrix} 1 & a & a^2-bc \\ 1 & b & b^2-ac \\ 1 & c & c^2-ab \end{vmatrix}=0$$

Q.65   Find the inverse of the matrix A $= \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$ by using elementary transformations.

Q.66   Find the equation of tangent line to $y = 2x^2 + 7,$ which is parallel to the line *4x – y + 3 =0*.

Q.67   If $x=a(\theta+\sin\theta); y=a(1+\cos\theta)$, prove that $\dfrac{d^2y}{dx^2}=\dfrac{-a}{y^2}$

Q.68   The sum of three numbers is 6. If we multiply the third number by 2 and add the first number to the result, we get 7. By adding second and third numbers to the three times the first number, we get 12. Using matrices find the numbers.

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Q.69 If $y = sin\ (sin\ x)$, prove that

$$\frac{d^2y}{dx^2} + \tan x \frac{dy}{dx} + y\cos^2 x = 0$$

Q.70 If $y = a^x + e^x + x^x + x^a$, find $\frac{dy}{dx}$ at $x = a$.

Q.71 Show that $\begin{vmatrix} a & b-c & c+b \\ a+c & b & c-a \\ a-b & b+a & c \end{vmatrix} = (a+b+c)\ (a^2+b^2+c^2)$ by using properties.

Q.72 The cost of 4 kg onion, 3kg wheat and 2kg rice is `60. The cost of 2 kg onion, 4 kg wheat and 6 kg rice is `90. The cost of 6 kg onion, 2 kg wheat and 3 kg rice is `70. Find the cost of each item per kg by matrix method.

Q.73 Water is dripping out from a conical funnel at a uniform rate of 4 cm^3/sec through a tiny hole at the vertex in the bottom. When the slant height of the water is 3cm, find the rate of decrease of the slant height of the water-cone. Given that the vertical angle of the funnel is 120^0.

Q.74 Show that the curves $4x = y^2$ and $4xy = k$ cut at right angles, if $k^2 = 512$.

Q.75 Show that the matrix $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ satisfies the equation $A^2 - 4A - 5I_3 = 0$ and hence find A^{-1}.

SUBJECT - BIOLOGY

General instructions:
1. **Do all the questions in a folder or available notebook.**
2. **Write answers in a proper sequence.**
3. **Do neat&clean work.**
4. **Draw diagrams where ever required.**

MULTIPLE CHOICE QUESTIONS:
1. What would happen if corpus luteum is not degenerated?
    (a) Progesterone will not be secreted
    (b) Endometrium will disintegrate
    (c) Proliferation of endometrium will take place
    (d) Ovulation will take place

2. Klinefelter syndrome has the genetic make up
    (a) 44 autosomes + xxy   (b) 44 autosomes + xo
    (c) 45 autosomes + xx   (d) 45 autosomes + xy

3. "Cleistogamous flowers are invariably autogamous because"
    (a) These flowers do not open at all.
    (b) There is no chance of cross – pollen landing on the stigma
    (c) These flowers have exposed anthers and stigma.
    (d) These flowers are wind pollinated

4. Which of the following statements is correct?
    (a) Surgical methods of contraception does not prevent gamete formation
    (b) In E.T techniques, embryos are always transferred into the uterus
    (c) Oral pills are very popular contraceptives among the rural women
    (d) All STDs are not completely curable

5. Read the statement if incorrect provide with correct answer 'Sickle cell anemia'
    (a) is a sex linked disorder
    (b) is due to a single base mutation of B globulin gene from GAG
    (c) is inherited whose one of the parent is carrier and other normal
    (d) changes shape of RBC from Round to concave.

6. Identify **True/False statements**. Correct each false statement to make it true
    (a) Spermatozoa get nutrition from Sertoli cells. (True/False)
    (b) Leydig cells are found in ovary. (True/False)
    (c) Menstrual cycle ceases during pregnancy. (True/False)

7. To analyse the genotype of an organism, it is made to
    (a) Self cross   (b) Cross with recessive parent
    (c) Cross with dominant parent   (d) Cross with another species.

8. A disease caused by an autosomal primary non-disjunction is
    (a) Down's syndrome   (b) Klinefelter's syndrome
    (c) Turner's syndrome   (d) Sickle cell anemia

9. Thalassemia and sickle cell anemia are caused due to a problem in globin molecule synthesis. Select the correct statement
    (a) Both are due to a qualitative defect in globin chain synthesis
    (b) Both are due to a quantitative defect in globin chain synthesis
    (c) Thalassemia is due to less synthesis of globin molecules
    (d) Sickle cell anemia is due to a quantitative problem of globin molecules

10. Which one from those given below is the period for Mendel's hybridization experiments?
    (a) 1856 - 1863
    (b) 1840 - 1850
    (c) 1857 – 1869

ANSWER THE FOLLOWING QUESTIONS:

Q1. Why is the process of fertilisation in a flowering plant referred to as double fertilisation?

Q2. State one advantage and one disadvantage of cleistogamy.

Q3. Write the function of each of the following:

    (a) middle piece of human sperm

    (b) luteinizing hormone in human males

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Q4. What is corpus luteum ? Under what conditions does it undergo degeneration ?

Q5. Differentiate between morula and blastula stages of mammalian embryo.

Q6. Describe the contraceptive actions of IUDS.

Q7. Expand the following: (i) ZIFT (ii) ICSI (iii) GIFT (iv) IUT

Q8. (a) mention any four strategies adopted by flowering plants to prevent self-pollination.

(b) define the term emasculation.

Q9. Draw neat and well labelled diagram of anatropus ovule showing mature embryo-sac.

Q10 What is apomixis? Describe its importance?

Q.11. Which regions of pistil form fruits and seeds?

Q.12 During polyembryony, if one embryo is formed from synergids and the other from nucellus, state the one that is haploid and the one that is diploid.

Q.13 Is it possible that an unfertilized apomictic embryo sac gives rise to a diploid embryo? Give a reason in support of your answer.

Q.14 When a pollen grain is shed at the 3-celled stage which three cells are found?

Q.15 What are the stages of post-fertilization in plants?

Q.16. What are the male and female reproductive parts of a flower?

Q17. What is point mutation? Give one example.

Q18 How is it possible for a child to have a blood group O if the parents have blood groups A and B?

Q.19. Why is it that women exceeding 40 years of age have more chances of having a child with Down's syndrome?

Q.20. How was it known that the genes are located on chromosomes?

SUBJECT - ACCOUNTANCY

General Instructions:
1) **Submit the holiday homework in a separate note book.**
2) **Give the answers in a sequence mentioning question numbers and their answers.**
3) **Write in full the correct answer to a particular question instead of it's number.**
4) **In case school reopen in online mode, then home work will be submitted online by way of a word file.**

Pick up the correct answer from the given choices:

1. A and B are partners sharing profits and losses in the ratio 5:3. They admitted C and agreed to give him 3/10th of the profit. What is the new ratio after C's admission?

   a. 35:42:17.   b. 35:21:24.   c. 49:22:29.   d. 34:20:12.   e. none of these

2. A and B are partners sharing profits in the ratio 5:3, they admitted C giving him $3/10^{th}$ share of profit. If C acquires 1/5th share from A and 1/10th from B, new profit sharing ratio will be:

   a. 5:6:3.   b. 2:4:6.   c. 18:24:38.   d. 17:11:12   e. none of these

3. C was admitted in a firm with 1/4th share of the profits of the firm. C contributes ₹15,000 as his capital, A and B are other partners with the profit sharing ratio as 3:2. Find the required capital of A and B, if capital should be in profit sharing ratio taking C's as base capital:

   a. ₹ 27,000 and ₹ 16,000 for A and B respectively.
   b. ₹ 27,000 and ₹ 18,000 for A and B respectively.
   c. ₹ 32,000 and ₹ 21,000 for A and B respectively.
   d. ₹ 31,000 and ₹ 26,000 for A and B respectively.
   e. none of these

4. A, B and C are partners sharing profits and losses in the ratio 6:3:3, they agreed to take D into partnership for 1/8th share of profits. Find the new profit sharing ratio.

   a. 12:27:36:42.   b. 14:7:7:4.   c. 1:2:3:4.   d. 7:5:3:1.   e. none of these

5. X and Y are partners sharing profits in the ratio 5:3. They admitted Z for 1/5th share of profits, for which he paid ₹1,20,000 against capital and ₹60,000 against goodwill.
   Find the capital balances for each partner taking Z's capital as base capital.

   a. 3,00,000; 1,20,000 and 1,20,000.   b. 3,00,000; 1,20,000 and 1,80,000.
   c. 3,00,000; 1,80,000 and 1,20,000.   d. 3,00,000; 1,80,000 and 1,80,000.
   e. none of these

6. A and B are partners sharing profits and losses in the ratio of 3:2 (A's Capital is ₹ 30,000 and B's Capital is ₹ 15,000). They admitted C and agreed to give 1/5th share of profits to him. How much C should bring in towards his capital?

   a. ₹ 9,000.   b. ₹ 12,000.   c. ₹ 14,500.   d. ₹ 11,250.   e. none of these

7. A and B are partners sharing the profit in the ratio of 3:2. They take C as the new partner, who brings in ₹ 25,000 against capital and ₹ 10,000 against goodwill. New profit sharing ratio is 1:1:1. In what ratio will this amount will be shared among the old partners A & B.

   a. 8,000:2,000.
   b. 5,000:5,000.
   c. Old partners will not get any share in the goodwill bought in by C.
   d. 6,000:4,000.
   e. none of these

8. A and B are partners sharing the profit in the ratio of 3:2. They take C as the new partner, who is supposed to bring ₹25,000 against capital and ₹10,000 against goodwill. New profit sharing ratio is 1:1:1. C is able to bring Rs. 30,000 only. How this will be treated in the books of the firm.

   a. A and B will share goodwill bought by C as 4,000:1,000.
   b. Goodwill will be raised to ₹ 15,000 in old profit sharing ratio and written off in the new ratio.
   c. Both.
   d. Goodwill will be raised to ₹ 5,000 in old profit sharing ratio.
   e. none of these

9. A and B are partners sharing the profit in the ratio of 3:2. They take C as the new partner, who is supposed to bring ₹ 25,000 against capital and ₹10,000 against goodwill. New profit sharing ratio is 1:1:1. C is able to bring only his share of Capital. How this will be treated in the books of the firm.

    a. A and B will share goodwill bought by C as 4,000:1,000.
    b. Goodwill will be raised to Rs. 30,000 in old profit sharing ratio.
    c. Both.
    d. None.

10. A and B are partners sharing the profit in the ratio of 3:2. They take C as the new partner, who is supposed to bring ₹25,000 against capital and ₹10,000 against goodwill. New profit sharing ratio is 1:1:1. C bought cash for his share of Capital and agreed to compensate to A and B outside the firm. How this will be treated in the books of the firm.

    a. Cash bought in by C will only be credited to his capital account.
    b. Goodwill will be raised to full value in old ratio.
    c. Goodwill will be raised to full value in new ratio.
    d. Cash bought by C will be credited to his account and debited with his share of goodwill, which will be debited to A and B's account in sacrificing ratio.
    e. none of these

12. Amit and Anil are partners of a partnership firm sharing profits in the ratio of 5:3 respectively. Atul was admitted on the following terms: Atul would pay ₹ 50,000 as capital and ₹ 16,000 as Goodwill, for 1/5th share of profit. Machinery would be appreciated by 10% (book value ₹ 80,000) and building would be depreciated by 20% (₹ 2,00,000). Unrecorded debtors of ₹ 1,250 would be bought into books now and a creditors amounting to ₹ 2,750 died and need not to pay anything to its estate. Find the distribution of profit/loss on revaluation between Amit, Anil and Atul.

    a. Loss – 17,500:10,500:0.   b. Loss – 14,000:8,400:5,600.
    c. Profits – 17,500:10,500:0.   d. Profits – 14,000:8,400:5,600.
    e. none of these

13. A and B, who share profits and losses in the ratio of 3:2 has the following balances: Capital of A ₹ 50,000; Capital of B ₹30,000; Reserve Fund ₹ 15,000. They admit C as a partner, who contributes to the firm ₹ 25,000 for 1/6th share in the partnership. If C is to purchase 1/6th share in the partnership from the existing partners A and B in the ratio of 3:2, find closing capital of C.

    a. ₹ 25,000.   b. ₹ 19,000.   c. ₹ 20,000.   d. ₹ 18,000.   e. none of these

14. Amit and Anil are partners of a partnership firm sharing profits in the ratio of 5:3 with capital of ₹ 2,50,000 & ₹ 2,00,000 respectively. Atul was admitted on the following terms: Atul would pay ₹ 50,000 as capital and ₹ 16,000 as Goodwill, for 1/5th share of profit. Find the balance of capital accounts after admission of Atul.

    a. 2,60,000:2,06,000:50,000.   b. 2,20,000:1,82,000:66,000.
    c. 2,92,500:2,25,500:50,000.   d. 2,82,500:2,19,500:66,000.
    e. none of these

15. A and B shares profit and losses equally. They admit C as an equal partner and assets were revalued as follow: Goodwill at ₹ 30,000 (book value NIL). Stock at ₹ 20,000 (book value ₹ 12,000); Machinery at ₹ 60,000 (book value ₹ 55,000). C is to bring in ₹ 20,000 as his capital and the necessary cash towards his share of Goodwill. Goodwill Account will not remain in the books. Find the profit/loss on revaluation to be shared among A, B and C.

a. 21,500:21,500:0.   b. 6,500:6,500:0.
c. 14,333:14,333:14,333.   d. 4,333:4,333:4,333.   e. none of these

SUBJECT - BUSINESS STUDY

General Instructions:
1) **Submit the holiday homework in a separate note book.**
2) **Write all the sub parts of the question at one place.**
3) **Case studies answers should be brief and to the point.**
4) **Holiday homework can also be shared in the form of PDF or Word file in case school reopens in an online mode.**

A.   **PROJECT WORK:**
      Students are supposed to select and make only one project from the following topics:
      1. Elements of Business Environment
      2. Principles of Management
      3. Marketing Management
      Topics already discussed and allotted in the class.
      Rules:
      Minimum 30 pages, handwritten, supplemented by pictures, graphs, charts etc. Be creative and write neatly on A4 size colored or white sheets.

B.   **ANSWER THE FOLLOWING QUESTIONS:**
Q.1   Neeraj is selected for the post of software developer in an IT Company. On the first day of his joining Mehul, his project manager tells Neeraj the during the course of his work he will come across many such opportunities which may tempt him to misuse his powers for individual or family's benefit at the cost of larger general interest of the company. In such situations, he should rather exhibit exemplary behavior as it will raise his stature in the eyes of the company. Also, for interacting with anyone in the company on official matters, he should adopt the formal chain of authority and communication.
      In context of the above case:

      (a)   Identify and explain the various principles of management that Mehul is advising Neeraj to follow while doing his job.

      (b)   List any two values that Mehul wants to communicate to Neeraj.

Q.2   Harshita has successfully emerged as the owner of the best modular kitchen manufacturer firm in Delhi. Her friend Vartika is highly inspired by Harshita's success in business. In order to understand the essence of successful business management vartika decides to spend a week in her office. Vartika observes that a deliberated effort is made to integrate the diverse activities of the organisation. Like whenever the sales manager makes a plan to raise the sales target, he also consults other department managers i.e. the production manager, the purchase manager, the finance manager, etc. in order to avoid any problem that may raise in future. Moreover, work among the people working in the production department in divided in such a manner that where the work of one person ends, the work of the next person begins.

Therefore, everybody makes efforts to complete his/her work on time, and the workers do not create obstruction in each other's work.

In contest of the above case:
(a)   Identify the concept being described in the above paragraph.

(b)   How does the concept as indentified in part (a) of the question help in carrying out management functions successfully?

Q.3   Post demonitisation in a further push to cashless economy, the central cabinet has recently approved the ordinance for paying wages via electronic means. Accordingly, the government approved to amend section 6 of the payment of wages Act 1936, to allow employers of certain industries to make payment through the electronic mode and cheques. The new ordinance will be applicable to the public sector. Identify the various dimensions of business environment which relate to the above mentioned case.

Q.4   Arush joins as a sales manager of a company dealing in naturotherapy products. Being proficient in his work, he knew that without good planning he will not be able to organise, direct, control or perform any of the other managerial functions efficiently and effectively. Only on the basis of sales forecasting, he would assist in the preparation of the annual plans for its production and sales. Besides, he will have to prepare sales plans regularly on weekly, monthly, quarterly and half yearly basis. While preparing the sales forecasts, he undertakes intellectual thinking or guess work. Most importantly, all these planning activities will be meaningful only if they will coincide with the purpose for which the business is being carried out. In context of the above case, identify the various features of planning highlighted in the above paragraph by quoting lines from it.

Q.5   Kiran Industries is a company dealing in office furniture. The company chose to diversify its operations to improve its growth potential and increase market share. As the project was important, many alternatives were generated for the purpose and were thoroughly discussed amongst the members of the organisation. After evaluating the various alternatives, Sukhvinder, the Managing Director of the company, decided that they should add 'Home Interiors and Furnishings' as a new line of business activity.

(a)   Name the framework, which the diversified organisation should adopt, to enable it to cope with the emerging complexity? Give one reason in support of your answer.

(b)   State any two limitations of this framework.

SUBJECT - ECONOMICS

Pick up the correct answer from the given choices:

1.   Which is the Central Bank of India?
      a. State Bank of India.   b. Punjab and National Bank.
      c. Oriental Bank of Commerce.   d. Reserve Bank of India.

2. Commercial banks suffer from
    a. Regional imbalances.   b. Increasing over dues.
    c. Lower inefficiency.   d. All of the above.

3. Who is the official "lender of the last resort" in India?
    a. SBI   b. PNB
    c. RBI   d. OBC

4. _____ refers to that portion of total deposits of a commercial bank which it has to keep with RBI in the form of cash reserves.
    a. CRR   b. SLR
    c. Bank Rate   d Repo Rate

5. _____ refers to that portion of total deposits of a commercial bank which it has to keep with itself in the form of liquid assets.
    a. CRR   b. SLR
    c. Bank Rate   d. Repo Rate

6. At present, CRR is _____ per cent.
    a. 3   b. 4.5
    c. 5   d. 5.5

7. At present, SLR is _____ per cent.
    a. 24   b. 30
    c. 18   d. 40

8. _____ is the official minimum rate at which the Central Bank of a country is prepared to rediscount approved bills held by banks.
    a. CRR   b. SLR
    c. Bank Rate   d. Repo Rate

9. At present, Bank rate is _____ per cent.
    a. 4.65   b. 6
    c. 6.25   d. 5.5

10. In order to control credit in the country, the RBI may
    a. Buy securities in the open market.   b. Sell securities in the open market.
    c. Reduce CRR.   d. Reduce Bank Rate.

11. In order to encourage investment in the country, the RBI may
    a. Reduce CRR.   b. Increase CRR.
    c. Sell securities in the open market. d. Increase Bank Rate.

12. In order to discourage investment in the economy, the RBI may
    a. Increase Bank Rate.   b. Decrease Bank Rate.
    c. Buy securities in the open market.   d. Decrease CRR.

13. The effect of increase CRR will be reduced or nullified if :
    a. Bank rate is reduced.
    b. Securities are sold in the open market.
    c. SLR is increased.
    d. People do not borrow from non-banking institutions.

14. In order to control credit
    a. CRR should be increased and Bank Rate should be decreased.
    b. CRR should be reduced and Bank Rate should be reduced.
    c. CRR should be increased and Bank Rate should be increased.
    d. CRR should be reduced and Bank Rate should be increased.

15. _____ controls affect indiscriminately all sectors of the economy.
    a. Selective credit.   b. Quantitative.
    c. Margin requirements.   d. None of the above.

SUBJECT - ENTREPRENEURSHIP

General Instructions:
1) **Submit the holiday homework in a separate note book.**
2) **Write all the sub parts of the question at one place.**
3) **Case studies answers should be brief and to the point.**
4) **Holiday homework can also be shared in the form of PDF or Word file in case school reopens in an online mode.**

PROJECT WORK:
A. BUSINESS PLAN
B. MARKET SURVEY
   Both the projects to be completed as discussed in the class.

Answer the following Questions:
Q.1 Ankit is into the business of manufacturing low-cost diesel-cars in Germany. He is earning good profits and ambitiously considering overseas expansion. He scans the environment for finding out the opportunities and threats that may influence his current and future plans. He zeroes down on India as a potential place for his business expansion as Indian Government has announced favorable trade regulations. On selling the first lot of cars in India. The Indian government noticed that the emissions from these cars were above the permissible limit. The government asked him to make necessary modification in his cars if he wanted to continue business in India. He readily agreed to meet the emission norms set by the Indian Government.

(i) Quoting the lines from the above paragraph identify any two environmental factors.
(ii) Also, state any two values which Ankit tried to communicate to the Indian society.

Q.2 Rajeev has just completed his B.Tech and wants to start his own business. He knew that the demand of electricity in India was increasing day by day, whereas its generation was not sufficient. Rajeev shared his views with some of his friends and they all decided to start the business of electricity generation. They experimented various methods and ultimately succeeded in electricity generation through garbage. They all were very happy as India is also facing the problem of garbage disposal.

(i) Identify and explain the source of 'Idea-field' from where the idea has been generated by Rajeev and his friends.
(ii) Also explain two other sources of idea-fields with the help of example.

Q.3 Lalit a small entrepreneur is manufacturing portable fans with the brand name 'P-FAN'. These fans are in great demand. He finds that the cost of production of per unit of the fan is

Rs. 800 and he can sell the same at Rs. 1000 per fan. The competitors in the market are selling this type of fan at the rate to Rs. 1200. Lalit's objective is not to earn profit in the short-run but to capture the largest market share. His expectation is that the customers will be attracted towards the new brand because of lower price.

Identify the method of pricing adopted by Lalit to capture the substantial portion of the market. Also state any two advantages of this method of pricing.

Q.4   Yash was not too keen to take up his family run business of making bamboo baskets. But due to the bad condition of the family business, he had no option except to take up this business. He started thinking about the new way of using bamboo. One day while having lunch in a restaurant, he overheard the owner talking about the difficulty in disposing the plastic and thermacol crockery that was being used in the restaurant. This provided him the stimulus for a new venture creation. Yash started looking into various options of making bamboo plates which could used in the restarurants. He discussed the idea with his father who advised Yash tha ideas should lead to commercially vialbe forms in order to survive and grow.
Identify and explain the concept discussed in the above situation.

Q.5   Abhimanyu Industries Ltd had a team of professionals and experts to draft a comprehensive yearly document with all the relevant details of internal and external elements in managing the venture. This document acts as a decision-making tool for the management.
The Chief Executive Officer of the company always pays special focus on one element of this document that ensures the orderly flow of materials from raw state to finished product with a proper system of quality contral, as according to him 'work your plan' is more important than 'plan your work'.

(a) Identify the 'comprehensive yearly document' being prepared by Abhimanyu industries.
(b) How is this plan a 'decision-making tool' for the management?
(c) Identify the element that is the priority of the CEO of the company.
(d) Why is the element as identified in (c) important?

SUBJECT - PHYSICAL EDUCATION

General Instructions:
1. **Do all the questions of Section-A in notebook.**
2. **Section-B should be done in Practical file.**
3. **The written part should be neatly presented in your own handwriting.**

SECTION–A

Multiple Choice Questions:-

Q.1.   How many total matches will be played in league tournament when teams are 10 (ten)?
a) 40   b) 45   c) 50   d) 55

Q.2.   In Knock-out tournament team has to
a) play large number of matches   b) play one match
c) play match with every other participating team   d) play till they are winning

Q.3.   Competitions conducted within the four walls of an Institution are called
a) Intramurals   b) Extramurals
c) Indoor Competitions   d) Outdoor Competitions

Q.4.   How many byes will be given if 19 teams are participating in a knock-out tournament?
a) 12   b) 13   c) 14   d) 15

Q.5.   It is a process/procedure of shuffling the position of good teams so that they don't meet each other in an early stage of the competition and spectators' interest is kept alive till finals. What is the name of this process?
a) Intramurals   b) Seeding   c) Fixture   d) Extramurals

Q.6.   Night blindness is caused due to deficiency of
a) Vitamin D   b) Vitamin A   c) Vitamin E   d) Vitamin K

Q.7.   Which one of the following is an example of water soluble vitamin?
a) Vitamin D   b) Vitamin C   c) Vitamin A   d) Vitamin E

Q.8.   Deficiency of which of the following may cause Goitre?
a) Iron   b) Iodine   c) Calcium   d) Sodium

Q.9.   Anaemia is caused due to the deficiency of
a) Calcium   b) Iron   c) Sodium   d) Iodine

Q.10.   If the weight is in kilograms and height is in metres, which of these is the correct formula for calculating Body Mass Index?
a) Weight x $(Height)^2$ b) Weight / $(Height)^2$
c) Weight / Height   d) Height / Weight

Q.11.   Which one of the following asanas is not performed in standing position?
a) Tadasana   b) Ardhchakrasana   c) Sukhasana   d) Trikonasana

Q.12.   Paschimottanasana is performed by
a) Bending backward   b) Bending forward & holding
c) Bending sideward   d) Holding the breath

Q.13.   Insulin is secreted by
a) Liver   b) Thyroid   c) Pituitary   d) Pancreas

Q.14.   Which of these is not one of the asanas prescribed for relief from Asthma?
a) Sukhasana   b) Matsyasana   c) Parvatasana   d)Hastasana

Q.15.   Which of these asanas is suggested to cure hypertension?
a) Chakrasana   b) Vajrasana   c) Shavasana   d) Matsyasana

SECTION-B

Write following topics in Practical file:-

Practical 1:   Fitness test administration for all items.

Practical 2:   Procedure for Asanas, Benefits & Contraindications for any two Asanas for each lifestyle disease.

SUBJECT - PAINTING

1. Write a short note in compositional arrangements of the rajasthan school of art.

2. Write an essay on the original n development of pahari school of art.

3. Describe the main features of the Mughal school of art.

4. Why do you like or dislike the art of mughal/ Rajasthani school of art?

SUBJECT - HISORY & POLITICAL SCIENCE

1. PROJECTWORK
   (HISTORY AND POLITICAL SCIENCE)

2. PROJECT WORK BOTH HISTORY AND POLITICAL SCIENCETO BE COMPLETED (ALREADY DISCUSSED INDETAIL)

   COMPLETE THE EXERCISES OF COMPLETED CHAPTERS OF HISTORY AS WELL AS POLITICAL SCIENCE.

SUBJECT - HINDI

सभी प्रश्नों के उत्तर निर्देशानुसार दीजिए –

निर्देश :

1. सभी प्रश्नों के उत्तर अपेक्षा अनुसार दीजिए।
2. स्वच्छता व सुलेख पर विशेष ध्यान दीजिए।
3. ग्रीष्मकालीन गृहकार्य एक अलग कॉपी (घर में जो उपलब्ध हो) में करें।
4. परियोजना–कार्य अलग फाइल में अपेक्षा अनुसार जमा करें।
5. गृहकार्य निर्धारित समय पर अपने विषय शिक्षक/शिक्षिका को जमा करवाएं।

प्रश्न 1   निम्नलिखित में से किसी एक विषय पर परियोजना–कार्य (PROJECT) निर्देशानुसार तैयार कीजिए :

निर्देश – (1) परियोजना–कार्य लगभग 400 शब्दों में होना चाहिए।

(2) इसे A4 शीट्स या रंगीन कागजों पर करने के उपरांत अलग फाइल में प्रस्तुत करें।

(3) आपका कार्य सुंदर , मौलिक एवं रचनात्मक होना चाहिए किंतु इसकी सुंदरता व्यय साध्य न हो।

विषय : (1) जल संचयन एवं हमारा विद्यालय

(2) स्वदेशी से समृद्धि हेतु हमारे प्रयास

(3) सी.ए.ए. के तहत नागरिकता प्राप्त करने वाले व्यक्ति का साक्षात्कार

(4) किसी ग्रामीण का साक्षात्कार / मध्यमवर्गीय समाज के बारे में अनुभव जानिए

(5) कोरोना काल में भारत का विश्व में बढ़ता गौरव

(6) सिंधु घाटी सभ्यता व वर्तमान सभ्यता का तुलनात्मक अध्ययन

प्रश्न 2   अनुस्मारक से क्या तात्पर्य है ? एक उदाहरण द्वारा समझाइए।

प्रश्न 3   अभ्यास हेतु आपको भेजे गए अपठित गद्यांशों में से किन्हीं दो के उत्तर लिखिए।

प्रश्न 4   अभ्यास हेतु आपको भेजे गए अपठित काव्यांशों में से किन्हीं दो के उत्तर लिखिए।

प्रश्न 5   शरीर व आत्मा के अंतर को उदाहरण या खेल द्वारा स्पष्ट कीजिए।

प्रश्न 6   खेल समरसता व व्यापक चिंतन में सहायक हैं , समझाइए।

प्रश्न 7   खतरनाक परिस्थितियों का सामना करने के बाद आप दुनिया की चुनौतियों के सामने स्वयं को कैसा महसूस करते हैं ?

प्रश्न 8   अपने परिवेश के उपमानों का प्रयोग करते हुए सूर्योदय और सूर्यास्त का शब्दचित्र खींचिए।

प्रश्न 9   कालिदास के रघुवंश महाकाव्य में पत्नी (इंदुमती) के मृत्यु–शोक पर अज तथा निराला की सरोज–स्मृति में पुत्री (सरोज) के मृत्यु–शोक पर पिता के करुण उद्गार निकले हैं। उनसे भ्रातृशोक में डूबे राम के इस विलाप की तुलना करें।

प्रश्न 10   दिन जल्दी–जल्दी ढलता है – की आवृत्ति से कविता की किस विशेषता का पता चलता है ?

प्रश्न 11   बाज़ार दर्शन पाठ में किस प्रकार के ग्राहकों की बात हुई है ? आप स्वयं को किस श्रेणी का ग्राहक मानती हैं ?

प्रश्न 12   भक्तिन के आ जाने से महादेवी अधिक देहाती कैसे हो गईं ?

प्रश्न 13   'आधुनिकता व संस्कारों में सामंजस्य बनाए रखना आवश्यक है' – सिल्वर वैडिंग पाठ के आधार पर स्पष्ट कीजिए।

प्रश्न 14   दिल्ली विश्वविद्यालय में हिन्दी शोधकर्ता हेतु एक पद खाली है। अपनी योग्यताओं का विवरण देते हुए इस पद हेतु आवेदन–पत्र लिखिए।

प्रश्न 15   निम्नलिखित में से कोई दो अनुच्छेद लिखिए –
(क) राष्ट्रभाषा का महत्त्व
(ख) परहित सरिस धर्म नहिं भाई
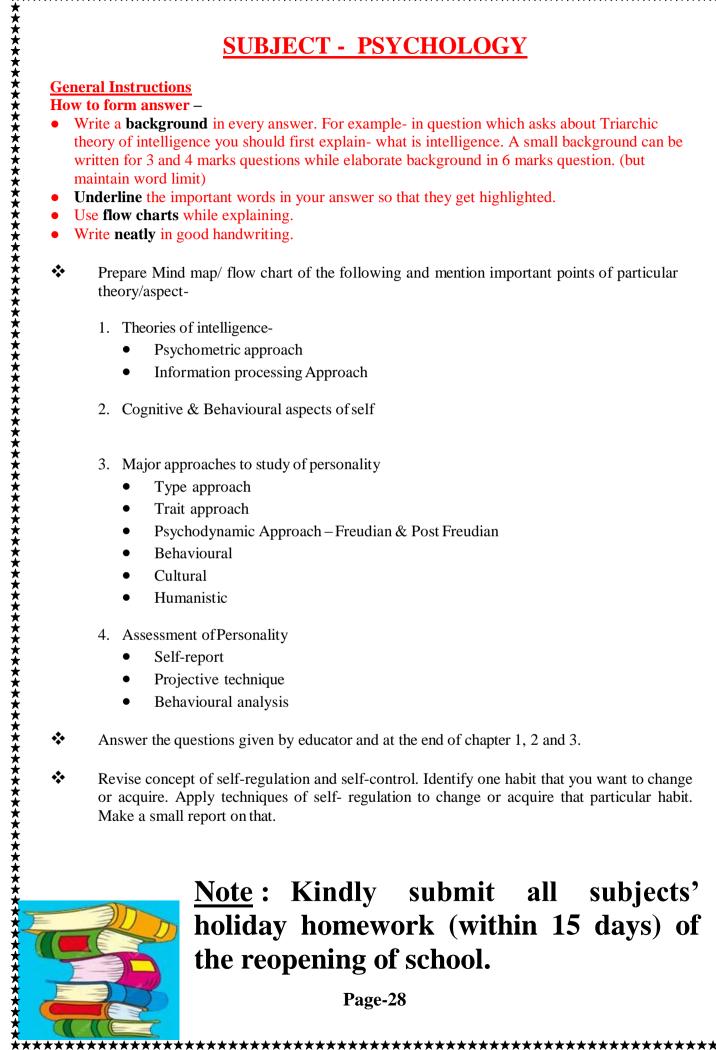(ग) पर उपदेश कुशल बहुतेरे
(घ) सादा जीवन : उच्च विचार

SUBJECT - PSYCHOLOGY

How to form answer –

- Write a **background** in every answer. For example- in question which asks about Triarchic theory of intelligence you should first explain- what is intelligence. A small background can be written for 3 and 4 marks questions while elaborate background in 6 marks question. (but maintain word limit)
- **Underline** the important words in your answer so that they get highlighted.
- Use **flow charts** while explaining.
- Write **neatly** in good handwriting.

❖ Prepare Mind map/ flow chart of the following and mention important points of particular theory/aspect-

1. Theories of intelligence-
   - Psychometric approach
   - Information processing Approach

2. Cognitive & Behavioural aspects of self

3. Major approaches to study of personality
   - Type approach
   - Trait approach
   - Psychodynamic Approach – Freudian & Post Freudian
   - Behavioural
   - Cultural
   - Humanistic

4. Assessment of Personality
   - Self-report
   - Projective technique
   - Behavioural analysis

❖ Answer the questions given by educator and at the end of chapter 1, 2 and 3.

❖ Revise concept of self-regulation and self-control. Identify one habit that you want to change or acquire. Apply techniques of self- regulation to change or acquire that particular habit. Make a small report on that.

Note : Kindly submit all subjects' holiday homework (within 15 days) of the reopening of school.