



DELHI PUBLIC SCHOOL
SAIL TOWNSHIP, RANCHI
ASSIGNMENT 2018-19

CLASS- XI

SUB- MATHEMATICS

1. In ΔABC , prove that $(a - b)^2 \cos^2 \frac{C}{2} + (a + b)^2 \sin^2 \frac{C}{2} = c^2$.
2. Prove that
 $\tan 6^\circ \tan 42^\circ \tan 66^\circ \tan 78^\circ = 1$
3. If $\tan \theta = \frac{a}{b}$, prove that
 $a \sin 2\theta + b \cos 2\theta = b$.
4. If $a \sin \theta = b \sin \left(\theta + \frac{2\pi}{3}\right) = c \sin \left(\theta + \frac{4\pi}{3}\right)$, prove that $ab + bc + ca = 0$.
5. If $\sin \theta + \sin \phi = \sqrt{3} (\cos \phi - \cos \theta)$, prove that $\sin 3\theta + \sin 3\phi = 0$.
6. Prove that
 $\tan \alpha + 2 \tan 2\alpha + 4 \tan 4\alpha + 8 \cot 8\alpha = \cot \alpha$
7. Solve for θ
 $\tan \theta + \tan 2\theta + \sqrt{3} \tan \theta \tan 2\theta = \sqrt{3}$
8. Solve the equation
 $\tan \theta + \cot \theta = 2$
9. Solve
 $2 \sin^2 x + \sin^2 2x = 2$
10. Solve :
 - (a) $\sin \frac{\theta}{2} = -1$
 - (b) $\cos \frac{3\theta}{2} = \frac{1}{2}$
 - (c) $\tan \left(\frac{2\theta}{3}\right) = \sqrt{3}$

Evaluate the limits

11. $\lim_{x \rightarrow 0} \frac{\sqrt{a+x} - \sqrt{a}}{x\sqrt{a^2+ax}}$
12. $\lim_{x \rightarrow a} \frac{\sqrt{a+2x} - \sqrt{3x}}{\sqrt{3a+x} - 2\sqrt{x}}$
13. $\lim_{y \rightarrow 0} \frac{(x+y) \sec(x+y) - x \sec x}{y}$
14. $\lim_{x \rightarrow 0} \frac{\sqrt{1+\sin x} - \sqrt{1-\sin x}}{x}$
15. $\lim_{x \rightarrow 0} \frac{\sin(a+x) + \sin(a-x) - 2 \sin a}{x \sin x}$
16. $\lim_{x \rightarrow \frac{\pi}{6}} \frac{2 - \sqrt{3} \cos x - \sin x}{(6x - \pi)^2}$
17. $\lim_{x \rightarrow a} \frac{\sin x - \sin a}{\sqrt{x} - \sqrt{a}}$
18. $\lim_{x \rightarrow a} \frac{x\sqrt{x} - a\sqrt{a}}{x - a}$

CHEMISTRY

Organic Chemistry : Some Basic Principles And Techniques

1. Draw the structures of isopropane, acetophenone and 3-Oxobutanal
2. From left to right, write down the state of hybridization of each carbon in the following molecule:
 $\text{CH}_3\text{-CH}=\text{C}=\text{CH}_2$.
3. Which type of functional group does not show isomerism? Explain.
4. Write the enolic form of acetone and count the number of σ - and π - bonds and the number of lone pairs of electrons present in it.
5. Write the names of the functional groups present in the following molecule.
 $\text{CH}_3\text{COCH}_2\text{COOC}_2\text{H}_5$,
6. Explain how is electronegativity of the carbon atom is related to the state of their hybridisation.
7. Why do branched hydrocarbons have lower boiling point than their linear isomers?
8. How will you justify that SO_3 is an electrophile and NH_4^+ is not ?
9. Give the IUPAC names of the following compounds:
(i) $\text{HC}=\text{C}-\text{CH}=\text{CH}_2$ (ii) $\text{CH}_3\text{CH}_2\text{NH}_2$
10. Expand the following formula and write its IUPAC name:
 $[(\text{CH}_3)_2\text{CH}]_3\text{COH}$
11. Give the IUPAC Names of the following compounds:
(i) $\text{Cl}-\text{CH}_2-\text{CH}_2-\text{CHO}$ (ii) $\text{CH}_2=\text{CH}(\text{CH}_3)-\text{C}(\text{CH}_3)_2-\text{CH}=\text{CH}_2$
12. Discuss the orbital picture of allene (C_3H_4)
13. Which carbocation is more stable, $(\text{CH}_3)_3\text{C}^+$ and $(\text{CH}_3)_2\text{CH}^+$?
14. What are metamers? Explain with examples.
15. What are inductive and electromeric effects ? How do these two differ?
16. What is tautomerism? Give one example why is vinyl alcohol less stable than its tautomer?
17. What are carbocations? Discuss their types and relative stability.
18. Differentiate between homolysis and heterolysis .Give an example of each.
19. What are inductive effect and hyperconjugation effect? Why do these effects of alkyl groups operate in opposite directions? Explain.
20. What are free radicals? Explain the structure and stability of different types of free radicals.
21. Give the resonating structures of benzoic acid and Chlorobenzene .

BUSINESS STUDIES

- Q.1. State the distinguish factors between business, profession and employment on the basis of
1) Reward 2) initial investment 3) qualification 4) risk
- Q.2. Differentiate between import, export and Entrepot.
- Q.3. Rohini is all set to sell toys for infants. She had almost decided to start her own production but her friend suggested to import them from china. Advise Rohini what factors she should consider before make a decision to import or manufacture.
- Q.4. In a partnership business, partners must have a written agreement. What are the values followed in this Statement?
- Q.5. Kiran is Sole Proprietor. Over the past decade, her business has grown from operating a neighbourhood corner shop selling accessories such as artificial jewellery, bags and nail art to a retail chain with 3 branches in the city. Given the varied functions in all the branches, she wonders whether she should form a company to manage her business better. She also has plan to open branches countrywide.
- Explain two benefits of remaining in a sole proprietor.
 - Explain two benefits of converting to a joint stock company .
 - What role will her choice to go nationwide play in her choice of form of the organization?
 - What legal formalities will she have to undergo to operate business as a company?
- Q.6. Multifunctional companies establish themselves in developing countries to enjoy huge profits by selling consumer goods or luxury items. They start business by offering wide variety of goods at prices cheaper than local retailers offer. But once they have established they increase prices.
- State the values the government of the developing countries ignores while allowing MNCs to establish in their country.
 - What values do the MNCs violate?
- Q.7. Identify the form of public sector enterprise in the following cases:
- An enterprise managed & controlled by individuals both aim to earn profit.
 - An enterprise established by government to participate in the economic activities of the country.
 - Maruti Udyog Limited & Bhart Heavy Electricals are example of this form.
 - This is the oldest and traditional form of public enterprise.
 - This form is in existence due to special act of parliament.
 - An enterprise form as a result of joining 2 different businesses for a common purpose / mutual benefit.
 - It enjoys maximum autonomy in all management activities.
 - Minimum 51% of the paid up capital is held by government.
- Q.8. Sahil took a fire insurance policy of Rs 15 Lakh for his factory at the annual premium of Rs 18,500. In order to avoid higher premium, he did not disclose that highly explosive chemicals are being manufactured in this factory. Due to fire, his factory is severely damaged. The insurance company refused to make the payment for claim as they came to know that the highly explosive chemicals were manufactured. Is Sahil entitled to receive the Claim? Explain the principle of insurance violated by Sahil.
- Q.9. Every year, lot of agricultural production is spoilt during rainy season due to lack of proper storage facilities in villages. Government has decided to construct a warehouse in radius of every 100km to store necessary goods. What Values is government trying to achieve?

- Q.10. "Some individuals or firms steal data either for personal motive or to harm the business" . Discuss the type of risk highlighted in the given statement. How can this risk be reduced if not eliminated?
- Q.11. Name the type of e-Business transactions for the below cases
- Customer buys a music software through Internet.
 - Rahul Lodges his car complaint at company's call centre.
 - Rohit uses an ATM card to withdraw money during his hostel stay.
 - The marketing staff send their daily report to Area Sales Manager through email.
 - Ankita Sold her bicycle through quickr.com.
 - Centralized Inventory management for all stores of Reebok in New Delhi.
- Q.12. Checks if the following statements are true or false. Give Reasons for answers:
- Business must focus on profit maximization only.
 - Business must provide good working conditions so that its work force is loyal & committed.
 - Business management is not legally committed to pay dividends to shareholders.
 - Business must not incur any expenditure on social causes as it drains out business resources, which can be used for economic activities.
 - Discretionary responsibilities of business imply performance of legal duties.
- Q.13. " Business must Concentrate on economic activities only" . Do you agree? Are there other responsibilities a business organization should follow?
- Q.14. In the partnership business, partners must have a written agreement. What are the values followed in this statement?
- Q.15. List the areas where the state or central ownership is a preferred form of business organization. Kindly provide justification against your choice.

ECONOMICS

MICRO ECONOMICS

- What is PP Frontier? Explain it with the help of an imaginary schedule and diagram.
- Show the following situation with PPF
 - Fuller utilisation of resources
 - Growth of resources.
 - Under utilisation of resources.
- Why is PPC called opportunity cost curve?
- Define opportunity cost and explain it with the help of an example.
- Explain PPF is
 - down ward sloping.
 - concave to the point of origin.
- Calculate MRT from following table what will be the shape of PPF and why?

<i>Good A (units)</i>	<i>Good B (units)</i>
60	0
35	1
20	2
10	3
5	4
- What is Law of Diminishing Marginal Utility?
- What is meant by Marginal Rate of Substitution (MRS).
- What is budget set.

10. Define Indifference curve Map.
11. Why does higher indifference curve give more satisfaction?
12. What will be the impact on demand of the substitute good due to increase in price of the good?
13. A rise in price of a good results in a decrease in expenditure on it. Is its demand elastic or inelastic?
14. What cause an upward movement along a demand curve?
15. If the slope of a demand curve is parallel to X-axis, what will be the elasticity of demand?
16. Calculate the price elasticity of demand for a commodity when its price increases by 25% and quantity demanded falls from 150 units to 120 units.
17. The price elasticity of demand of good 'X' and 'Y' is same. If price of good 'X' falls by 10% and price of good 'Y' increase by 10% then what changes will take place in demand of good 'X' and good 'Y'.
18. If the price of a commodity rises from Rs. 8 per unit to Rs. 10 per unit, a consumer's demand falls from 110 units to 100 units. Find out the price elasticity of demand for this commodity.
19. At the price of Rs. 4 per unit, a consumer's demand is -2. How many units will the consumer buy at Rs. 3 per unit?
20. Price elasticity of demand of a good is -3. At a price of Rs. 5 per unit, 80 units of this good are bought. How many units will be bought at a price of Rs. 4 per unit. Calculate.
21. A consumer buys 100 units of a good at a price of Rs. 5 per unit. When price changes he buys 140 units. What is the new price if elasticity of demand is -2.
22. Why the indifference curve should be tangent to the budget line at the point of consumer's equilibrium.
23. Why any producer would like to operate in second stage even though total physical production is increasing at diminishing rate or marginal product is falling?
24. Following statements are true or false. Give reasons :
 - (a) Diminishing returns to a factor is applicable only when average product starts falling.
 - (b) AC and AVC curves do not intersect each other
25. Explain the effect on output when only one input is increased and all other inputs are held constant.

STATISTICS

1. What are the principal sources of data?
2. Draw a frequency polygon by following data:

marks	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	10	15	22	18	15	10

3. What are the kinds of errors that you envisage in the process of collection of data? Explain
4. Define statistics as a singular noun.
5. What is meant by Direct Personal investigation? Give its merits and demerits.
6. Compare between Census and sample method. Mention merits and demerits of Sample method.
7. Draw a Histogram of the following data:-

Weekly wage(Rs)	10-15	15-20	20-25	25-30	30-40	40-60	60-80
No. of workers	7	10	27	15	12	12	8

8. Define Median. What are its merits and demerits?
9. Following data relate to the construction of a house in Ranchi. Present the information in the form of a Pie Diagram:-

Items	labour	Bricks	Cement	Steel	Timber	Supervision
-------	--------	--------	--------	-------	--------	-------------

Expenditure	25	15	20	15	10	15
-------------	----	----	----	----	----	----

10. Find mean, median and mode of the following data:-

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of workers	5	7	15	25	20	15	8	5

11. Find Quartile one and Quartile third of the following data:-

Marks	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70
Student	6	3	7	4	6	4	2	8	3	7

12. Find mode by table method of the following data:-

Size	0-5	5-10	10-15	15-20	20-25	25-30	30-35
Frequency	4	12	5	10	11	18	10

13. What is meant by Random Sampling ?

14. Mention two qualities of a good questionnaire.

15. State the methods of classification ? explain any one of them.

16. Make a frequency polygon and Histogram using the given data:-

Marks	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	5	12	15	22	14	4

17. Calculate median of the following data:-

145 130 200 210 198 234 159 160 178 257 260 300 345 360 390

18. Construct a pie diagram of the following data:

Items	Food	clothing	Rent	Education	Oil
Expenditure	400	250	150	40	160

19. Show the following data by a histogram:

Wages	10-15	15-20	20-25	25-30	30-40	40-60	60-80
No. of workers	14	38	54	30	24	24	16

20. Find out median :

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of student	5	15	30	8	6	2

21. The following table gives the production yield in kg per hectare of wheat of 150 farms in a village. Calculate mean, median and mode production yield.

production	50-53	53-56	56-59	59-62	62-65	65-68	68-71	71-74	74-77
------------	-------	-------	-------	-------	-------	-------	-------	-------	-------

No. of farms	3	8	14	30	36	28	16	10	5
--------------	---	---	----	----	----	----	----	----	---

22. Determine mean and standard deviation for the following data:

Class	20-30	30-40	40-50	50-60	60-70	70-80
frequency	70	51	47	31	29	22

23. Determine Quartile deviation and coefficient of Quartile deviation and Median of the following data:

Wages	0-20	20-40	40-60	60-80	80-100
Persons	4	10	15	20	11

HISTORY

1. How did human being (modern man) come into existence? Explain.
2. Describe the legacy of Mesopotamian civilisation.
3. How was the economic scenario of the Roman Empire?
4. How were the Islamic architectural forms different from those of the Roman Empire?
5. Describe the reasons behind the success of Genghis Khan.
6. What is feudalism? How did it decline?
7. What do you understand by manorial estates? Describe its few characteristics.
8. Discuss the emergence of cathedral towns of France.
9. Discuss the life of monks and nuns of the medieval Europe.
10. Discuss the advantages and disadvantages of feudalism.