

**GUESS PAPER (2024)**

**MATHEMATICS**

**CLASS X (SCIENCE)**

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**EXERCISE NO 17.2 (SETS)**

IF  $U = \{1, 2, 3, 4, 5, 6, 7\}$        $A = \{1, 3, 4, 5, 7\}$      $B = \{1, 2, 4, 6\}$   
IF  $U = \{a, b, c, d, e, f, g\}$        $A = \{a, e, f, g\}$      $B = \{a, c, d, f\}$   
Prove that  $(A \cup B)' = A' \cap B'$        $(A \cap B)' = A' \cup B'$

**EXERCISE NO 17.3 (SETS)**

If  $A = \{1, 2, 3, 4\}$        $B = \{2, 4, 7, \}$       FIND:

- 1)  $A \Delta B$       2)  $B \Delta A$

**EXERCISE NO 17.4 (POWER SET)**

Find  $P(S)$ ?

$S = \{1, 2, 3, 4\}$        $S = \{a, b, c, d\}$

**EXERCISE NO 18.3**

Find the third proportional of the following:

- i. 6, 18 and 54      ii.  $a^2 - b^2, a + b$  and  $a - b$

Find the fourth proportion to :

- i. 8, 4, 2      ii.  $a^3 + b^3, a^2 - b^2, a^2 - ab + b^2$

Find the value of x in the following continued proportions:

- i. 45, x, 5      ii. 16, x, 9

**EXERCISE NO 18.4**

Solve the following equation by componendo and dividendo theorem:

- i.  $\frac{(x+3)^2 - (x-5)^2}{(x+3)^2 + (x-5)^2} = \frac{4}{5}$       ii.  $\frac{\sqrt{x+1} + \sqrt{x-1}}{\sqrt{x+1} - \sqrt{x-1}} = \frac{1}{2}$

**EXERCISE NO 18.6**

2. If  $a : b = c : d = e : f$  then show that

- i.  $\frac{a^4 b^2 + a^2 e^2 - e^4 f}{b^6 + b^2 f^2 - f^5} = \frac{a^4}{b^4}$       ii.  $\frac{a^2 b + c^2 d + e^2 f}{ab^2 + cd^2 + ef^2} = \frac{a+c+e}{b+d+f}$

- iii.  $\frac{ac}{bd} + \frac{ce}{df} + \frac{ea}{fb} = \frac{a^2}{b^2} + \frac{c^2}{d^2} + \frac{e^2}{f^2}$       iv.  $\frac{(a+c+e)^3}{(b+d+f)^3} = \frac{ace}{bdf}$

**EXERCISE NO 19.1**

For the matrices  $A = \begin{bmatrix} -1 & 0 & 1 \\ 2 & 1 & 0 \\ 3 & 2 & -1 \end{bmatrix}$      $B = \begin{bmatrix} 4 & 2 & 3 \\ -2 & 4 & 1 \\ 3 & 2 & 1 \end{bmatrix}$  Find

- i.  $A + B$     ii.  $A - B$     iii.  $3A + 2B$     iv.  $AB$

if  $\begin{bmatrix} a & b \\ c & d \end{bmatrix} + \begin{bmatrix} 3 & -1 \\ 1 & 0 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$  Find a, b, c and d.

**EXERCISE NO 19.2**

For what value of x, the matrix  $\begin{bmatrix} 5-x & x+1 \\ 2 & 4 \end{bmatrix}$  is Singular?

Find the Inverse of the following by adjoint method?

- i.  $A = \begin{vmatrix} 3 & 2 \\ -2 & -1 \end{vmatrix}$     ii.  $B = \begin{vmatrix} 3 & 6 \\ 5 & 10 \end{vmatrix}$     iii.  $C = \begin{bmatrix} 2 & 1 & 1 \\ 3 & 2 & 1 \\ 2 & 1 & 2 \end{bmatrix}$

Find solution set by matrix method and Cramer Rule both:

1.  $2x + 2y = 18$ ,     $3x - 3y = 21$   
2.  $x + 2y = 6$ ,     $2x + 7y = 3$   
3.  $2x - 7y = 24$ ,     $5x + 3y = 19$

**EXERCISE NO 20.2**

1. Find all the cube roots of

- i. 64      ii. -125

2. Evaluate the following:

- i.  $(1 + \omega)^4$       ii.  $(1 - \omega + \omega^2)(1 + \omega - \omega^2)$       iii.  $(2 + 5\omega + 2\omega^2)^6$

**EXERCISE NO 20.4**

If  $\alpha, \beta$  are the roots of equation  $px^2 + qx + q = 0$ .

Find the value of  $\sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}}$

**EXERCISE NO 20.6**

1. Find the remaining two roots of the following cubic equations? when.

- i.  $2x^3 - x^2 - 2x + 1 = 0$ , and  $x = 1$

- ii.  $x^3 - 4x^2 + x + 6 = 0$ , and  $x = 3$

Find the value of m and remaining two roots of the equation

$2x^3 - 3mx^2 + 9 = 0$ . If its one root is 3.

**EXERCISE NO 21.1**

Resolve the following into partial fraction:

1.  $\frac{12}{x^2-9}$       2.  $\frac{4(x-4)}{x^2-2x-3}$       3.  $\frac{x^2-3x+6}{x(x-2)(x-1)}$

**EXERCISE NO 21.2**

Resolve the following into partial fraction:

1.  $\frac{4x-3}{(x+1)^2}$       2.  $\frac{x^2+7x+3}{x^2(x+3)}$

**EXERCISE NO 22.1**

Find A. M, G. M and H. M of the following:

28, 30, 26, 28, 25, 28, 26, 30.

3, 2, 6, 10, 12, 12, -20, 25, 28, 30, 8.

6, 5, 11, 12, 3, 9, 8, 1, 16, 18, 20, 5, 25

51, 55, 52, 54, 58, 60, 61, 62, 52, 57, 52, 64

Find A. M of the following:

C.I	10-12	12-14	14-16	16-18	18-20
FREQUENCY	2	12	22	12	2

Find Median .

C.I	16-20	21-25	26-30	31-35	36-41	41-45	46-50
FREQUENCY	4	6	8	14	8	6	4

**EXERCISE NO 22.9**provethat  $A. M > G. M > H. M$ :

1. 35, 28, 5, 7, 11, 15, 20, 17      2. 1, 3, 9, 27

**EXERCISE NO 22.12**

1. Find Variance and Standard deviation of the following:

30, 28, 25, 27, 20, 20, 24, 27, 19, 15 and 9.

2. Find variance of the following: 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10.

**EXERCISE NO 30.2**1. The arc of a circle subtends an angle of  $\frac{\pi}{6}$  radians at the centre.

The radius of a circle 5 cm. Find i. length of arc ii. area of sector.

2. A point is moving on the circle of radius 10cm. If it makes 3.5 revolutions. Find the distance travelled by the point?

3. If a point on the rim of a 21cm diameter fly wheel travels 5040 meters per minute through how many radian does the wheel turn in a second?

**EXERCISE NO 30.3**

Find the remaining trigonometric functions if

i.  $\sin\theta = \frac{\sqrt{3}}{2}$  and  $\theta$  lies in second quadrant.  
 ii.  $\cos\theta = \frac{2}{3}$  and  $\theta$  lies in fourth quadrant.

**EXERCISE NO 30.4****prove that:**

1.  $\sin^2\theta + \cos^2\theta = 1$       2.  $1 + \tan^2 = \sec^2\theta$       3.  $(\operatorname{cosec}^2\theta - 1)\sin^2\theta = \cos^2\theta$   
 4.  $(\cos\theta - \sin\theta)^2 + 2\sin\theta\cos\theta = 1$       5.  $\frac{\sin\theta}{1-\cos\theta} = \frac{1+\cos\theta}{\sin\theta}$   
 6.  $\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = 2\operatorname{cosec}\theta$       7.  $\frac{\cot\theta + \operatorname{cosec}\theta}{\sin\theta + \tan\theta} = \operatorname{cosec}\theta \cot\theta$

**EXERCISE NO 30.5**1. From the top of lighthouse 102 metres high, measure of the angle of depression of a ship is  $18^\circ 30'$ . How far the ship from light house?2. A ladder makes angle  $60^\circ$  with the ground and reaches a height of 6m on the wall. find the length of the ladder?**THEOREMS**

Theorem No: 23.1, 24.2, 25.1, 26.4, 27.1, 28.1

**THE END****LIKE, SHARE, SUBSCRIBE**

## مطالعہ پاکستان

### دہم کلاس

#### مختصر سوالات

1- قائد اعظم کے چودہ نکات میں کوئی پانچ نکات تحریر کریں؟	2- دو قومی نظریہ سے کیا مراد ہے؟
3- علی گڑھ تحریک کے کوئی پانچ مقاصد بیان کریں؟	4- جمہوری حکومت کی کوئی چار خوبیاں بیان کریں؟
5- حضرت شاہ ولی اللہؒ کی خدمات بیان کریں؟	6- آل انڈیا مسلم لیگ کے اغراض و مقاصد لکھیں؟
7- قائد اعظم کے کردار کے کوئی تین اوصاف لکھیں؟	8- تحریک پاکستان میں سندھ کے کردار کو بیان کریں؟
9- 1973 کے آئین کی کوئی پانچ اسلامی دفعات تحریر کریں؟	10- مشرقی پاکستان کی علیحدگی کے کوئی چار اسباب تحریر کریں؟
11- پاکستان کے جغرافیائی محل وقوع کی اہمیت بیان کریں؟	12- ماحولیاتی آلودگی کے تین اسباب لکھیں؟
13- جنگلات کے کوئی پانچ فوائد لکھیں؟	14- قدرتی گیس کے تین استعمالات تحریر کریں؟
15- پاکستان کے کوئی تین زرعی مسائل بیان کریں؟	16- ای۔ تجارت کے کوئی چار استعمالات تحریر کریں؟
17- پاکستان کی چار برآمدی اور چار درآمدی اشیاء کے نام لکھیں؟	18- مردم شماری کی اہمیت پر چار جملے لکھیں؟
19- پاکستان میں افزائش آبادی کی تین وجوہات لکھیں؟	20- پاکستان کے چار صوفیائے کرام کے نام اور ان کا تعلق کہاں سے ہے؟
21- پاکستان کے کوئی چار مذہبی تہواروں کے بارے میں بیان کریں؟	22- اردو زبان کی اہمیت پر چار جملے لکھیں؟
23- پاکستان میں شعبہ تعلیم کے کوئی تین مسائل لکھیں؟	24- پاکستان کے تین اہم قومی مقاصد بیان کریں؟
25- شہریوں کے پانچ فرائض لکھیں؟	26- فلاحی مملکت سے کیا مراد ہے؟

#### تفصیلی سوالات

- 1- اسلام میں جمہوریت کے اہم اصول بیان کریں؟
- 2- قائد اعظم کے چودہ نکات بیان کریں؟
- 3- مشرقی پاکستان کی علیحدگی کے اسباب بیان کریں؟
- 4- جنوبی ایشیاء میں پاکستان کے جغرافیائی محل وقوع کی اہمیت بیان کریں؟
- 5- پاکستان کے اہم زرعی مسائل کیا ہیں؟ بیان کریں؟
- 6- بحیثیت قومی زبان اردو کی اہمیت بیان کریں؟
- 7- پاکستان میں تعلیم کی اہمیت اور پاکستان میں اہم تعلیمی مسائل بیان کریں؟
- 8- فلاحی مملکت سے کیا مراد ہے؟ ایک اسلامی فلاحی ریاست کا کیا تصور ہے؟

#### نوٹ لکھیں۔

قرارداد پاکستان	دو قومی نظریہ	شاہ ولی اللہ کی تحریک	سندھ طاس معاہدہ	فرائضی تحریک
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نوٹ۔ MCQs اپنے دس سالہ پیپر سے یاد کریں۔ تاکہ آپ کے سو فیصد نمبر آئیں۔

## CHEMISTRY

### SHORT QUESTIONS:

1. Define the following:

Analytical chemistry, qualitative analysis, quantitative analysis, aldose, Ketose, Atmosphere, pollutants, Acid rain, Soft water, Hard water, Water pollutants, Error, Accuracy.

2. Write four differences between the following:

Fat soluble and water soluble vitamins, Saturated and unsaturated hydrocarbons, Reversible and Irreversible reactions, Fats and Oil, Titrimetric and Gravimetric analysis.

3. Write three uses of salts?

4. Define three types of salts with two example of each?

5. Write any three significant uses of Carbohydrates?

6. Write three beneficial impacts of pharmaceutical Industry on human life?

7. What are conjugate acid base pairs?

8. What are the proteins?

9. What is homologous series? Name the some homologous series?

10. Enlist major air pollutants and their sources?

11. List down the diseases due to polluted drinking water?

12. Justify the petroleum is "Black Gold"?

13. Write down the characteristics of reversible reactions?

14. What do you know about the nucleic acid?

15. Justify the Green House effect leads to gobal warming?

16. Define Vital force theory?

17. Define and importance of DNA?

18. Give some examples of error related to our life?

19. Write the properties of acid and base?

20. What are primary and secondary air pollutants?

21. Define saponification process?

22. List down the layers of atmosphere?

23. Define buffers? What is the composition of buffers?

24. What are lipids and write the uses of lipids?

25. What are effects of acid rain?

26. Explain the components of soft drinks?

### DETAILED ANSWERS:

1. Describe Global warming?

2. Define equilibrium? State law of mass action and derive an expression for constant?

3. What are soft water and hard water? Describe different methods of removing temporary and permanent hardness?

4. Describe dynamic equilibrium with two examples?

5. What are the carbohydrates? Explain the sources and uses of carbohydrates?

6. Describe fractions of petroleum in detail?

7. Justify "water is solvent"?

8. Describe salts, preparation of salts and types of salts?

9. Explain in detail water borne diseases?

10. Write the general characteristics and uses of organic compound?

### NUMERICAL

Do practice pH, pOH and Chemical Equilibrium from your book.

Please learn MCQ's from your 10 years.

## PHYSICS

### SHORT QUESTIONS:

27. Define the following:

Time period, wave length, frequency, transverse waves, longitudinal waves, amplitude, wave front, atomic mass, Normal, the angle of incidence, The angle of reflection, isotopes, Quality, Timber of sound, Short sight, long sight, lens, Reflection, Refraction, Dispersion of light, power of lens, Resistance,

28. Write four differences between the following:

Longitudinal and transverse waves, sound and noise, Data and Information, Reflection and refraction, RAM and ROM, Real image and Virtual image, simple and compound microscope.

29. Write down four characteristics of cathode rays?

30. Write the use of Radar and Lidar?

31. What is wave front? Write its types?

32. Write down any three daily life applications of Transformer?

33. What is meant by the storage device? Name any two storage devices?

34. Describe how the capacitor works as a device that stores electrical charges?

35. Define and explain the term "Conventional Current?"

36. Derive the formula  $v = f\lambda$  and  $\lambda = V \times T$  and  $H = I^2Rt$ ?

37. Explain how safety precautions are used in home electricity?

38. Explain how compressions and rarefactions are produced in the air near the source of sound? State name of the nuclear process?

39. How can we make radioisotopes artificially?

40. Give the Rutherford model of atom?

41. What is the use of fuse?

42. What are the radiation hazards?

43. What are the lenses? Write its types?

44. Write the use of spherical mirrors?

### DETAILED ANSWERS:

i. State Coulomb law and derive its equation?

ii. Define fission and fusion reactions, with their equations, explain?

iii. What are Ultrasounds? Explain two applications of ultrasound that are used in hospitals?

iv. What is an electric power? Derive its equation  $P = \frac{V^2}{R}$ ?

v. Describe the Rutherford experiment for the separation of radioactive rays?

vi. With the help of diagram explain SHM in the pendulum?

vii. Describe the functions of transformer?

viii. How is the sound produced?

ix. Explain how the rainbow is produced on a rainy day? And explain how the colours are related to distinct frequency or wavelength?

x. Explain Ohm's law in detail? Derive its equation?

### NUMERICAL:

#### WAVES:

- Find the time period and frequency of a simple pendulum 1.0 m long at a location where  $g=9.8 \text{ ms}^{-2}$ . (Ans. 2.01s, 050Hz)
- What is the wavelength of a radio wave broadcasted by a radio station with a frequency 1300 kHz? (An. 230.76m)
- The wave moving in the pond has a wavelength of 1.6m and a frequency of 0.80Hz. Find the speed of water waves? ( $1.28 \text{ ms}^{-1}$ )

- If 50 waves pass through a point in the rope in 10 seconds. What are frequency and the time period of the wave? If its wavelength is 8cm, find the wave speed?  
(5Hz, 0.2seconds,  $0.4\text{ms}^{-1}$ )
- A simple oscillating pendulum has length of 80 cm. find its Time period and frequency?  
(1.79sec, 0.55Hz)

#### **SOUND:**

- Sound wave has a frequency of 6kHz and a wave length of 25cm. how long will it take to travel 1.5 km? (( $1500\text{ms}^{-1}$ , 1sec)
- Calculate the speed of sound in air at  $^{\circ}\text{C}$ ? Speed of sound =331m/s. (348.7 m/s)

#### **MIRRORS AND LENS:**

- A concave mirror forms a real image at 25cm from the mirror. If object is at 10 cm, find the focal length of mirror? (7.14 cm)
- A concave lens of focal length 20 cm forms an image 15 cm from the lens. Find the power of lens, also how far is the object positioned from the lens? (Power of lens=0.05D, P=60cm)
- A thumb pin is positioned at a distance of 15 cm from a convex mirror of a focal length. Find the position and nature of the image? ( $q=8.57\text{ cm}$ )
- An object is placed 15 cm away from a converging lens of a focal length of 10 cm. determine the position, size and nature of the image formed? ( $q=30\text{cm}$ ,  $M=-2$ , Nature= real, inverted and magnified)
- Calculate the distance of object from a convex lens having a focal length of 15 cm. if the magnification is 3 and image is real? (P= 20cm)

#### **ELECTRICITY:**

- Find the resistance of an electric bulb if 0.60A current is passing through it and the potential difference across the bulb is 90v? (150 ohms)
- Calculate the current of electric heater. If 1800 coulomb charge passes through it in 3 minute? (10amp)
- A parallel circuit contains 80 ohms heater and 20 ohms element. What will be the current passing through the circuit if it is driven by a voltage source of 80 volts? Also find the equivalent resistance? ( $R_e = 16\text{ ohms}$ ,  $I= 5\text{amp}$ )
- Three resistances of 4 ohms, 6 ohms, 12 ohms are connected in parallel with source of 6 volts. Find the current flowing this circuit? (3amp)
- Find the potential difference between two ends of a conductor if its resistance is 5 ohms and a current of 500 miliampere is passing through it? (2.5volts)

#### **ELECTROSTATICS:**

- Calculate the force of attraction between two point charge of +2mC and -3mC, if they apart of 1 cm? ( $5.4 \times 10^8\text{ N}$ )
- Two point charges  $q_1 = 5\mu\text{C}$  and  $q_2 = 3\mu\text{C}$  are placed at a distance of 5 cm. what will be the force between them? (54 N)

Please learn MCQ's from your 10 years.