

# MODEL QUESTION PAPER SET-I

## SCIENCE (M.P.) CLASS X

Time : 3 Hrs.

M.M. : 75

### Instructions :

- (i) All questions are compulsory.
- (ii) Question No. 1 to 5 are Objective type questions. Each sub question carries 1 marks.
- (iii) Internal options are given in Q. No. 6 to 23.
- (iv) Q. No. 6 to 17 are very short answer type question. Each question carries 2 marks.
- (v) Q. No. 18 to 20 are short answer type question. Each question carries 3 marks.
- (vi) Q. No. 21 to 23 are long answer type question. Each question carries 4 marks.
- (vii) Draw neat and labelled diagram wherever required.

**Q. 1. Choose the correct option of the following : (1 × 06 = 06)**

1. Unit of rate of reaction is :  
(a) Mole per litre per second      (b) Mole per litre  
(c) Gram per litre      (d) Gram per mole.
2. A solution turns red litmus to blue, its pH may be :  
(a) 1      (b) 4      (c) 5      (d) 10.
3. Which is most reactive metal :  
(a) Lead      (b) Mercury      (c) Sodium      (d) Iron.
4. Which lens is used for long sightedness :  
(a) Plane      (b) Cylindrical      (c) Concave      (d) Convex.
5. Controls involuntary actions :  
(a) Cerebrum      (b) Cerebellum  
(c) Medulla oblongata      (d) Spinal cord.
6. What is fusion of male gamete and female gamete called :  
(a) Pollination      (b) Fertilization      (c) Cell maturation      (d) Cell division.

**Ans. 1. (a), 2. (d), 3. (c), 4. (d), 5. (c), 6. (b).**

**Q. 2. Fill in the blanks : (1 × 06 = 06)**

1. World environment day is celebrated on .....
2. For healthy human eye, least distance of distinct vision is .....
3. Focal length of spherical mirror is ..... of its radius of curvature.
4. ..... is known as father of genetics.
5. Mosquito is a .....
6. S.I. unit of electric current is .....

**Ans. 1. 5th june , 2. 25 cm. 3. Half, 4. Mendel, 5. Parasite, 6. Ampere.**

**Q. 3. State True/ False in the following : (1 × 06 = 06)**

1. Melting of ice into water is an exothermic reaction.
2. Turmeric is a natural indicator.
3. Non metals form oxides which are either acidic or neutral.
4. Aqua regia possess the property of dissolving gold and platinum.
5. Chromosome responsible for male child is Y chromosome.
6. Unit of power of lens is dioptre.

**Ans. 1. False, 2. True, 3. True, 4. True, 5. True, 6. True.**

- |   |                                       |
|---|---------------------------------------|
| <b>Q. 4.</b> Answer the following questions in one word/sentence : (1 x 06 = 06)  |                                       |
| 1. Name the device which converts electric current into mechanical energy.  |                                       |
| 2. Write name of the device used for the prevention of electric circuit.  |                                       |
| 3. By which instrument is electric current in a circuit measured.   |                                       |
| 4. Write the formula of mirror.   |                                       |
| 5. What is meant by power of accommodation of the eye ?   |                                       |
| 6. Whose unit is kilowatt hour ?  |                                       |
| <b>Ans.</b> 1. Electric motor, 2. Fuse wire, 3. Ammeter, 4. $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$ , 5. Power of accommodation is the ability of eye lens due to which it can adjust its focal length as per requirement, 6. Energy. | (1 x 06 = 06)                         |
| <b>Q. 5.</b> Match the following : (1 x 06 = 06)  |                                       |
| 'A'   | 'B'                                   |
| 1. Lipase   | (a) By spores                         |
| 2. Adrenal  | (b) Fusion of male and female gametes |
| 3. Insulin  | (c) Budding                           |
| 4. Reproduction in hydra  | (d) Pancreas                          |
| 5. Asexual reproduction   | (e) Intestine                         |
| 6. Fertilization  | (f) Adrenaline.                       |
| <b>Ans.</b> 1. (e), 2. (f), 3. (d), 4. (c), 5. (a), 6. (b).   | 02                                    |
| <b>Q. 6.</b> Why do we apply paint on iron articles ?   |                                       |
| <b>Ans.</b> See Chapter 1, Very Short Ans. Type Q. No. 7.   |                                       |
| <b>Or,</b> Oil and fat containing articles are flushed with nitrogen. Why ?   |                                       |
| <b>Ans.</b> See Chapter 1, Very Short Ans. Type Q. No. 8.   |                                       |
| <b>Q. 7.</b> Name two metals which are found in free state in nature.   |                                       |
| <b>Ans.</b> See Chapter 3, Very Short Ans. Type Q. No. 6.   |                                       |
| <b>Or,</b> Why the electrical combination wires made up of metals ?   |                                       |
| <b>Ans.</b> See Chapter 3, Very Short Ans. Type Q. No. 16.  |                                       |
| <b>Q. 8.</b> What are organic compounds ?   |                                       |
| <b>Ans.</b> See Chapter 4, Very Short Ans. Type Q. No. 7.   |                                       |
| <b>Or,</b> What are functional groups ?   |                                       |
| <b>Ans.</b> See Chapter 4, Very Short Ans. Type Q. No. 8.   |                                       |
| <b>Q. 9.</b> What is the difference between autotrophic nutrition and heterotrophic nutrition ?   | 02                                    |
| <b>Ans.</b> See Chapter 5, Very Short Ans. Type Q. No. 5.   |                                       |
| <b>Or,</b> What is the role of acid in our stomach ?  |                                       |
| <b>Ans.</b> See Chapter 5, Very Short Ans. Type Q. No. 7.   |                                       |
| <b>Q. 10.</b> What is meant by asexual reproduction ?   |                                       |
| <b>Ans.</b> See Chapter 7, Very Short Ans. Type Q. No. 8.   |                                       |
| <b>Or,</b> What is meant by vegetative propagation ?  |                                       |
| <b>Ans.</b> See Chapter 7, Very Short Ans. Type Q. No. 5.   |                                       |
| <b>Q. 11.</b> Define the heredity.  |                                       |
| <b>Ans.</b> See Chapter 8, Very Short Ans. Type Q. No. 3.   |                                       |
| <b>Or,</b> What are chromosomes ?   |                                       |
| <b>Ans.</b> See Chapter 8, Short Ans. Type Q. No. 1.  |                                       |
| <b>Q. 12.</b> Write the two laws of reflection.   |                                       |
| <b>Ans.</b> See Chapter 9, Very Short Ans. Type Q. No. 2.   |                                       |
| <b>Or,</b> What is meant by the term magnification ?  |                                       |
| <b>Ans.</b> See Chapter 9, Very Short Ans. Type Q. No. 13.  |                                       |
| <b>Q. 13.</b> What is meant by converging lens ?  |                                       |
| <b>Ans.</b> See Chapter 9, Very Short Ans. Type Q. No. 17.  |                                       |
| <b>Or,</b> Define radius of curvature of spherical mirror.  |                                       |
| <b>Ans.</b> See Chapter 9, Very Short Ans. Type Q. No. 20.  |                                       |
| <b>Q. 14.</b> Define electric power.  |                                       |
| <b>Ans.</b> See Chapter 11, Very Short Ans. Type Q. No. 2.  |                                       |
| <b>Or,</b> What is specific resistance ?  |                                       |
| <b>Ans.</b> See Chapter 11, Very Short Ans. Type Q. No. 11.   |                                       |
| <b>Q. 15.</b> What do you understand by magnetic effect of electric current ?   | 02                                    |
| <b>Ans.</b> See Chapter 12, Very Short Ans. Type Q. No. 1.  |                                       |
| <b>Or,</b> State Flemming's left hand rule.   |                                       |
| <b>Ans.</b> See Chapter 12, Very Short Ans. Type Q. No. 6.  |                                       |
| <b>Q. 16.</b> Name the electric appliances used in daily life which are based on use of electromagnet.  | 02                                    |
| <b>Ans.</b> See Chapter 12, Very Short Ans. Type Q. No. 2.  |                                       |
| <b>Or,</b> What is electromagnetic induction ?  |                                       |
| <b>Ans.</b> See Chapter 12, Very Short Ans. Type Q. No. 8.  |                                       |
| <b>Q. 17.</b> What is ozone layer ? Why is it depleting ?   | 02                                    |
| <b>Ans.</b> See Chapter 13, Short Ans. Type Q. No. 1.   |                                       |
| <b>Or,</b> What is Environment ?  |                                       |
| <b>Ans.</b> See Chapter 13, Very Short Ans. Type Q. No. 3.  |                                       |
| <b>Q. 18.</b> Explain the following terms with one example each :   | 03                                    |
| (i) Corrosion, (ii) Rancidity.  |                                       |
| <b>Ans.</b> See Chapter 1, Short Ans. Type Q. No. 2.  |                                       |
| <b>Or,</b> Explain combination reaction with example.   |                                       |
| <b>Ans.</b> See Chapter 1, Very Short Ans. Type Q. No. 15.  |                                       |
| <b>Q. 19.</b> What is synapsis ?  | 03                                    |
| <b>Ans.</b> See Chapter 6, Short Ans. Type Q. No. 8.  |                                       |
| <b>Or,</b> Draw a well labelled diagram of nerve cell.  |                                       |
| <b>Ans.</b> See Chapter 6, Short Ans. Type Q. No. 11.   |                                       |
| <b>Q. 20.</b> What is Short sightedness ? Explain with the diagram, how it can be removed ?   | 03                                    |
| <b>Ans.</b> See Chapter 10, Short Ans. Type Q. No. 5.   |                                       |
| <b>Or,</b> Why does clear sky appear blue ?   |                                       |
| <b>Ans.</b> See Chapter 10, Very Short Ans. Type Q. No. 9.  |                                       |
| <b>Q. 21.</b> Write any four differences between Acid and Base.   | 04                                    |
| <b>Ans.</b> See Chapter 2, Short Ans. Type Q. No. 9.  |                                       |
| <b>Or,</b> Write two uses of the following :  |                                       |
| (i) Baking soda, (ii) Bleaching powder, (iii) Plaster of paris, (iv) Washing soda.  |                                       |
| <b>Ans.</b> See Chapter 2, Long Ans. Type Q. No. 7.   |                                       |
| <b>Q. 22.</b> What are Alcohols ? Write IUPAC name of first four members of this series and write their structural formulae .   | 04                                    |
| <b>Ans.</b> See Chapter 4, Long Ans. Type Q. No. 1.   |                                       |
| <b>Or,</b> Draw electron dot structures of methanes $\text{CH}_4$ and Ethane $\text{C}_2\text{H}_6$ .   |                                       |
| <b>Ans.</b> See Chapter 4, Short Ans. Type Q. No. 12.   |                                       |
| <b>Q. 23.</b> Write any five differences between Aerobic and Anaerobic respiration.   | 04                                    |
| <b>Ans.</b> See Chapter 5, Short Ans. Type Q. No. 7.  |                                       |
| <b>Or,</b> Draw well labelled diagram of internal structure of human heart.   |                                       |
| <b>Ans.</b> See Chapter 5, Short Ans. Type Q. No. 10.   |                                       |

## MODEL QUESTION PAPER SET-II

Instructions : See previously.

**Q. 1. Choose the correct option of the following :** (1 × 06 = 06)

1. Function as a decomposer :  
(a) Virus      (b) Eagle      (c) Algae      (d) Bacteria.
2. Device which converts mechanical energy to electric energy is :  
(a) Current carrying coil      (b) Current carrying solenoid  
(c) Electric generator      (d) Electric motor.
3. S. I. unit of power of lens is :  
(a) Metre      (b) Centimeter      (c) Dioptre      (d) Millimetre.
4. When a light ray enters from rarer medium to denser medium then :  
(a) It goes away from normal      (b) Bends towards the normal  
(c) Goes straight      (d) None of these.
5. Short sightedness is removed by using :  
(a) Concave lens      (b) Convex lens  
(c) Bifocal lens      (d) All the above.
6. Dispersion takes place :  
(a) By mirror      (b) By rectangular glass slab  
(c) By prism      (d) By lens.

Ans. 1. (d), 2. (c), 3. (c), 4. (b), 5. (a), 6. (c).

**Q. 2. Fill in the blanks :** (1 × 06 = 06)

1. Respiration is an ..... reaction.
2. ..... is produced by sexual reproduction.
3. The fusion of male and female gamete is called .....
4. Reactions in which there is a mutual exchange of ions between the reactants is called .....
5. ..... is called the 'power house' of the cell.
6. Aerobic respiration takes place in the presence of .....

Ans. 1. Exothermic, 2. Zygote, 3. Fertilization, 4. Double displacement reactions, 5. Mitochondria, 6. Oxygen.

**Q. 3. State True / False :** (1 × 06 = 06)

1. All the domestic electrical appliances in houses are joined in series.
2. Length of plants increase by Gibberellin.
3. Resistance of thick wire is more than thin wire.
4. Resistance of metallic conductors increase with the increase in temperature.
5. Fuse wire is used for prevention against overloading and short circuit.
6. Power of convex lens is negative.

Ans. 1. False, 2. True, 3. False, 4. True, 5. True, 6. False.

**Q. 4. Answer the following in one word/sentence :** (1 × 06 = 06)

1. Nettle is a herbaceous plant. Which acid is introduced by its sting ?
2. What is the pH of pure water ?
3. Which metal burns easily ?
4. What is the mixture of two or more metals known as ?
5. Which metal does not corrode easily ?
6. Write the formula of the lens.

Ans. 1. Methanoic acid, 2. 7, 3. Magnesium, 4. Alloy, 5. Gold, 6.  $\frac{1}{f} = \frac{1}{V} - \frac{1}{U}$ .

**Q. 5. Match the following :**

'A'

1. Ovum
2. Testis
3. Reproductive part of plants
4. Male
5. D.N.A.
6. Y chromosome

- (a) Sex determination in male
- (b) Watson and Crick
- (c) Sperms
- (d) Estrogen
- (e) Flower
- (f) Testosterone.

Ans. 1. (d), 2. (f), 3. (e), 4. (c), 5. (b), 6. (a).

(1 × 06 = 06)

'B'

Q. 6. Why should a magnesium ribbon be cleaned before burning in air ?

02

Ans. See Chapter 1, Very Short Ans. Type Q. No. 1.

Or, Define Rancidity.

Ans. See Chapter 1, Very Short Ans. Type Q. No. 11.

02

Q. 7. Why is titanium called a strategic metal ?

02

Ans. See Chapter 3, Very Short Ans. Type Q. No. 5.

Or, Why is sodium kept immersed in kerosene oil ?

Ans. See Chapter 3, Very Short Ans. Type Q. No. 3.

02

Q. 8. Why is denatured alcohol not fit for drinking ?

02

Ans. See Chapter 4, Very Short Ans. Type Q. No. 9.

Or, What is formalin ?

Ans. See Chapter 4, Very Short Ans. Type Q. No. 11.

02

Q. 9. What are the function of digestive enzymes ?

02

Ans. See Chapter 5, Very Short Ans. Type Q. No. 8.

Or, What would be the consequences of the deficiency of haemoglobin in our body ?

Ans. See Chapter 5, Very Short Ans. Type Q. No. 19.

02

Q. 10. What is reproduction ?

02

Ans. See Chapter 7, Very Short Ans. Type Q. No. 7.

Or, What do you understand by pollination ? It is of how many types ?

Ans. See Chapter 7, Very Short Ans. Type Q. No. 4.

02

Q. 11. Define heredity.

02

Ans. See Chapter 8, Very Short Ans. Type Q. No. 3.

Or, How was it known by Mendel's experiment that various characters are independently hereditary ?

Ans. See Chapter 8, Very Short Ans. Type Q. No. 5.

02

Q. 12. What is meant by refraction of light ?

02

Ans. See Chapter 9, Very Short Ans. Type Q. No. 3.

Or, Which mirror is used as rear view mirror in vehicles ?

Ans. See Chapter 9, Very Short Ans. Type Q. No. 9.

02

Q. 13. What is meant by power of a lens ?

02

Ans. See Chapter 9, Very Short Ans. Type Q. No. 11.

Or, What is diverging lens ?

Ans. See Chapter 9, Very Short Ans. Type Q. No. 19.

02

Q. 14. Write Ohm's law.

02

Ans. See Chapter 11, Very Short Ans. Type Q. No. 7.

Or, What is meant by thermal effect of electric current ?

Ans. See Chapter 11, Very Short Ans. Type Q. No. 12.

02

Q. 15. Why does coil of an electric motor rotates when electric current is made to flow through it ?

02

Ans. See Chapter 12, Very Short Ans. Type Q. No. 5.



Q. 6. Why the respiration is considered as exothermic reaction?	02
Ans. See Chapter 1, Very Short Ans. Type Q. No. 12.	
Or, What do you mean by decomposition reaction ? Give example.	
Ans. See Chapter 1, Very Short Ans. Type Q. No. 16.	
Q. 7. State the meaning of malleable and ductile.	02
Ans. See Chapter 3, Very Short Ans. Type Q. No. 2.	
Or, State two ways to prevent the rusting of iron.	
Ans. See Chapter 3, Very Short Ans. Type Q. No. 10.	
Q. 8. What is a homologous series ? Explain with example.	02
Ans. See Chapter 4, Short Ans. Type Q. No. 4.	
Or, What are hydrocarbons ? Explain with giving examples.	
Ans. See Chapter 4, Very Short Ans. Type Q. No. 12.	
Q. 9. What processes would you consider essential for maintaining life ?	02
Ans. See Chapter 5, Very Short Ans. Type Q. No. 4.	
Or, How is oxygen and carbon dioxide transported in human beings ?	
Ans. See Chapter 5, Very Short Ans. Type Q. No. 11.	
Q. 10. What is sexual reproduction ?	02
Ans. See Chapter 7, Very Short Ans. Type Q. No. 9.	
Or, Define Regeneration.	
Ans. See Chapter 7, Very Short Ans. Type Q. No. 14.	
Q. 11. What is the number of chromosomes in human beings ? What is the difference in chromosomes of male and female ?	02
Ans. See Chapter 8, Very Short Ans. Type Q. No. 4.	
Or, Draw a labelled diagram of Eukaryotic chromosome.	
Ans. See Chapter 8, Short Ans. Type Q. No. 1.	
Q. 12. What is meant by rarer and denser medium ?	02
Ans. See Chapter 9, Very Short Ans. Type Q. No. 10.	
Or, What is lens ? Write its types.	
Ans. See Chapter 9, Very Short Ans. Type Q. No. 5.	
Q. 13. Find out the power of concave lens of focal length 2m.	02
Ans. See Chapter 9, Very Short Ans. Type Q. No. 15.	
Or, Find the focal length of a convex mirror of radius of curvature is 32 cm.	
Ans. See Chapter 9, Very Short Ans. Type Q. No. 18.	
Q. 14. Define electric current and write its S.I. unit.	02
Ans. See Chapter 11, Very Short Ans. Type Q. No. 13.	
Or, Why are coils of electric toasters and electric irons made of alloy rather than a pure metal ?	
Ans. See Chapter 11, Very Short Ans. Type Q. No. 14.	
Q. 15. Write any three properties of magnetic lines of force.	02
Ans. See Chapter 12, Very Short Ans. Type Q. No. 11.	
Or, When does short circuit take place in an electric circuit.	
Ans. See Chapter 12, Very Short Ans. Type Q. No. 19.	
Q. 16. Two magnetic lines of force never intersect each other. Why ?	02
Ans. See Chapter 12, Very Short Ans. Type Q. No. 16.	
Or, What is Electric fuse ? What is its use ?	
Ans. See Chapter 12, Very Short Ans. Type Q. No. 10.	

Q. 17. Write two causes of global warming.	02
Ans. See Chapter 13, Very Short Ans. Type Q. No. 2.	
Or, What is Environment ?	
Ans. See Chapter 13, Very Short Ans. Type Q. No. 3.	
Q. 18. What is corrosion? Explain with example.	03
Ans. See Chapter 1, Very Short Ans. Type Q. No. 17.	
Or, Explain the following on the basis of gain or loss of oxygen with two examples each.	
(i) Oxidation, (ii) Reduction.	
Ans. See Chapter 1, Short Ans. Type Q. No. 1.	
Q. 19. What is the difference between reflex action and walking ?	03
Ans. See Chapter 1, Short Ans. Type Q. No. 1.	
Or, Why is the use of iodised salt advisable ?	
Ans. See Chapter 6, Short Ans. Type Q. No. 2.	
Q. 20. The far point of a myopic person is 80cm in front of eye. What is the nature and power of the lens required to correct the problem ?	03
Ans. See Chapter 10, Long Ans. Type Q. No. 1.	
Or, Why are stars seen twinkling at night not moon ?	
Ans. See Chapter 10, Short Ans. Type Q. No. 3.	
Q. 21. Metal compound A reacts with dilute hydrochloric acid to produce effervescence. The gas evolved extinguishes a burning candle. Write a balanced chemical equation of the reaction if one of the compound formed is calcium chloride.	04
Ans. See Chapter 2, Long Ans. Type Q. No. 2.	
Or, Why does distilled water not conduct electricity whereas rain water does ?	
Ans. See Chapter 2, Long Ans. Type Q. No. 3.	
Q. 22. How can ethanol and ethanoic acid be differentiated on the basis of their physical and chemical properties ?	04
Ans. See Chapter 4, Long Ans. Type Q. No. 2.	
Or, How are clothes cleaned by detergents ?	
Ans. See Chapter 4, Long Ans. Type Q. No. 4.	
Q. 23. Write the differences between respiration and photosynthesis.	04
Ans. See Chapter 5, Short Ans. Type Q. No. 9.	
Or, Describe the components of blood along with their functions.	
Ans. See Chapter 5, Short Ans. Type Q. No. 11.	

### EXPECTED QUESTION PAPER SET-II

Instructions : See previously.

- Q. 1. Choose the correct option of the following: (1 × 06 = 06)
- The xylem in plants is responsible for :
 

(a) Transport of oxygen	(b) Transport of food
(c) Transport of water	(d) Transport of acid.





# **Model Question Paper Set - I**

**Mathematics (M.P.) : Class X**

Time: 3 hours

MM : 75

**Instructions :**

- (i) All questions are compulsory.
  - (ii) Q. No. 1 to 5 are objective type questions in which multiple choice questions are of 06 marks, fill in the blanks are of 06 marks, true/ false are of 06 marks, match the columns are of 06 marks and answer in one word / sentence questions are of 06 marks. Each questions carry 6 marks and each sub question carry 1 mark.
  - (iii) Q. No. 6 to 17 carries 2 marks each.
  - (iv) Q. No. 18 to 20 carries 3 marks each.
  - (v) Q. No. 21 to 23 carries 4 marks each.
  - (vi) Q. No. 6 to 23 has internal options.

Part-'A'

Q. 1. Choose the correct option of the following :



**Ans.** 1. (b), 2. (a), 3. (d), 4. (d), 5. (c), 6. (c).

**O. 2. Fill in the blanks :**

1. All circles are ..... (congruent/similar)
  2. The probability of sure event is always ..... (1/0)
  3.  $3\sqrt{2}$  is a ..... number. (rational/irrational)
  4. Zeroes of the linear polynomial  $ax+b=0$  is .....  $\left(\frac{-a}{b} \text{ or } \frac{-b}{a}\right)$
  5. The value of  $\pi$  is given by Indian mathematician ..... (Aryabhatta/Ramanujan)
  6. ..... is the unit of central tendency which gives the value of middle in the given data. (Mean/mode)

**Ans.** 1. Similar, 2. 1, 3. Irrational, 4.  $\frac{-a}{b}$ , 5. Aryabhatta, 6. Mean.

**Q. 3. Write True or False :**

1. Secant line intersect a circle in one point only.
  2. The angle of elevation increases while the length of shadow of a tower increases.
  3. Point  $P(-8, 6)$  lies in second quadrant.

4. Abscissa of any point is zero, then it lies of Y axis.  
 5. Hypotenuse is the longest side in a right angle triangle.  
 6. The perimeter two similar triangle is equal in length.

**Ans.** 1. False, 2. False, 3. True, 4. True, 5. True, 6. False.

**Q. 4. Match the columns :**

Column 'A'	Column 'B'
1. $\tan \theta$	(a) $\frac{4}{3}\pi R^3$
2. $\sin^2(25^\circ) + \cos^2(25^\circ)$	(b) $\frac{\theta}{360^\circ} \times \pi r^2$
3. $\sin 45^\circ + \cos 45^\circ$	(c) 1
4. Volume of cone	(d) $\sqrt{2}$
5. Volume of sphere	(e) $\frac{1}{3}\pi r^2 h$
6. Area of sector of circle	(f) $\frac{\sin \theta}{\cos \theta}$

**Ans.** 1. (f), 2. (c), 3. (d), 4. (e), 5. (a), 6. (b).

**Q. 5. Write the answer in one word / sentence :**

1. Write the formula of discriminant of the quadratic equation  $ax^2 + bx + c = 0$ .
2. Write value of  $x$  in  $x(x-1) = 0$ .
3. The sum of the 8 term of the series 5, 10, 15 ....?
4. Write the formula of  $n$  terms of an arithmetic progression.
5. What is the probability of impossible events ?
6. A line intersecting a circle in two points is called.

**Ans.** 1.  $D = b^2 - 4ac$ , 2.  $x = 0, 1$ , 3. 180, 4.  $S_n = \frac{n}{2}[2a + (n-1)d]$ , 5. 0, 6. Secant line.

#### Part-'B'

**Q. 6. Find HCF of 12, 15, 21 by prime factorisation method.**

**Ans.** See Chapter 1, Short Ans. Type Q. No. 2(iv).

**Or,** Find LCM of 8, 9, 25 by prime factorisation method.

**Ans.** See Chapter 1, Short Ans. Type Q. No. 2(ii).

**Q. 7. Prove that  $5 - \sqrt{3}$  is irrational number.**

**Ans.** See Chapter 1, Short Ans. Type Q. No. 8.

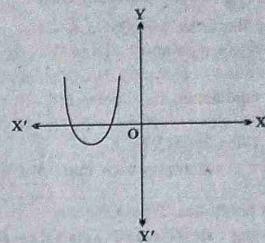
**Or,** Prove that  $3\sqrt{2}$  is irrational number.

**Ans.** See Chapter 1, Long Ans. Type Q. No. 2.

**Q. 8. Find a quadratic polynomial, the sum and product of whose zeroes are -3 and 2, respectively.**

**Ans.** See Chapter 2, Very Short Ans. Type Q. No. 4.

**Or,** The graph of polynomial  $y = p(x)$  given in the figure. Find the number of zeroes of  $p(x)$ .



**Ans.** See Chapter 2, Very Short Ans. Type Q. No. 6 (ii).

**Q. 9. Find the zeroes of the quadratic polynomials  $6x^2 - 3 - 7x$ .**

**Ans.** See Chapter 2, Short Ans. Type Q. No. 4.

**Or,** Find the zeroes of the polynomials  $x^2 + 7x + 10$  and the relationship between the zeroes and the coefficients.

**Ans.** See Chapter 2, Short Ans. Type Q. No. 1(iii).

**Q. 10. Find out whether the linear equations  $5x - 4y + 8 = 0$ ,  $7x + 6y - 9 = 0$  represent intersect at a point, parallel or coincident.**

**Ans.** See Chapter 3, Very Short Ans. Type Q. No. 1 (i).

**Or,** Find out whether  $3x + 2y = 5$ ,  $2x - 3y = 7$  are consistent or inconsistent.

**Ans.** See Chapter 3, Very Short Ans. Type Q. No. 3(i).

**Q. 11. Find two numbers whose sum is 17 and product is 72.**

**Ans.** See Chapter 4, Long Ans. Type Q. No. 2.

**Or,** Solve the following equation by factorisation method :

$$\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0.$$

**Ans.** See Chapter 4, Short Ans. Type Q. No. 5.

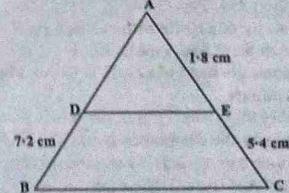
**Q. 12. Find the number of terms in each of the following A.P. : 7, 13, 19, ..., 205.**

**Ans.** See Chapter 5, Very Short Ans. Type Q. No. 3(i).

**Or,** Which terms of the A.P. : 3, 8, 13, 18, ... is 78?

**Ans.** See Chapter 5, Short Ans. Type Q. No. 1.

**Q. 13. In the given figure  $DE \parallel BC$  then find the value of AD.**



**Ans.** See Chapter 6, Very Short Ans. Type Q. No. 3.

- Or, If a line intersects the side of a triangle  $\Delta ABC$ ,  $AB$  and  $AC$  at the point D and E, then prove that  $\frac{AD}{AB} = \frac{AE}{AC}$ , when  $DE \parallel BC$ .
- Ans. See Chapter 6, Very Short Ans. Type Q. No. 6.
- Q. 14. Find the distance between points  $(0, 0)$  and  $(36, 15)$ .
- Ans. See Chapter 7, Very Short Ans. Type Q. No. 6.
- Or, If point  $Q(0, 1)$  is equidistant from point  $P(5, -3)$  and  $R(x, 6)$  then find the value of  $x$ .
- Ans. See Chapter 7, Short Ans. Type Q. No. 5.
- Q. 15. If  $\angle A$  and  $\angle B$  are acute angles such that  $\cos A = \cos B$  then, show that :  $\angle A = \angle B$ .
- Ans. See Chapter 8, Very Short Ans. Type Q. No. 2.
- Or, Evaluate the following :  $\sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ$ .
- Ans. See Chapter 8, Very Short Ans. Type Q. No. 3(i).
- Q. 16. Harpreet tosses two different coins simultaneously. What is the probability that she gets at least one head ?
- Ans. See Chapter 14, Very Short Ans. Type Q. No. 6.
- Or, A die is thrown once what will be the probability of getting bigger number than 4 ?
- Ans. See Chapter 14, Short Ans. Type Q. No. 7(i).
- Q. 17. A box contains 3 blue, 2 white and 4 red marbles. A marble is drawn at random from the box, what is the probability that will be a (i) white ?, (ii) blue ?, (iii) red ?
- Ans. See Chapter 14, Long Ans. Type Q. No. 4.
- Or, If  $P(E)=0.05$ , what is the probability of 'not' E ?
- Ans. See Chapter 14, Very Short Ans. Type Q. No. 4.
- Q. 18. The angle of elevation of the top of a tower from a point on the ground, which is 30 m away from the foot of the tower is  $30^\circ$ . Find the height of tower.
- Ans. See Chapter 9, Short Ans. Type Q. No. 3.
- Or, A kite is flying at a height of 60 m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is  $60^\circ$ . Find the length of the string, assuming that there is no slack in the string.
- Ans. See Chapter 9, Short Ans. Type Q. No. 4.
- Q. 19. From a point  $Q$  the length of the tangent to a circle is 24 cm and the distance of  $Q$  from the centre is 25 cm, then find the radius of a circle.
- Ans. See Chapter 10, Very Short Ans. Type Q. No. 5.
- Or, Prove that the tangents drawn at the ends of a diameter of a circle are parallel.
- Ans. See Chapter 10, Short Ans. Type Q. No. 2.
- Q. 20. Find the area of sector of a circle with radius 6 cm if angle of the sector is  $60^\circ$ .
- Ans. See Chapter 11, Very Short Ans. Type Q. No. 1.
- Or, The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand is 5 minute.
- Ans. See Chapter 11, Very Short Ans. Type Q. No. 5.
- Q. 21. Solve the equations by the elimination method :
- (i)  $3x+4y=10$  and  $2x-2y=2$ .
- Ans. See Chapter 3, Short Ans. Type Q. No. 4 (ii).
- Or, The larger of two supplementary angles exceeds the smaller by  $18^\circ$ , find them.
- Ans. See Chapter 3, Short Ans. Type Q. No. 3(ii).

$(TT), (HH), (TH), (HT)$

- Q. 22. A medicine capsule is in the shape of cylinder which having shaped hemispherical in the both ends. The length of capsule is 14 mm and diameter of capsule is 5 mm. Find its total surface area.
- Ans. See Chapter 12, Long Ans. Type Q. No. 6.
- Or, 2 cubes each of volume  $64\text{cm}^3$  are joined end to end. Find the surface area of the resulting cuboid.
- Ans. See Chapter 12, Short Ans. Type Q. No. 1.
- Q. 23. Consider the following distribution of daily wages of 50 workers of a factory :

Daily wages (in Rs.)	500 – 520	520 – 540	540 – 560	560 – 580	580 – 600
Number of workers	12	14	8	6	10

Find the mean daily wages of the workers of the factory.

- Ans. See Chapter 13, Short Ans. Type Q. No. 6.
- Or, The following table shows the ages of the patients admitted in a hospital during a year :
- | Age (in years)     | 5 – 15 | 15 – 25 | 25 – 35 | 35 – 45 | 45 – 55 | 55 – 65 |
|--------------------|--------|---------|---------|---------|---------|---------|
| Number of patients | 6      | 11      | 21      | 23      | 14      | 5       |
- Ans. See Chapter 13, Long Ans. Type Q. No. 2.

## Model Question Paper Set -II

Instructions : See Previously.

### Part-'A'

- Q. 1. Choose the correct option :
- $n^2 - 1$ , is divisible by 8 if  $n = ?$ 
    - Whole number
    - Prime number
    - An odd whole number
    - An even whole number.
  - The condition for "Unique solution" for the linear equation  $a_1x + b_1y + c_1 = 0$  and  $a_2x + b_2y + c_2 = 0$  is :
    - $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$
    - $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
    - $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$
    - $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$
  - If first two term of an A.P. is  $-3$  and  $4$  than  $21^{\text{st}}$  term will be :
    - 143
    - 143
    - 137
    - 17.
  - From a point 100 m apart the angle of elevation of a tower is  $60^\circ$ , then the height of the tower is :
    - $100\sqrt{3}$  m
    - $50\sqrt{3}$  m
    - $\frac{100}{\sqrt{3}}$  m
    - $\frac{50}{\sqrt{3}}$  m.
  - Distance of a point  $A(2, 3)$  from  $X$ -axis is :
    - 2
    - 3
    - 1
    - 5.
  - Standard form of quadratic equation is :
    - $a^2x + bx + c = 0$
    - $ax^2 - bx + c = 0$
    - $ax^2 + bx + c = 0$
    - $ax^2 + bx + c^2 = 0$ .

Ans. 1, (c), 2, (d), 3, (c), 4, (a), 5, (a), 6, (c).

**Q. 2. Fill in the blanks :**

1. Corresponding sides of similar triangle are .....
  2. If  $P(E) = 0.05$  then  $P(\bar{E})$  is .....
  3. Sum of zeroes of polynomial  $x^2 - 4x + 1$  .....
  4. The radius of a circle is ..... of the diameter.
  5. HCF of 4 and 7 is .....
  6. Term having maximum frequency in data is called .....
- Ans.** 1. Proportional, 2. 0.95, 3. 4, 4. Half, 5. 1, 6. Mode.

**Q. 3. Write True or False :**

1. Radius of a circle passing through the tangent is equal to the length of tangent line.
  2. When we look above the horizontal plane, the angle between the line of sight and the horizontal line is the angle of depression.
  3. Abscissa of any point is zero, then the lies on Y-axis.
  4. Distance of point  $(x, y)$  from origin is  $\sqrt{x^2 + y^2}$ .
  5. All congruent shapes are similar.
  6. Two right angled triangles are similar triangle.
- Ans.** 1. False, 2. False, 3. True, 4. True, 5. True, 6. True.

**Q. 4. Match the columns :**

Column 'A'	Column 'B'
1. $\sqrt{\sec^2 \theta - \tan^2 \theta}$	(a) $\cos \theta$
2. $\sec \theta / \tan \theta$	(b) $\pi r l$
3. $\sqrt{1 - \sin^2 \theta}$	(c) 1
4. Area of circle, radius = $r$	(d) $1/\sin \theta$
5. Curved surface of cylinder	(e) $\pi r^2$
6. Curved surface area of cone	(f) $2\pi r h$ .

**Ans.** 1. (c), 2. (d), 3. (a), 4. (e), 5. (f), 6. (b).

**Q. 5. Write the answer in one word / sentence :**

1. If  $a, b$  and  $c$  are real numbers and  $a \neq 0$ , then the quadratic equation in which form?
  2. If the discriminant of quadratic equation is 0, then which type of roots we get?
  3. The difference between two consecutive terms of an arithmetic progression is called?
  4. Which term of A.P., 3, 6, 9, .... is 27?
  5. The probability of sum event is always ?
  6. How many tangents can be drawn to a circle ?
- Ans.** 1.  $ax^2 + bx + c = 0$ , 2. Equal, 3. Common difference, 4. 9<sup>th</sup>, 5. 1, 6. Infinite.

**Part-B'**

- Q. 6. Find the LCM and HCF of 6 and 20 by the prime factorisation method.**
- Ans.** See Chapter 1, Very Short Ans. Type Q. No. 5.

- Or,** Find the LCM and HCF of the pair of integers 510 and 92 and verify that  $LCM \times HCF = \text{Product of the two numbers.}$
- Ans.** See Chapter 1, Long Ans. Type Q. No. 3.

- Q. 7. Prove that  $1/\sqrt{2}$  is an irrational number.**
- Ans.** See Chapter 1, Short Ans. Type Q. No. 9(i).

- Or,** Check whether  $6^n$  can end with the digit 0 for any natural number  $n$ .
- Ans.** See Chapter 1, Short Ans. Type Q. No. 7.

**Q. 8. Find the zeroes of the quadratic polynomial  $6x^2 - 3 - 7x$ .**

**Ans.** See Chapter 2, Short Ans. Type Q. No. 4.

- Or,** Find the quadratic polynomial whose sum and product is  $1/4$  and  $-1$  respectively.

**Ans.** See Chapter 2, Very Short Ans. Type Q. No. 9.

- Q. 9. Find the zeroes of the polynomial  $x^2 - 3$  and verify the relationship between the zeroes and the coefficients.**

**Ans.** See Chapter 2, Very Short Ans. Type Q. No. 5.

- Or,** Find the zeroes of the polynomial  $t^2 - 15$  and verify the relationship between the zeroes and the coefficients.

**Ans.** See Chapter 2, Very Short Ans. Type Q. No. 2.

- Q. 10. Tell following pairs of linear equation  $9x + 3y + 12 = 0$  and  $18x + 6y + 24 = 0$  intersect at a point or parallel or coincident.**

**Ans.** See Chapter 3, Very Short Ans. Type Q. No. 1(ii).

- Or,** Solve  $2x + 3y = 11$  and  $2x - 4y = -24$  and hence find the value of 'm' for which  $y = mx + 3$ .

**Ans.** See Chapter 3, Short Ans. Type Q. No. 2.

- Q. 11. Find the value of 'k' for the quadratic equation  $2x^2 + kx + 3 = 0$  have equal roots.**

**Ans.** See Chapter 4, Very Short Ans. Type Q. No. 2.

- Or,** Find the roots of the quadratic equation  $6x^2 - x - 2$ .

**Ans.** See Chapter 4, Very Short Ans. Type Q. No. 3.

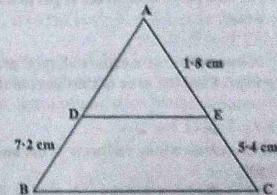
- Q. 12. Find the 31<sup>st</sup> term of an A.P. whose 11<sup>th</sup> term is 38 and the 16<sup>th</sup> term is 73.**

**Ans.** See Chapter 5, Short Ans. Type Q. No. 3.

- Or,** Find the sum of the first 15 multiples of 8.

**Ans.** See Chapter 5, Short Ans. Type Q. No. 4.

- Q. 13. In the given DE||BC then find the value of AD.**



**Ans.** See Chapter 6, Very Short Ans. Type Q. No. 3.

- Or,** If a line intersects sides  $AB$  and  $AC$  of a  $\triangle ABC$  at  $D$  and  $E$  respectively and is parallel to  $BC$ , then prove that  $AD/AB : AE/AC$ .

**Ans.** See Chapter 6, Very Short Ans. Type Q. No. 6.

- Q. 14. If the points  $A(6, 1)$ ,  $B(8, 2)$ ,  $C(9, 4)$  and  $D(P, 3)$  are the vertices of a parallelogram, taken in order, find the value of  $P$ .**

**Ans.** See Chapter 7, Short Ans. Type Q. No. 1.

- Or,** Find the value of  $y$  for which the distance between the points  $P(2, -3)$  and  $Q(10, y)$  is 10 units.

**Ans.** See Chapter 7, Very Short Ans. Type Q. No. 4.

Q. 15. Find the value of :  $2\tan^2 45^\circ + \cos^2 30^\circ - \sin^2 60^\circ$ .

Ans. See Chapter 8, Very Short Ans. Type Q. No. 3 (ii).

Or, If is  $\cot A = 8$  then find the value of  $\sin A$ .

Ans. See Chapter 8, Very Short Ans. Type Q. No. 6.

Q. 16. A die is thrown ? What is the probability of getting even number ?

Ans. See Chapter 14, Very Short Ans. Type Q. No. 1(A).

Or, A game consists of tossing a one rupee coin 3 times and noting its outcome each time. Hanif wins if all the tosses give the same result i.e., three heads or three tails, and losses otherwise. Calculate the probability that Hanif will loss the game.

Ans. See Chapter 14, Short Ans. Type Q. No. 3.

Q. 17. A lot of 20 bulbs contain 4 defective bulbs. One bulb is drawn at random from the lot. What is the probability that this bulb is defective ?

Ans. See Chapter 14, Long Ans. Type Q. No. 7(i).

Or, A die is thrown once. What will be the probability of getting bigger number than 4.

Ans. See Chapter 14, Short Ans. Type Q. No. 7(i).

Q. 18. The angle of elevation of the top of a tower from a point on the ground, which is 15 m away from the foot of the tower is  $60^\circ$ . Find the height of tower.

Ans. See Chapter 9, Short Ans. Type Q. No. 6.

Or, From a point  $P$  on the ground the angle of elevation of the top of a 10 meter tall building is  $30^\circ$ . A flag is hoisted at the top of the building and the angle of elevation of the top of the flagstaff from  $P$  is  $45^\circ$ . Find the length of the flagstaff and the distance of the building from the point  $P$ .

Ans. See Chapter 9, Long Ans. Type Q. No. 6.

Q. 19. If tangent  $PA$  and  $PB$  from a point  $P$  to a circle with centre  $O$  are inclined to each other at angle of  $80^\circ$ , then find the value of  $\angle POA$ .

Ans. See Chapter 10, Short Ans. Type Q. No. 1.

Or, Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.

Ans. See Chapter 10, Short Ans. Type Q. No. 7.

Q. 20. A horse is tied to a beg at one corner or a square shaped grass field of side 15 m by means of a 5 m long rope. Find the area of that part of the field in which the horse can graze.

Ans. See Chapter 11, Long Ans. Type Q. No. 2(i).

Or, Find the area of a sector of a circle whose radius is 12 cm and its chord makes an angle to the centre is  $120^\circ$ .

Ans. See Chapter 11, Short Ans. Type Q. No. 1.

Q. 21. A wooden article was made by a scooping out a hemisphere form each end of a solid cylinder is 10 cm and its base is of radius 3.5 cm. Find the total surface area of the article.

Ans. See Chapter 12, Short Ans. Type Q. No. 3.

Or, A conical section is cut from the cylinder of height 2.4 cm and diameter 1.4 cm. Find the curved surface area of remaining of solid.

Ans. See Chapter 12, Long Ans. Type Q. No. 5.

Q. 22. If we add one to the new numerator and subtract 1 to the denominator of the fraction it becomes 1 and if we add 1 to its denominator then it become  $1/2$ . Find the fraction.

Ans. See Chapter 3, Short Ans. Type Q. No. 5.

Or, Solve the following linear pair of equations :

$$3x + y = 10, 2x + 2y = 12.$$

Ans. See Chapter 3, Short Ans. Type Q. No. 4(i).

Q. 23. A survey conduct on 20 households is a locality by a group of students resulted in the following frequency table for the number of family member in a household.

Family size	1 – 3	3 – 5	5 – 7	7 – 9	9 – 11
Number of families	7	8	2	2	1

Find the mode of the given data.

Ans. See Chapter 13, Long Ans. Type Q. No. 7.

Or, Calculate the arithmetic mean by the following data :

Class interval	10 – 25	25 – 40	40 – 55	55 – 70	70 – 85	85 – 100
No. of students	2	3	7	6	6	6

Ans. See Chapter 13, Long Ans. Type Q. No. 8.

## Expected Question Paper Set-I

Instructions : See Previously.

Q. 1. Choose the correct option :

1. Product of non-zero rational number and irrational number is :  
 (a) Always rational number      (b) Always irrational number  
 (c) Rational or irrational      (d) None of these.

2. If  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ , then the system of equation gives :

- (a) Has a unique solution      (b) Has no solution  
 (c) Has infinitely many solution      (d) Two solutions.

3. If first term of an A.P. is 7 and  $a_{13} = 35$  then common difference is :

- (a) 24      (b)  $\frac{3}{7}$       (c)  $\frac{7}{3}$       (d)  $\frac{5}{3}$ .

4. The shadow of a pole is  $2\sqrt{3}$  m. If the height of the pole is 6 meter. Then the Sun's altitude is :

- (a)  $30^\circ$       (b)  $45^\circ$       (c)  $60^\circ$       (d)  $90^\circ$ .

5. Coordinate of a point on X-axis whose distance from X-axis is 4 units, will be :

- (a) (0, 4)      (b) (4, 0)      (c) (0, -4)      (d) (0, 0).

6. The quadratic equation has maximum number of roots :

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

Ans. 1. (b), 2. (b), 3. (c), 4. (a), 5. (b), 6. (c).

Q. 2. Fill in the blanks :

1. All ..... triangles are similar.

2. The distance covered by one round of a circle is known as ..... of circle.

3. In a quadratic polynomial maximum number of zeroes is ..... .

4.  $1 - P(E) = \dots$

5.  $5 - \sqrt{2}$  is ..... number.

6. 3 median = ..... + 2 mean.

Ans. 1. Equilateral, 2. Circumference, 3. 2, 4.  $P(E)$ , 5. Irrational, 6. Mode.

Q. 3. Write True or False :

1. The tangents drawn from an external point to a circle are unequal.

2. Angle of elevation of always obtuse angle.

3. Distance of any point from Y-axis is called coordinate of Y of that point.

4. Distance between (4, 0) and (0, 3) is 5 unit.

5. Corresponding angles of similar triangle is equal.

6. All angles of equilateral triangle is  $60^\circ$ .

Ans. 1. False, 2. False, 3. False, 4. True, 5. True, 6. True.

Q. 4. Match the columns :

Column 'A'	Column 'B'
1. $1 + \cot^2 \theta$	(a) $\frac{\sqrt{3}}{2}$
2. $\sin 60^\circ$	(b) $2\pi r^2$
3. $2\tan \theta \cot \theta$	(c) $\operatorname{cosec}^2 \theta$
4. Surface area of hemisphere	(d) $\frac{2\pi r\theta}{360^\circ}$
5. Curves surface area of cone	(e) 2
6. Length of arc of a circle	(f) $\pi r l$ .

Ans. 1. (c), 2. (a), 3. (e), 4. (b), 5. (f), 6. (d).

Q. 5. Write the answer in one word / sentence :

1. The zeroes of the quadratic equation  $ax^2 + bx + c = 0$  are  $\alpha$  and  $\beta$  then write the value of  $\alpha + \beta$ .

2. Write the value of discriminant of equation  $x^2 - 4x + 4 = 0$ .

3. Is  $\frac{1}{3}, \frac{2}{3}, \dots$  in A.P. or not.

4. If  $n^{\text{th}}$  term of  $3 + 2n$  in A.P. then the first term of A.P. is ?

5. What is the probability of 53 Mondays in general (normal) year.

6. What is the name of the line intersecting a circle at only one point.

Ans. 1.  $-\frac{b}{a}$ , 2. 0, 3. Yes, 4. 5, 5.  $\frac{1}{7}$ , 6. Tangent.

Q. 6. Find the HCF and LCM of the number 336 and 54.

Ans. See Chapter 1, Short Ans. Type Q. No. 4 (ii).

Or, Find LCM (306, 657) if HCF (306, 657) = 9 (given).

Ans. See Chapter 1, Short Ans. Type Q. No. 3.

Q. 7. Write prime factorization of a number 140 and 156.

Ans. See Chapter 1, Very Short Ans. Type Q. No. 3 (i), (ii).

Or, Prove that  $7\sqrt{5}$  is an irrational number.

Ans. See Chapter 1, Short Ans. Type Q. No. 9 (ii).

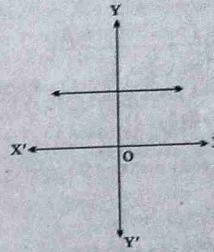
Q. 8. Find the zeroes of  $4u^2 + 8u$ .

Ans. See Chapter 2, Short Ans. Type Q. No. 2.

Or, Find the quadratic polynomial whose sum and product is  $\frac{1}{4}$  and -1 respectively.

Ans. See Chapter 2, Very Short Ans. Type Q. No. 9.

Q. 9. Number of zeroes of polynomial  $y = p(x)$  is what, (graph given)



Ans. See Chapter 2, Very Short Ans. Type Q. No. 7.

Or, Verify that  $3, -1, \frac{-1}{3}$  are the zeroes of the cubic polynomial  $3x^3 - 5x^2 - 11x - 3$ .

Ans. See Chapter 2, Long Ans. Type Q. No. 1.

Q. 10. The difference between two numbers is 26 and one number is three times the other. Find them.

Ans. See Chapter 3, Short Ans. Type Q. No. 3 (i).

Or, Solve the following pair of linear equations by the elimination method :

$$x + y = 5 \text{ and } 2x - 3y = 4.$$

Ans. See Chapter 3, Long Ans. Type Q. No. 2.

Q. 11. Verify whether  $x^2 - 2x = -2(3 - x)$  is a quadratic equation.

Ans. See Chapter 4, Very Short Ans. Type Q. No. 6.

Or, In the quadratic equation  $kx(x - 2) + 6 = 0$ , find the value of  $k$  when their roots are equal.

Ans. See Chapter 4, Short Ans. Type Q. No. 1.

Q. 12. The 17<sup>th</sup> term of an A.P. exceed its 10<sup>th</sup> term by 7. Find the common difference.

Ans. See Chapter 5, Very Short Ans. Type Q. No. 6.

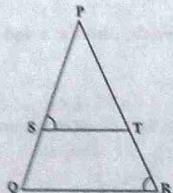
Or, Which terms of the A.P. : 3, 8, 13, 18, ... is 78 ?

Ans. See Chapter 5, Short Ans. Type Q. No. 1.

Q. 13. In a triangle  $PQR$ , E and F point are situated on the side  $PQ$  and  $PR$  then tell whether  $EF \parallel QR$ .

Ans. See Chapter 6, Short Ans. Type Q. No. 1.

Or, In the given figure  $\frac{PS}{SQ} = \frac{PT}{TR}$  and  $\angle PST = \angle PRQ$  then prove that  $\triangle PQR$  is an isosceles triangle.



Ans. See Chapter 6, Short Ans. Type Q. No. 4.

Q. 14. Find the coordinate of the point which divides the line joining the points  $(-1, 7)$  and  $(4, -3)$  in the ratio  $2 : 3$ .

Ans. See Chapter 7, Short Ans. Type Q. No. 2.

Or, Find a relation between  $x$  and  $y$  such that the point  $(x, y)$  is equidistant from the points  $(3, 0)$  and  $(-3, 4)$ .

Ans. See Chapter 7, Long Ans. Type Q. No. 5.

Q. 15. Prove by geometrical method :  $1 + \tan^2 A = \sec^2 A$ .

Ans. See Chapter 8, Short Ans. Type Q. No. 1(i).

Or, If  $\tan(A + B) = \sqrt{3}, \tan(A - B) = \frac{1}{\sqrt{3}}$  then find  $A$  and  $B$ .

Ans. See Chapter 8, Short Ans. Type Q. No. 3.

Q. 16. From a pack of 52 cards one card is drawn at random. Find the probability of getting a face card.

Ans. See Chapter 14, Short Ans. Type Q. No. 6.

Or, A die is thrown once. Find the probability of getting an odd number.

Ans. See Chapter 14, Long Ans. Type Q. No. 1(i).

Q. 17. If a person tosses two different coins simultaneously. What is the probability that she gets at least one head?

Ans. See Chapter 14, Very Short Ans. Type Q. No. 6.

Or, 12 defective pens are accidentally mixed with 102 good ones. It is not possible to just look at a pen and tell whether or not it is defective. One pen is taken out at random from the lot. Determine the probability that the pen taken out is a good one.

Ans. See Chapter 14, Short Ans. Type Q. No. 5.

Q. 18. An observer 1.5 m tall is 20.5 m away from a chimney. The angle of elevation of the top of the chimney from his eyes is  $45^\circ$ . Find the height of the chimney.

Ans. See Chapter 9, Short Ans. Type Q. No. 5.

Or, From the top of a 7 m high building, the angle of elevation of the top of a cable tower is  $60^\circ$  and the angle of depression of its foot is  $45^\circ$ . Determine the height of the tower.

Ans. See Chapter 9, Long Ans. Type Q. No. 3.

Q. 19. Prove that the length of two tangents drawn from an external point to a circle are equal.

Ans. See Chapter 10, Long Ans. Type Q. No. 1.

Or, From a point  $P$  the length of tangent to a circle is 8 cm and distance of  $P$  from the centre is 10 cm. Then find the radius of a circle.

Ans. See Chapter 10, Long Ans. Type Q. No. 2.

Q. 20. Find the area of the sector of a circle with radius 4 cm and of angle  $30^\circ$ . Also find the area of the corresponding major sector.

Ans. See Chapter 11, Short Ans. Type Q. No. 3.

Or, Find the area of a quadrant of a circle whose circumference is 22 cm.

Ans. See Chapter 11, Short Ans. Type Q. No. 2.

Q. 21. A hemisphere is put up in upper side of 7 cm cuboidal block. What will be the maximum diameter of hemisphere and also find the surface area.

Ans. See Chapter 12, Long Ans. Type Q. No. 8.

Or, A solid is in the shape of a cone standing on hemisphere with both their radii being equal to 1 cm and the height of the cone is equal to its radius. Find the volume of the solid in terms of  $\pi$ .

Ans. See Chapter 12, Short Ans. Type Q. No. 4.

Q. 22. The ratio of income of two person is  $9 : 7$  and ratio of their expenditure is  $4 : 3$ . If each person saves Rs. 2,000 in a month then find their monthly income.

Ans. See Chapter 3, Long Ans. Type Q. No. 1.

Or, The sum of digit of two digit number is 9. Nine times of this number is two times of the reversing the digits. Find that numbers.

Ans. See Chapter 3, Long Ans. Type Q. No. 3.

Q. 23. The table below shows the number of wickets taken by bowlers in one-day cricket matches. Find the mean number of wickets by choosing a suitable method :

Number of wicket	20 – 60	60 – 100	100 – 150	150 – 250	250 – 350	350 – 450
Number of bowlers	7	5	16	12	2	3

Ans. See Chapter 13, Long Ans. Type Q. No. 6.

Or, If the median of the distribution given below is 28.5 find the value of  $x$  and  $y$ :

Class interval	Frequency
0 – 10	5
10 – 20	$x$
20 – 30	20
30 – 40	15
40 – 50	$y$
50 – 60	5
Total	60

Ans. See Chapter 13, Long Ans. Type Q. No. 3.



Q. 9. Find the zeroes of the polynomial  $x^2 - 2x - 8$  and verify the relationship between the zeroes and the coefficient.

Ans. See Chapter 2, Short Ans. Type Q. No. 1(i).

Or, Write the definition of linear polynomial and quadratic polynomial with an example also.

Ans. See Chapter 2, Short Ans. Type Q. No. 3.

Q. 10. What is the nature of the lines (graphically),  $x + 2y - 4 = 0$  and  $2x + 4y - 12 = 0$ ?

Ans. See Chapter 3, Very Short Ans. Type Q. No. 4.

Or, Find out whether the following pair of linear equation is consistent or inconsistent  $2x - 3y = 8$ ,  $4x - 6y = 9$ .

Ans. See Chapter 3, Very Short Ans. Type Q. No. 3(ii).

Q. 11. Find the discriminant of the quadratic equation  $3x^2 - 2x + \frac{1}{3} = 0$ .

Ans. See Chapter 4, Short Ans. Type Q. No. 3.

Or, Find the roots by factorisation method  $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$ .

Ans. See Chapter 4, Short Ans. Type Q. No. 5.

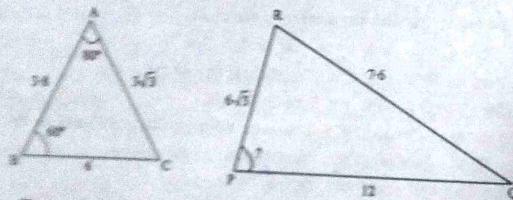
Q. 12. Find the number of terms in  $18, 15\frac{1}{2}, 13, \dots, -47$ .

Ans. See Chapter 5, Very Short Ans. Type Q. No. 3(ii).

Or, Find the sum of first 22 terms of the A.P.  $8, 3, -2, \dots$ .

Ans. See Chapter 5, Very Short Ans. Type Q. No. 4.

Q. 13. Find the value of  $\angle P$  in given figure :



Ans. See Chapter 6, Short Ans. Type Q. No. 7.

Or, A vertical pole of length 6 m casts shadow 4 m long on the ground at the same time a tower casts a shadow 28 m long. Find the height of the tower.

Ans. See Chapter 6, Short Ans. Type Q. No. 3.

Q. 14. Find the coordinates of a point A. Where AB is the diameter of a circle whose centre is (2, -3) and B (3, 4).

Ans. See Chapter 7, Very Short Ans. Type Q. No. 3.

Or, Find the co-ordinates of any point on X-axis, which is equidistant from points (-3, -5) and (-2, 5).

Ans. See Chapter 7, Very Short Ans. Type Q. No. 7.

Q. 15. If  $\sin A = \frac{3}{4}$ , calculate  $\cos A$  and  $\tan A$ .

Ans. See Chapter 8, Long Ans. Type Q. No. 7.

Or, If  $\angle B$  and  $\angle Q$  are acute angles such that  $\sin B = \sin Q$  then prove that  $\angle B = \angle Q$ .

Ans. See Chapter 8, Short Ans. Type Q. No. 4.

Q. 16. One card is drawn from a well-shuffled pack of 52 cards. Calculate the probability that the card will not be an ace.

Ans. See Chapter 14, Very Short Ans. Type Q. No. 7 (ii).

Or, A die is thrown once, what will be the probability of getting number 4 or less than 4 ?

Ans. See Chapter 14, Short Ans. Type Q. No. 7(ii).

Q. 17. A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from a box, find the probability that a perfect square number.

Ans. See Chapter 14, Long Ans. Type Q. No. 5(ii).

Or, It is given that in a group of 3 students, the probability of 2 students not having the same birthday is 0.992. What is the probability that the 2 students have the same birthday ?

Ans. See Chapter 14, Very Short Ans. Type Q. No. 5.

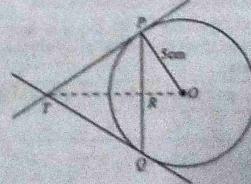
Q. 18. Two poles of equal heights are standing opposite to each other on either side of the road, which is 80m wide from a point between them on the road, the angles of elevation of the top of the poles are  $60^\circ$  and  $30^\circ$ , respectively. Find the height of the poles and the distance of the point from the poles.

Ans. See Chapter 9, Long Ans. Type Q. No. 4.

Or, A tree breaks due to storm and the broken part bend so that the top of the tree touches the ground making an angle  $30^\circ$  with it. The distance between the foot of the tree and the point where the top touch the ground is 8 m. Find the height of the tree.

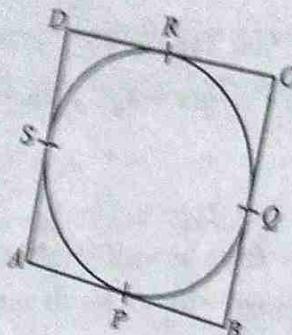
Ans. See Chapter 9, Short Ans. Type Q. No. 2.

Q. 19. PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangent at P and Q intersect at a point T (see figure). Find the length of TP.



Ans. See Chapter 10, Long Ans. Type Q. No. 3.

- Or. A quadrilateral ABCD is drawn to circumscribe a circle prove that  $AB + CD = AD + BC$ .



- Ans. See Chapter 10, Short Ans. Type Q. No. 5.
- Q. 20. Find the length of arc and area of sector of a circle whose radius is 21 cm and subtends an angle of  $60^\circ$  at the centre.
- Ans. See Chapter 11, Long Ans. Type Q. No. 3(i).
- Or. There are 8 spokes in an umbrella which are fixed in equal distance. Assuming umbrella as a circle of radius 45 cm. Find the area between two consecutive spokes.
- Ans. See Chapter 11, Long Ans. Type Q. No. 4.
- Q. 21. A conical section is cut from the cylinder of height 2.4 cm and diameter 1.4 cm. Find the curved area of remaining of solid.
- Ans. See Chapter 12, Long Ans. Type Q. No. 5.
- Or. A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of same radius. The total height of the toy is 15.5 cm. Find the total surface area of toy.
- Ans. See Chapter 12, Long Ans. Type Q. No. 1.
- Q. 22. The sum of a two digit number and number obtained by reversing the digits is 66. If the digits of the number difference by 2. Find the number.
- Ans. See Chapter 3, Long Ans. Type Q. No. 5.
- Or. A rectangular park whose length is 4 more than its breadth, its half circumference is 36 m. Then find the length and breadth by graphical method.
- Ans. See Chapter 3, Long Ans. Type Q. No. 8.
- Q. 23. Following table shows the daily expenditure on food of 25 families of a locality :

Daily Expenditure	100 – 150	150 – 200	200 – 250	250 – 300	300 – 350
No. of families	4	5	12	2	2

Calculate mean expenditure by suitable method.

- Ans. See Chapter 13, Short Ans. Type Q. No. 7.
- Or. The distribution below gives the weight of 30 students of class. Find the median weight of the students :

Weight (in kg)	40 – 45	45 – 50	50 – 55	55 – 60	60 – 65	65 – 70	70 – 75
Number of students	2	3	8	6	6	3	2

- Ans. See Chapter 13, Short Ans. Type Q. No. 5.