

Date: 30-10-2023

F.S.E. - 2023

Time: 2 Hrs.

Std. X

Maths Part -(II)

Marks : 40

A

Instructions -

- 1) All questions are compulsory.
- 2) Use of calculator is not allowed.
- 3) The numbers to the right side of the questions indicate full marks.
- 4) In case of MCQs [Q.No.1.(A)] only the first attempt will be evaluated and will be given credit.
- 5) For every MCQ, the correct alternative (A), (B), (C) or (D) with sub-question number is to be written as an answer.
- 6) Draw the proper figures for answers wherever necessary.
- 7) The marks of construction should be clear and distinct. Do not erase them.
- 8) Diagram is essential for writing the proof of the theorem.

Q.1 A) Choose the correct answer and write the alphabet of it in front of the subquestion number.

4

1) $\Delta ABC \sim \Delta PQR$, $A(\Delta ABC) = 9$, $A(\Delta PQR) = 16$ then $AB:PQ = ?$

A) $\frac{9}{16}$

B) $\frac{3}{4}$

C) $\frac{3}{16}$

D) $\frac{9}{4}$

2) The maximum number of tangents that can be drawn to a circle from a point outside it is _____.

A) 2

B) one and only one

C) 1

D) 0

3) In a triangle with side lengths x, y, z and if $x^2 + y^2 = z^2$ then the triangle is an _____ triangle.

A) Obtuse angled

B) Acute angled

C) Right angled

D) Equilateral

4) Co-ordinates of origin are _____.

A) (1, 1)

B) (0, 0)

C) (1, 0)

D) (0, 1)

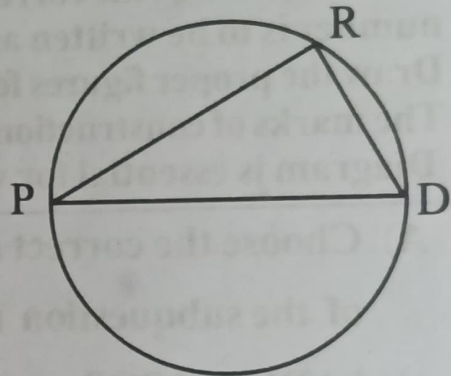
Q.1 B) Solve the following subquestions.

1) In ΔPQR and ΔLMN , $PQ = 6$, $QR = 8$, $PR = 10$ and $LM = 3$, $MN = 4$, $LN = 5$ then state by which test the given triangles are similar?

2) In ΔABC , $\angle B = 90^\circ$, $\angle A = 30^\circ$, $AC = 14$, then find BC .

3) Find the distance between the points $O(0, 0)$ and $P(3, -4)$

4) In adjacent figure seg PD is a diameter and R is any point on the circle then find $\angle PRD$.



Q.2 A) Complete any two activities of the following.

1) In adjacent figure, $\angle L = 35^\circ$ then find

(i) $m(\text{arc } MN) = ?$ (ii) $m(\text{arc } MLN) = ?$

Solution: (i) $\angle L = \frac{1}{2} m(\text{arc } MN) \dots\dots$

(Inscribed angle theorem.)

$\therefore \square = \frac{1}{2} m(\text{arc } MN)$

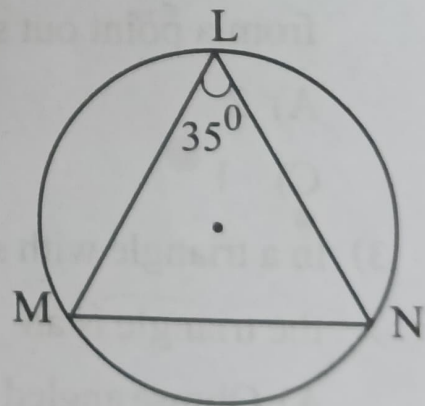
$\therefore 2 \times 35 = m(\text{arc } MN)$

$\therefore m(\text{arc } MN) = \square$

(ii) $m(\text{arc } MLN) = \square - m(\text{arc } MN)$

(definition of measure of arc)

$m(\text{arc } MLN) = 360^\circ - 70^\circ = \square$



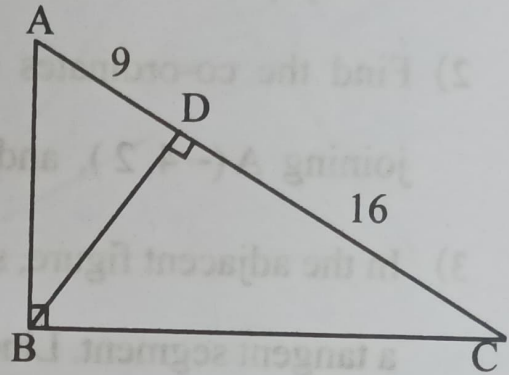
Q.2 A) 2) In the following figure, $\angle ABC = 90^\circ$, seg $BD \perp$ seg AC , $AD = 9$, $DC = 16$ then find BD .

Solution: In $\triangle ABC$, seg $BD \perp$ seg AC

$\therefore BD^2 = AD \times DC$ (Theorem of geometric mean)

$\therefore BD = \sqrt{\dots \times \dots}$
 $= \sqrt{9 \times \dots}$
 $= \dots \times 4$

$\therefore \dots = 12$



3) In $\triangle PQR$, seg PM is median. Angle bisectors of $\angle PMQ$ and $\angle PMR$ intersect side PQ and side PR in points X and Y respectively. Prove that $XY \parallel QR$.

Solution: In $\triangle PMQ$ ray MX is bisector of $\angle PMQ$.

$\therefore \frac{MP}{MQ} = \dots$ (Theorem of angle bisector—(I))

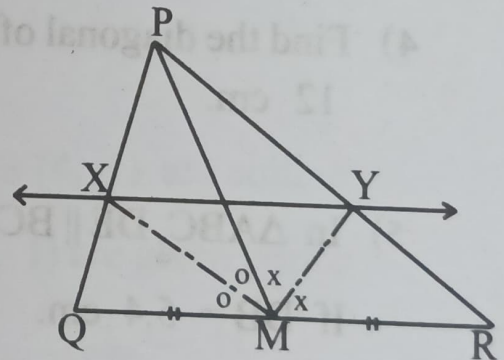
In $\triangle PMR$, ray MY is bisector of $\angle PMR$.

$\therefore \frac{MP}{MR} = \frac{PY}{YR}$ (Theorem of angle bisector—(II))

but $\frac{MP}{MQ} = \frac{MP}{MR}$ (M is the mid point of $QR \therefore MQ = MR$) —(III)

$\therefore \frac{PX}{\dots} = \frac{\dots}{YR}$ (From equation (I), (II) and (III))

$\therefore XY \parallel QR$ (Converse of proportionality theorem)



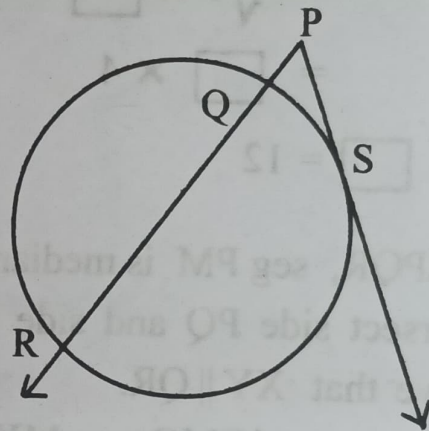
Q.2 B) Solve any four subquestions of the following.

8

1) Construct a tangent to a circle with centre P and radius 3.2 cm. at any point D on it.

2) Find the co-ordinates of the midpoint P of the line segment joining A (-4, 2), and B (6, 2).

3) In the adjacent figure, seg PS is a tangent segment. Line PR is a secant. If $PQ = 3.6$, $QR = 6.4$, find PS.



4) Find the diagonal of a rectangle whose length is 35 cm. and 12 cm.

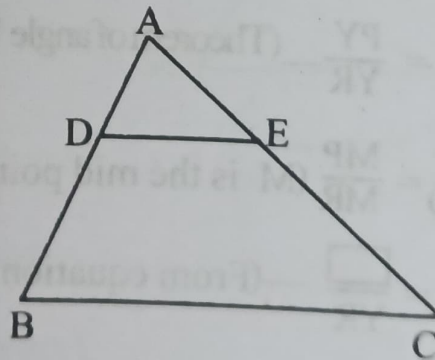
5) In $\triangle ABC$, $DE \parallel BC$.

If $DB = 5.4$ cm.

$AD = 1.8$ cm.

$EC = 7.2$ cm.

then find AE.



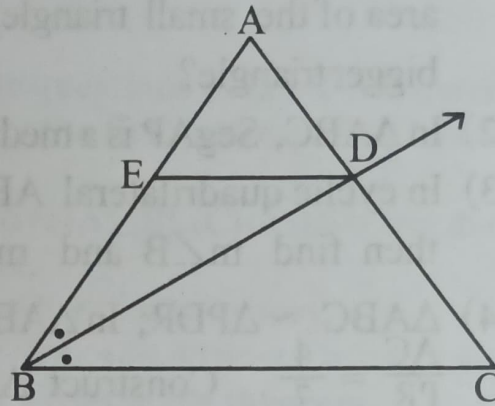
Q.3 A) Complete any one activity of the following.

3

- 1) In $\triangle ABC$,
 ray BD bisects $\angle ABC$
 A-D-C, side DE \parallel side BC,
 A-E-B then prove that,

$$\frac{AB}{BC} = \frac{AE}{EB}$$

Proof: In $\triangle ABC$, ray BD
 bisects $\angle B$.



$$\therefore \frac{AB}{BC} = \frac{\boxed{}}{DC} \dots\dots(\text{Angle bisector theorem} \text{---(I)})$$

In $\triangle ABC$, DE \parallel BC,

$$\therefore \frac{AE}{\boxed{}} = \frac{AD}{DC} \dots\dots(\boxed{}) \dots\dots(\text{II})$$

$$\therefore \frac{AB}{\boxed{}} = \frac{\boxed{}}{EB} \dots\dots(\boxed{})$$

- 2) Show that point P (- 2, 3), Q (1, 2), R (4, 1) are collinear.

Solution: P (- 2, - 3), Q (1, 2), R (4, 1) are given points.

$$\therefore \text{Slope of line PQ} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\boxed{}}{1 - (-2)} = - \frac{1}{\boxed{}} \dots\dots(\text{I})$$

$$\therefore \text{Slope of line QR} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 2}{\boxed{}} = - \frac{\boxed{}}{3} \dots\dots(\text{II})$$

$$\therefore \text{Slope of line PQ and line QR is } \boxed{} \dots\dots(\text{From (I) and (II)})$$

But point Q lies on both the lines.

$$\therefore \text{Points } \boxed{}, \boxed{}, \boxed{} \text{ are collinear.}$$

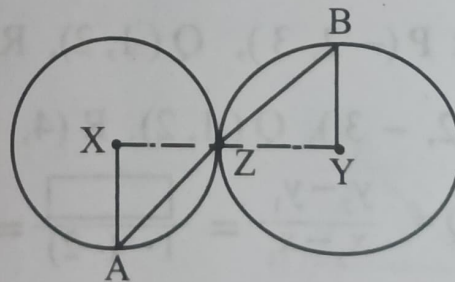
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Q.3 B) Solve any two subquestions of the following. 6

- 1) Ratio of corresponding sides of two similar triangles is 2 : 5, If the area of the small triangle is 64 sq.cm. then what is the area of the bigger triangle?
- 2) In $\triangle ABC$, Seg AP is a median. If $BC=18$, $AB^2 + AC^2 = 260$. Find AP.
- 3) In cyclic quadrilateral ABCD, $\angle B = (5x - 17)^\circ$ and $\angle D = (4x + 8)^\circ$ then find $m\angle B$ and $m\angle D$.
- 4) $\triangle ABC \sim \triangle PDR$; In $\triangle ABC$, $AB = 5.1$ cm., $\angle B = 40^\circ$, $BC = 4.8$ cm. $\frac{AC}{PR} = \frac{4}{7}$. Construct $\triangle ABC$ and $\triangle PDR$.

Q.4 Solve any two subquestions of the following. 8

- 1) In $\triangle ABC$, seg $DE \parallel$ seg BC , If $2A(\triangle ADE) = A(\square DBCE)$, then show that $AB:AD$ and $BC = \sqrt{3} DE$.
- 2) Construct a circle of any radius. Take any point A on it. Construct tangent to the circle without using centre of the circle.
- 3) In the adjoining figure circles with centres X and Y touch each other at point Z intersects the circles at point A and B respectively. Prove that $XA \parallel$ radius YB .



Q.5 Solve any one subquestion of the following. 3

- 1) $\triangle PQR \sim \triangle PST$, In $\triangle PQR$, $PQ = 6.4$ cm., $\angle RQP = 50^\circ$, $PR = 5.7$ cm. and $\frac{PQ}{PS} = \frac{7}{5}$ then construct $\triangle PST$.
- 2) If $P(6, 1)$, $R(8, 2)$, $A(9, 4)$ and $D(7, 3)$ are the vertices of $\square PRAD$ then show that $\square PRAD$ is a parallelogram.

FIRST SEMESTER EXAMINATION - 2023

MATHS-Part -(1)

STD: X

Marks-40

Date:- 4-11-23

Time:- 2 Hrs

Instructions-

- 1) All questions are compulsory.
- 2) Use of calculator is not allowed
- 3) The numbers to the right of the question indicate full marks.
- 4) In case of MCQs [Q.No 1(A)] only the first attempt will be evaluated and will be given credit.
- 5) For every MCQ, four alternative (A),(B),(C),(D) of answers are given. Alphabet of correct answer is to be written in front of the subquestion number.

Q1 A Choose the correct answer and write the alphabet of it in front of the subquestion number. 04

1. In the format of GSTIN there are _____ alpha-numerals
 - A) 15
 - B) 10
 - C) 16
 - D) 9
2. For simultaneous equations in variables x and y , if $D_x = 49$, $D_y = -63$, $D = 7$, then, what is the value of x
 - A) 7
 - B) -7
 - C) $1/7$
 - D) $-1/7$
3. For drawing the graph of $3x + 7y = 27$, if $y = 3$, what is the value of X ?
 - A) $20/3$
 - B) 2
 - C) 9
 - D) $13/3$
4. Which of the following is the value of K if the root of $x^2 + kx + k = 0$ are real and equal
 - A) 4
 - B) 0 or 4
 - C) 0
 - D) 2

B Solve the following sub questions

04

1. Find the second and third term of AP whose first term is -19 and common difference - 4
2. Determine whether 2 is a root of quadratic equation $2m^2 - 5m = 0$

3. If $15x+17y=21$ and $17x+15y=11$, then find the value of $x+y$
4. "Pawan Medical supplies medicines. On some medicine the rate of GST is 12 %, the what is the rate of CGST and SGST?

Q.2 A Complete any two activities of the following

04

- 1 Complete the following activity to find the 19th term of an AP
7,13,19,25.....

Activity :

Given A.P : 7,13,19,25.....

Here first term $a=7$; $t_{19}=?$

$$t_n = a + (\text{ }) d \dots \dots \dots \text{(formula)}$$

$$t_{19} = 7 + (19-1) \text{ }$$

$$t_{19} = 7 + \text{ }$$

$$t_{19} = \text{ }$$

2. Fill in the blanks with correct numbers

$$\begin{vmatrix} 3 & -2 \\ 4 & 6 \end{vmatrix} = 3 \times \text{ } - \text{ } \times 4 = \text{ } + 8 = \text{ }$$

3. One of the root of equation $5m^2 + 2m + k = 0$ is $-7/5$. Complete the following activity to find the value of k

$-7/5$ Is a root of quadratic equation $5m^2 + 2m + k = 0$

Put $m = -7/5$ in the equation

$$5 \times \text{ } + 2 \times \text{ } + k = 0$$

$$\text{ } + -14/5 + k = 0$$

$$7 + k = 0$$

$$k = \text{ }$$

B Solve any four subquestions

08

1. Solve by factorization method : $m^2 - 14m + 13 = 0$
2. Solve the simultaneous equation : $x - y = 6, \quad x + y = 10$

3. Find the value of discriminant of the equation $x^2 + 7x + 12 = 0$
4. Check whether the sequence 0.3, 0.33, 0.333 is in A.P. If it is an A.P, then find the common difference.
5. Mr. Rohit is a retailer. He paid GST of Rs 6500 at the time of purchase. He collected GST of Rs 8000 at the time of sale. Find the his input tax and output tax and find his payable GST.

Q3 A Complete any one activity of the following

03

1. First term and common difference of an A.P are 6 and 3 respectively.

Find S_{27}

First term = $a = 6$, common difference = $d = 3$, $S_{27} = ?$

$$S_n = n/2 (\square + (n-1)d) \text{ ----- formula}$$

$$S_{27} = 27/2 (\square + (27-1) \square)$$

$$= 27/2 \times \square$$

$$= 27 \times \square$$

$$S_{27} = \square$$

2. If $x=5$ is a root of equation $kx^2 - 14x - 5 = 0$ then find the value of k by completing the following activity

Solution : One of the root of the equation $kx^2 - 14x - 5 = 0$ is 5

Substituting $x = 5$ in the equation

$$k \square^2 - 14 \square - 5 = 0$$

$$25k - 70 - 5 = 0$$

$$25k - \square = 0$$

$$25k = \square$$

$$k = \square$$

$$\frac{\square}{\square} = 3$$

B Solve any two Subquestions of the following

06

1. In an A.P sum of three consecutive terms is 27 and their product is 504, find the terms (Assume that three consecutive terms in A.P are $a-d$, a , $a+d$)

2. The sum of squares of two consecutive natural numbers is 244; find the numbers

3. Solve the following equations by Cramer's method

$$4m - 2n = -4 ; 4m + 3n = 16$$

Q4 Solve any two sub questions of the following

08

1. One person borrows Rs 4,000 and agrees to repay with a total interest of Rs 500 in 10 Instalments. Each instalment being less than the preceding instalment by Rs 10. What should be the first and the last instalment.

2. Shri Santilal has purchased 150 shares of FV Rs 100, for MV of Rs 120. Company has paid dividend at 7%. Find the rate of return on his investment.

3. Solve the simultaneous equation by graphical method.

$$2x - 3y = 4 ; 3y - x = 4$$

Q5 Solve any one subquestion of the following

03

1. Divide 207 in three parts, such that all parts are in A.P and product of two smaller parts will be 4623

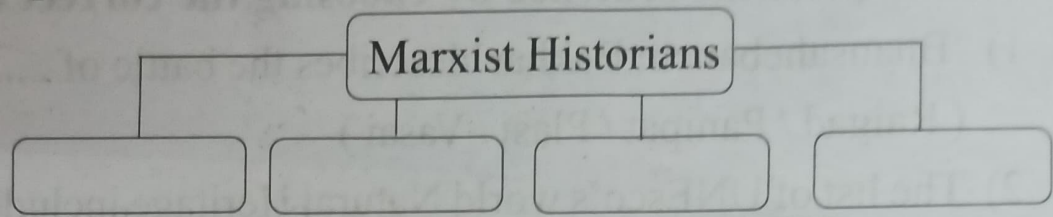
2. Solve the simultaneous equation

$$\frac{4}{x-y} + \frac{1}{x+y} = 3 ; \frac{2}{x-y} - \frac{3}{x+y} = 5$$

Q.2A) Complete the following concept chart(any two)

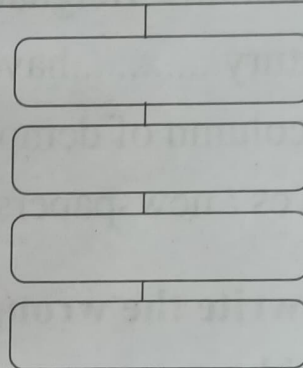
04

1)

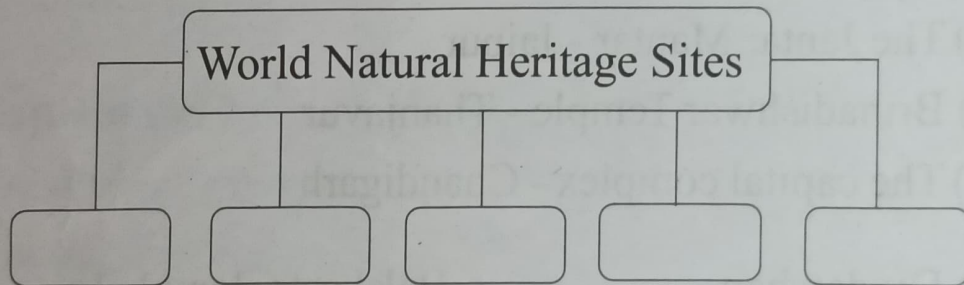


2)

Stages in writing of History
flow chart



3)



Q.2B) Write short notes (any two)

04

- 1) Maratha style of painting
- 2) Need of mass media.
- 3) Archives

Q.3 Explain the following statements with reason: (any two) **04**

- 1) It is essential to study the history of technology.
- 2) Indian performing art enriching over the time.
- 3) In historical research it may not be possible to use the method of laboratory experiments and observation.

Q.4 Read the following passage carefully and answer the questions

04

Rock paintings dating to stone ages have been discovered in many countries. In India, there are rock painting sites in the states of Madhya Pradesh, Uttar Pradesh, Bihar, Uttarakhand, Karnataka, Andhra Pradesh and Telangana. The rock paintings in the caves at Bhimbetka are famous. Bhimbetka is a World Heritage site.

Rock paintings usually depict human, animal and geometric figures. However, the style of rock paintings seems to be changing according to the cultural changes from stone ages to the beginning of agriculture. The change is visible in the depiction of flora and fauna or it may be evident in the style of portraying various figures and also in the colours that were used. Black, red and white colours were used in the rock paintings, which were made from natural substances. With the help of rock paintings we can understand the knowledge of ancient people about their natural surroundings and also the way they exploited available natural resources.

Q.4 questions:

- 1) Where are the rock painting sites found? 01
- 2) When did the rock painting styles start? 01
- 3) Write about the special features of rock paintings? 02

Q.5 Answer the following question in brief.(any two) 06

- 1) Explain Karl Mark's class theory?



- 2) Which sources were adopted to spread news to the people before newspapers started ?
- 3) Give detail information about the given picture ?

Political Science

Q.6 Choose the correct option from the given options and complete the sentences.

02

- 1) Constituencies are created bycommittee of the election commission.
(selection / delimitation / voting / timetable)
- 2) Dravida Munnetra party is instate.
(Odisha / Assam / Tamilnadu/ Karnataka)

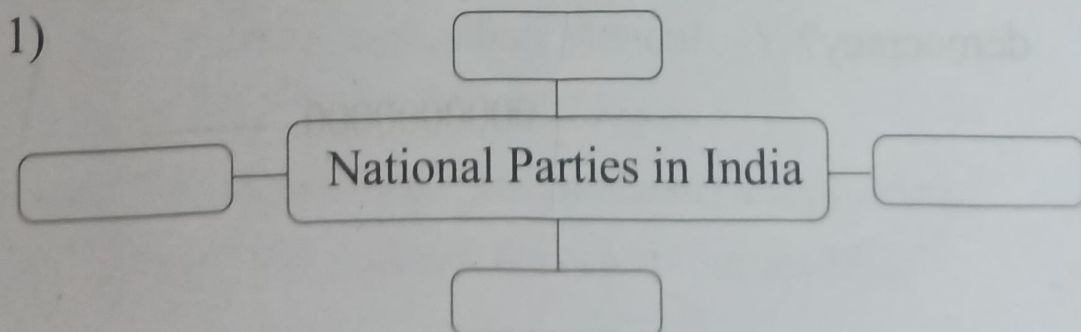
Q.7 State the following statements are true or false with reason: (any two)

04

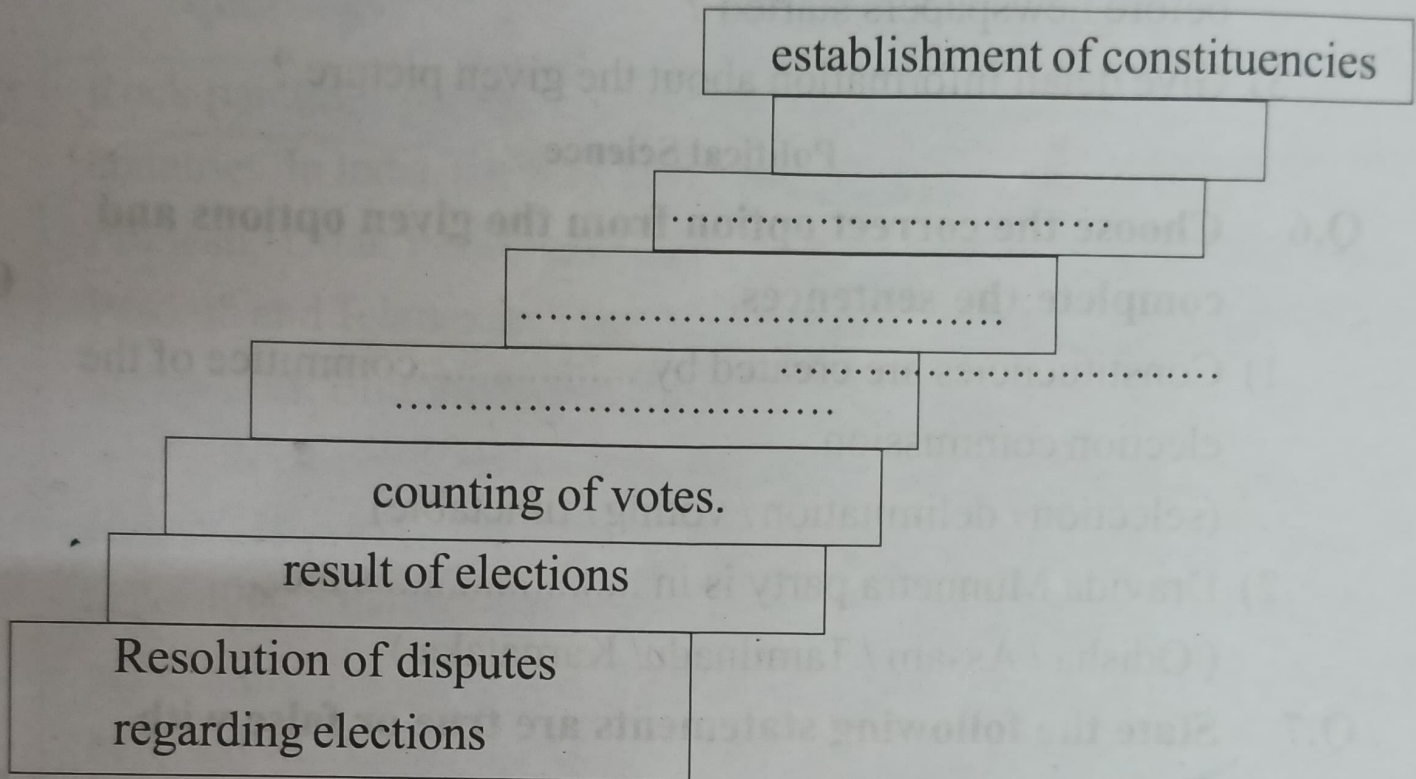
- 1) The influence of regional parties is not seen on the national political parties.
- 2) Under special circumstances the election commission holds re-elections in a particular constituency for a second time.
- 3) Indian democracy is considered the largest democracy in the world.

Q.8A) Complete the following concept chart.(any one)

02



Q.8 2) Process of elections



B) Explain the following concept : (any one) 02

- 1) Right to information
- 2) Nature of political parties.

Q.9 Answer the following question in brief.(any one) 02

- 1) What criteria are laid down to regional parties for the recognition by election commission?
- 2) What should be done to bring good governance in democracy?

Instruction:

- 1) All questions are compulsory to solve
- 2) Right side number shows marks
- 3) Use stencil to draw map
- 4) Draw diagram wherever necessary
- 5) Use map for question no – 4A

Q1 A Choose the correct option from the bracket

04

1. Which country has a larger latitudinal extent?
(India, Brazil, America, South Africa)
2. The area lying to the South of North Indian Plains are called ____
(Himalayas, Coastal Plains, The Peninsula, Island group)
3. The third important river of Brazil is _____
(River Parana, River Amazon, River Sao Francisco, River Uruguay)
4. The escarpments act as an obstruction to the winds coming from the sea, _____ type of rainfall in the coastal region.
(Conventional , Orographic , Cyclonic)

B Match the Following

03

Kumaun	Chenab
Godavari	Greater Himalaya
Himadri	Shon
	Central Himalaya

Q2 A Answer the following question in one word (Any Four)

04

1. In which country a greater diversity of vegetation is found?
2. How is the climate in the coastal region of Brazil?
3. Between which two highlands is the Amazon river basin located?
4. Which trees are found in Brazil?
5. What do you think is essential for understanding the journey of field visit?

B State whether the sentence are right or wrong. Rewrite the wrong sentence (Any Four) 04

1. Huge anacondas are found in the swampy areas of Cantingaa?
2. During field visit, vegetation is not the indicator of difference in precipitation?
3. There are rapids and waterfalls formed by the tributaries of Amazon.
4. In the Eastern and western ghats rainfall is heavy in the leeward side of the hill
5. Brazil was under the Portuguese rule for more than one and a half centuries.

Q3 Give geographical reason (Any two) 06

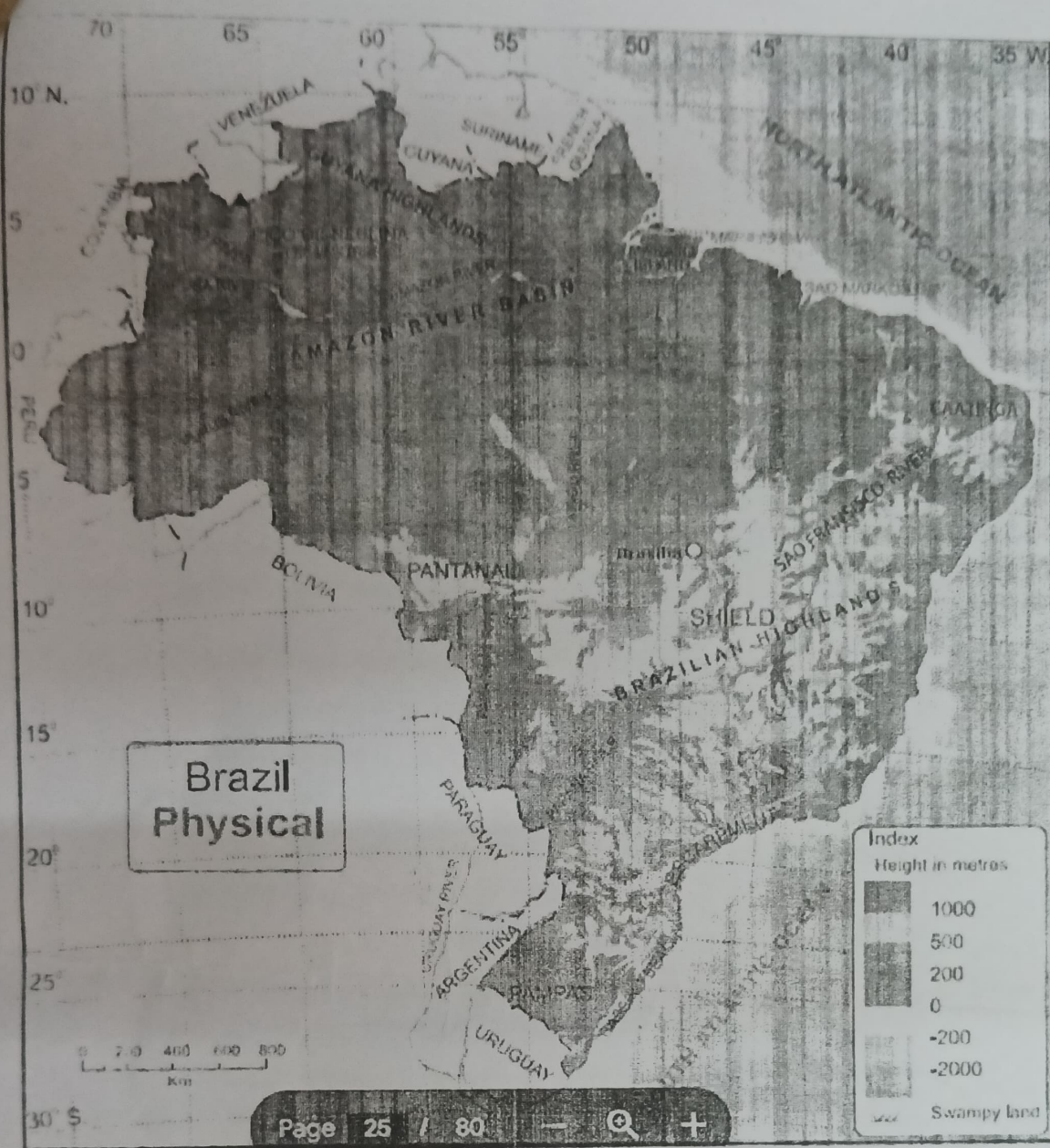
1. There are dissimilarities between the eastern and western coast of India
2. Snowfall doesn't always occur in Brazil
3. Wild life in India is decreasing day by day
4. Brazil is known as the "Coffee Pot" of the world?

Q4 A Show the following in the given map of India (Any four) 04

1. State receiving the maximum rainfall during the retreating monsoon region.
2. Largest state of India
3. Sunderban
4. One horned Rhino
5. Cold Desert

Q4 B Observe the given map and answer the given questions: (Any three) 03

1. Name the swampy land in Brazil
2. Name the highland to the North of Brazil
3. Which Island is located in the North of Brazil
4. Name two rivers which flows in Southern direction



Q5.

Answer the following question in brief (Any three)

12

1. Explain the characteristics of North Indian plains?
2. Why does the deciduous type of vegetation occupy most of India
3. Write the factors affecting climate of Brazil?
4. What problems did Brazil and India face after independence