

Instructions :- Question paper is divided into four sections - A, B, C & D.

1. **Section-A** : Q.No. 1 contains 5 MCQ's carrying 2 marks each.
Q.No. 2 contains 4 VSA (very short answer) carrying 1 mark each.
2. **Section-B** : Q.No. 3 to Q.No. 13 contains 11 short answer type carrying 2 marks each.
3. **Section-C** : Q.No. 14 to Q.No. 19 contains 6 short answer type carrying 3 marks each.
4. **Section-D** : Q.No.20 to Q.No.23 contains 4 long answer type questions carrying 4 marks each.
5. Figures to the right indicate full marks.
6. Start each section on new page.

Section - A

Q.1 Select and write the most appropriate answer from the given alternative for each sub-questions. 10

- i) In degree measure, exterior angle of regular octagon is _____
a) 30° b) 45° c) 60° d) 90°
- ii) If angle of inclination is 30° then slope of that line = _____
a) $\frac{1}{2}$ b) $\frac{1}{\sqrt{3}}$ c) $\sqrt{3}$ d) 0
- iii) If w is complex cube root of unity then $w^{21} =$ _____
a) 0 b) 1 c) -1 d) -w
- iv) If $z = 7 - 5i$ then modulus of $z = |z| =$ _____
a) 74 b) $\sqrt{74}$ c) 49 d) 25
- v) For a G.P, if $r = \frac{1}{3}$, $a = 9$ then $t_7 =$ _____
a) $\frac{1}{9}$ b) $\frac{1}{81}$ c) $\frac{1}{243}$ d) $\frac{1}{27}$

Q.2 Answer the following sub-questions. 4

- i) Express the following angles in degree, minute & second. $(183.7)^\circ$
- ii) Write the equation of line containing $(2, -3)$ and parallel to the Y axis.
- iii) Write the conjugate of complex number : $3 - i$
- iv) If the common ratio of G.P is $\frac{2}{3}$ and sum to infinity is 12. Find the first term.

Section -B

Attempt any Eight of the following questions. 16

- Q. 3** Find the length of an arc of a circle which subtends an angle of 108° at the centre, if the radius of the circle is 15 cm.
- Q. 4** Convert the following angle into radian : 85°
- Q. 5** Convert the following angle into degree : $\frac{11\pi}{18}$
- Q. 6** Find the slope of line passing through G (7, 1) & H (-3, 1)

- Q.7 Find the equation of line containing a point (3, 5) and having slope $\frac{2}{3}$.
- Q.8 Find the distance of the point A (-2, 3) from line $12x - 5y - 13 = 0$.
- Q.9 Find the amplitude of complex no : $-3(1 - i)$.
- Q.10 If w is complex cube root of unity then show that $\frac{a + bw + cw^2}{c + aw + bw^2} = w^2$
- Q.11 Find A.M of two positive numbers whose GM and HM are 4 and $\frac{16}{5}$ respectively.
- Q.12 For the following G.P, find S_n
0.7, 0.07, 0.007,
- Q.13 Find the n th term of following H.P $\frac{1}{2}, \frac{1}{5}, \frac{1}{8}, \frac{1}{11}, \dots$

Section - C

Attempt any FOUR of the following question.

- Q.14 In $\triangle ABC$, if $m\angle A = \frac{7\pi^c}{36}$, $m\angle B = 120^\circ$, find $m\angle C$ in degree and radian.
- Q.15 Find the slope, X-intercept, Y-intercept of given equation of line : $2x + 3y - 6 = 0$.
- Q.16 The vertices of triangle are A (3, 4), B (2, 0) and C (-1, 6). Find the equation of the line containing median AD.
- Q.17 Express the following complex number in polar form $-1 + \sqrt{3}i$.
- Q.18 The numbers $x - 6$, $2x$ and x^2 are in G.P.
Find i) x ii) 1st term iii) n^{th} term
- Q.19 Find a G.P, if $t_4 = 16$ and $t_9 = 512$ then find S_{10} .

Section - D

Attempt any TWO of the following questions.

- Q.20 The perimeter of sector of circle of area 25π is 20 cm. Find the area of sector.
- Q.21 N (3, -4) is the foot of the perpendicular drawn from origin to line L.
Find the equation of line L.
- Q.22 Find the value of $x^3 - x^2 + x + 46$ if $x = 2 + 3i$
- Q.23 Find the sum to n terms
 $3 + 33 + 333 + 3333 + \dots$