

General Instructions:

The question paper is divided into FOUR sections

- 1) **Section A:** Q.1 Contains **Five** multiple choice questions carrying **Two** marks each.
Q.2 Contains **Four** very short answer type questions carrying **One** marks each.
- 2) **Section B:** Contains **Eleven** short answer type questions **Two** marks each (Attempt any **Eight**).
- 3) **Section C:** Contains **Six** short answer type questions **Three** marks each (Attempt any **Four**).
- 4) **Section D:** Contains **Four** long answer type questions **Four** marks each (Attempt any **Two**).
- 5) Use of log table is allowed. Use of calculator is **not** allowed.
- 6) Figures to the right indicate full mark.
- 7) For each MCQ, correct answer must be written along with its alphabet: e.g. (a)...../ (b)/ (c)...../ (d)..... Only first attempt will be considered for evaluation.
- 8) Start answer to each section on new page.

SECTION: A

Q.1 Select and write the most appropriate answer from the give alternatives. (10)

- i) If a 14cm long pendulum oscillates through an angle of 12° , then find the length of its path.
- A) $\frac{13\pi}{14}$ B) $\frac{14\pi}{13}$ C) $\frac{15\pi}{14}$ D) $\frac{14\pi}{15}$

- ii) If the point (1,1) lies on the line passing through the points (a,0) and (0,b), then

$$\frac{1}{a} + \frac{1}{b} =$$

- (A) -1 (B) 0 (C) 1 (D) $\frac{1}{ab}$

- iii) If w is a complex cube root of unity, then the value of $w^{99} + w^{100} + w^{101}$ is :

- A) -1 B) 1 C) 0 D) 3

- iv) Which term of the geometric progression 1,2,4 8, ...is 2048.

- A) 10^{th} B) 11^{th} C) 12^{th} D) 13^{th}

- v) The value of $\frac{i^{592} + i^{590} + i^{588} + i^{586} + i^{584}}{i^{582} + i^{580} + i^{578} + i^{576} + i^{574}}$ is equal to :

- A) -2 B) 1 C) 0 D) -1

Q.2 Answer the following questions.

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- i) Find value of w^{18}
- ii) Find slope of line whose inclination is 30° .
- iii) Determine the quadrant of the angle 945°
- iv) Find n^{th} term of H.P.

$$\frac{1}{4} + \frac{1}{6} + \frac{1}{8} + \frac{1}{10} \dots$$

SECTION: B**Attempt any EIGHT of the following questions:****(16)**

- Q.3** Convert the angle into radian: -132° .
- Q.4** Convert the angle into degree: $\left(\frac{7\pi}{12}\right)^c$.
- Q.5** In right angled triangle, the acute angles are in the ratio 4:5. Find the angles of triangle in degree.
- Q.6** Find the modulus and amplitude of complex number: $\sqrt{3} - i$
- Q.7** If w is a complex cube root of unity, show that $(1 + w - w^2)^6 = 64$
- Q.8** Find slope of line AB, where A(2, -1) and B(4, 3)
- Q.9** Write equation of line parallel to Y axis and making an intercept of 4 unit on X axis.
- Q.10** Find the equation of line containing the point A(3, 5) and having slope $2/3$.
- Q.11** For a G.P. if $S_5 = 1023$, $r = 4$, Find a .
- Q.12** Find A.M. of two positive numbers whose G.M. and H.M. are 4 and $16/5$ respectively.
- Q.13** For a G.P. if $r = 1/3$, $a = 9$ find t_7 .

SECTION: C**Attempt any FOUR of the following questions:****(12)**

- Q.14** The radius of circle is 9cm. Find the length of an arc of circle which cuts off chord of length, equal to length of radius.
- Q.15** Find slope, X-intercept and Y-intercept of the line $2x + 3y - 6 = 0$.
- Q.16** Find the distance between the parallel lines $3x + 2y - 7/3 = 0$ and $3x + 2y + 6 = 0$.
- Q.17** Express the following recurring decimal into rational number $\overline{0.7}$
- Q.18** Insert two numbers between 1 and -27 so that the resulting sequence is a G.P.
- Q.19** If w is a complex cube root of unity find the value of $(1 + w)(1 + w^2)(1 + w^4)(1 + w^8)$.

SECTION: D**Attempt any TWO of the following questions:****(8)**

- Q. 20** The vertices of triangle are A(3,4), B(2, 0) and C(-1, 6) Find the equations of
(a) Side BC (b) the median AD
- Q. 21** Find the values of $x^3 - x^2 + x + 46$ if $x = 2 + 3i$
- Q. 22** Find the sum to n terms : $3 + 33 + 333 + 3333 + \dots$
- Q. 23** The measures of angles of a triangle are in A.P. and the greatest is 5 times the smallest. Find the angles in degree and radian.