Sahaj Adhyayan (सहज अध्ययन)

जर हे Practice Question Papers तुम्हाला खरंच फायदेशीर वाटत असतील तर तुमच्या सर्व मित्र मैत्रिणींना पाठवा.

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तर ते आम्हाला WhatsApp वर पाठवा,

इतर विद्यार्थी मित्रांना त्या सर्वांचा उपयोग होईल.

This Question paper shared by Akshada from Ahmednagar, Thanks Akshada.

First Term Examination - 2021-22

Std. 11th (Sci.) | Sub : Mathematics & Statistics | Marks - 50
Date - 5/1/2022 | Time - 12.00 To 2.30

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 mark each.
2) Section B - Contains Eleven Short answer type questions carrying Two Marks each . (Attempt any Eight)
3) Section C - Contains Six short answer type questions carrying Three marks each. (Attempt any Four)
4) Section D - Contains Four long answer type questions carrying 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 marks.
7) Use of graph paper is not necessary only rough sketch of graph is expected.
8) For each M.C.Q. correct answer must be written along with its alphabet.
   eg. (a) ..... / (b) ..... / (c) ..... / (d) .....
   Only first attempt will be considered for evaluation.
9) Start answer to each section on new page.

Section - A

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

1) The value of $\sin 315° =$ .....

   a) $-1/2$ b) $1/2$ c) $-\frac{1}{\sqrt{2}}$ d) $\frac{1}{\sqrt{2}}$

2) In ΔABC, $m\angle A = \frac{3\pi}{4}$ and $m\angle B = 30°$, then $m\angle C =$ .....

   a) $\frac{\pi}{12}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{3}$ d) $\frac{\pi}{9}$

3) In ΔABC $\cos(C+A) =$ .....

   a) cosB b) - cosB c) sinB d) -sinB

4) The value of $(3 \times 2)! =$ .....

   a) 720 b) -720 c) 12 d) -12

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5) If $Z_1 = 3 + 2i$ and $Z_2 = 5 - 4i$ then $|Z_1 + Z_2| =$ .....

a) $\sqrt{13} + \sqrt{41}$ b) $\sqrt{60}$ c) $\sqrt{68}$ d) $\sqrt{13} - \sqrt{41}$

Q.2 Answer the following questions. 4

1) Find the value of $\begin{vmatrix} 2i & 3 \\ 4 & -i \end{vmatrix}$

2) Draw the angle in standard position and determine it's quadrant (-330°)

3) Find 'n' if (n+1) ! = 42 (n-1) !

4) Find the Value of $i + i^2 + i^3 + i^4$

Section - B

Attempt any Eight of the following questions. 16

Q.3 Prove that , $\tan\left(\frac{\pi}{4} + \theta\right) = \frac{1 + \tan\theta}{1 - \tan\theta}$

Q.4 Using tables, find the Value of $4\cot 45° - \sec^2 60° + \sin 30°$.

Q.5 Convert the angle (183.7)° in degree minute and second.

Q.6 State the signs of the following trigonometric functions.

i) tan (250°) ii) $\sec\left(\frac{3\pi}{5}\right)^c$

Q.7 Eliminate θ, if $x = 3\sec\theta$, $y = 4\tan\theta$.

Q.8 Express the following as sum or difference of two trigonometric functions.

$2\sin\frac{2\pi}{3}\cos{}^{\pi}/_{2}$

Q.9 Find the values of x, if $\begin{vmatrix} x & -1 & 2 \\ 2x & 1 & -3 \\ 3 & -4 & 5 \end{vmatrix} = 0$

Q.10 Find Modulus and Argument of the complex number $z = 1 + i\sqrt{3}$.

Q.11 Find the sum 3 + 33 + 333 + ... upto n terms.

Q.12 Evaluate $\frac{n!}{r!\,(n-r)!}$ for n = 12 , r = 12.

(P.T.O.)

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Q.13 For the G.P. if $r = \frac{1}{3}$, $a = 9$ find t_7.

Section - C

Attempt any Four of the following questions. 12

Q.14 Prove that, $\tan x + \cot x = 2 \operatorname{cosec} 2x$

Q.15 Represent the complex number $z = -1 + i\sqrt{3}$ in the polar form.

Q.16 Find n and r, if $nP_r = 720$ and $nC_r = 120$.

Q.17 Find H.M. of two numbers whose A.M. & G.M. are 16 & 12.

Q.18 Find Minors and Cofactors of the elements of determinant.

$$\begin{vmatrix} 2 & -3 & 1 \\ 0 & -2 & 3 \\ 1 & 2 & -3 \end{vmatrix}$$

Q.19 The Measures of angles of a quadrilateral are in the ratio 2:3:6:7 find their measures in degree and radian.

Section - D

Attempt any TWO of the following questions. 8

Q.20 Prove that, $\sqrt{2+\sqrt{2+\sqrt{2+2\cos 8x}}} = 2\cos x$

Q.21 If w is a complex cube root of unity
find the values of i) $(2 - w)(2 - w^2)$
ii) $(1 - w - w^2)^3 + (1 - w + w^2)^3$

Q.22 Find all Trigonometric functions of $\frac{5\pi}{6}$ from the defination.

Q.23 If p, q, r are in G.P. and $p^{1/x} = q^{1/y} = r^{1/z}$,

Verify whether x, y, z are in A.P. or G.P. or neither.

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