# Sri Raghavendra Tuition Center

**Exercise test II**

**11th Standard**

**Maths**

Date : 07-09-24

Reg.No. :

Exam Time : 01:00 Hrs                                                        Total Marks : 50

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**Centum Book Available**

I. Multiple Choice Question                                                        5 x 1 = 5

1) If $\pi < 2\theta < \frac{3\pi}{2}$, then $\sqrt{2 + \sqrt{2 + 2cos4\theta}}$ equals to

   (a) -2 cosθ   (b) -2 sinθ   (c) 2 cosθ   (d) 2 sinθ

2) The maximum value of $4sin^2x + 3\ cos^2x + sin\frac{x}{2} + cos\frac{x}{2}$ is

   (a) $4 + \sqrt{2}$   (b) $3 + \sqrt{2}$   (c) 9   (d) 4

3) If $\cos 28^0 + \sin 28^0 = k^3$, then $\cos 17^0$ is equal to

   (a) $\frac{k^3}{\sqrt{2}}$   (b) $-\frac{k^3}{\sqrt{2}}$   (c) $\pm\frac{k^3}{\sqrt{2}}$   (d) $-\frac{k^3}{\sqrt{3}}$

4) $\left(1 + cos\frac{\pi}{8}\right)\left(1 + cos\frac{3\pi}{8}\right)\left(1 + cos\frac{5\pi}{8}\right)\left(1 + cos\frac{7\pi}{8}\right) =$

   (a) $\frac{1}{8}$   (b) $\frac{1}{2}$   (c) $\frac{1}{\sqrt{3}}$   (d) $\frac{1}{\sqrt{2}}$

5) $\frac{1}{cos80^0} - \frac{\sqrt{3}}{sin80^0} =$

   (a) $\sqrt{2}$   (b) $\sqrt{3}$   (c) 2   (d) 4

II. 2 Marks                                                                        5 x 2 = 10

6) Identify the quadrant in which an angle of each given measure lies; $-55^0$

7) Find the degree measure corresponding to the following radian measure; $\frac{7\pi}{3}$

8) Find the degree measure corresponding to the following radian measure; $\frac{\pi}{3}$

9) Identify the quadrant in which an angle of each given measure lies; $-230^0$

10) Express each of the following angles in radian measure
    $30^0$

11) Find the degree measure corresponding to the following radian measure; $\frac{\pi}{9}$

III. 3 Marks                                                                        5 x 3 = 15

12) In a circular of diameter 40 cm, a chord is of length 20 cm. FInd the length of the minor arc of the chord?

13) For each given Angle, find a coterminal angle with a measure of $\theta$ such that $0^o \le \theta \le 360°$
    $395^0$

14) For each given Angle, find a coterminal angle with a measure of $\theta$ such that $0^o \le \theta \le 360°$
    $-450^0$

15) A circular metallic plate of radius 8 cm and thickness 6 mm is melted and molded into a pie ( s sector of the circle with thickness) of radius 16 cm and thickness 4 mm. Find the angle of the sector

16) A train is moving on a circular track of 1500 m radius at the rate of 66 Km/hr. What angle will it turn in 20 seconds?

17) The perimeter of a certain sector of a circle is equal to the length of the arc of a semi-circle having the same radius. Express the angle of the sector in degree, minites and seconds,

IV. 5 Marks                                                                                                              4 x 5 = 20

18) Eliminate $\theta$ from the equation a sec $\theta$ - c tan $\theta$ = b and b sec $\theta$ + d tan $\theta$ = C

19) If a cos $\theta$ - b sin $\theta$ = c, show that a sin $\theta$ + b cos $\theta$ = $\pm\sqrt{a^2 + b^2 - c^2}$

20) If $\frac{cos^4\alpha}{cos^2\beta} + \frac{sin^4\alpha}{sin^2\beta} = 1$ prove that $\frac{cos^4\beta}{cos^2\alpha} + \frac{sin^4\beta}{sin^2\alpha} = 1$

21) If $\tan^2 \theta$ = 1 - $k^2$, Show that sec $\theta$ + $\tan^3 \theta$ cosec $\theta$ = $(2 - k^2)^{3/2}$. Also, find the value of k for which this result holds

22) If x = $\sum_{n=0}^{\infty} cos^{2n}\theta$; y = $y = \sum_{n=0}^{\infty} sin^{2n}\theta$ and z = $\sum_{n=0}^{\infty} cos^{2n}\theta$ $sin^{2n}\theta$, $0 < \theta < \frac{\pi}{2}$, then show that xyz = x+y+z

Hint :1+x+$x^2$+$x^3$+.......= $\frac{1}{1-x}$, where $|x|$< 1].

23) If cosec $\theta$ - sin $\theta$ = $a^3$ and sec $\theta$ - cos $\theta$ = $b^3$, then prove that $a^2b^2$ $(a^2+ b^2)$ = 1

24) Expand cos (A + B + C). Hence prove that cos A cos B cos C = sin A sin B cos C + sin B sin C cos A + sin C sin A cos B, if A + B + C = $\frac{\pi}{2}$

**All the best**

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