CLASS PRACTICE TEST-3

NAME OF STUDENT …… ……ROLL. NO……BATCH…… DATE……

M.M:30 CPT- MATHEMATICS XII TOPICS: ITF, DET & MATRICES

OBJECTIVE SECTION (5X2 Marks)

1. The value of the determinant $\begin{vmatrix} 2 & 8 & 4 \\ -5 & 6 & -10 \\ 1 & 7 & 2 \end{vmatrix}$ is

(a) -440 (b) 0 (c) 328 (d) 488

2. If ω is a cube root of unity, then $\begin{vmatrix} x+1 & \omega & \omega^2 \\ \omega & x+\omega^2 & 1 \\ \omega^2 & 1 & x+\omega \end{vmatrix} =$

(a) x^3+1 (b) $x^3+\omega$ (c) $x^3+\omega^2$ (d) x^3

3. $\begin{vmatrix} 1 & \log_x y & \log_x z \\ \log_y x & 1 & \log_y z \\ \log_z x & \log_z y & 1 \end{vmatrix}$ = (where *x, y, z* being positive) **[IIT 1993; UPSEAT 2002]**

(a) $\log_y x$ (b) $\log_z y$ (c) $\log_x z$ (d) 0

4. If *A, B, C* are the angles of a triangle, then the value of $\Delta = \begin{vmatrix} -1 & \cos C & \cos B \\ \cos C & -1 & \cos A \\ \cos B & \cos A & -1 \end{vmatrix}$ is **[Karnataka CET 2002]**

(a) $\cos A \cos B \cos C$ (b) $\sin A \sin B \sin C$ (c) 0 (d) None of these

5. If $C = 2\cos\theta$, then the value of the determinant $\Delta = \begin{vmatrix} C & 1 & 0 \\ 1 & C & 1 \\ 6 & 1 & C \end{vmatrix}$ is **[Orissa JEE 2002]**

(a) $\frac{\sin 4\theta}{\sin\theta}$ (b) $\frac{2\sin^2 2\theta}{\sin\theta}$ (c) $4\cos^2\theta(2\cos\theta - 1)$ (d) None of these

1. Simplify $\tan^{-1}\left[\frac{a\cos x - b\sin x}{b\cos x + a\sin x}\right]$, if $\frac{a}{b}\tan x > -1$
2. Prove that $\tan^{-1} x + \tan^{-1}\frac{2x}{1-x^2} = \tan^{-1}\left(\frac{3x-x^3}{1-3x^2}\right)$, $|x| < \frac{1}{\sqrt{3}}$

Solve the following equation

3. $2\tan^{-1}(\cos x) = \tan^{-1}(2\ \text{cosec}\ x)$
4. $If A = \begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$, find A^{-1}. Using A^{-1} solve the system of equations. $2x - 3y + 5z = 11, 3x + 2y - 4z = -5, x + y - 2z = -3$

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