(6) 1. $\cos^2 26° + \cos 64° \sin 26° + \frac{\tan 36°}{\cot 54°}$

~~$= \cos^2(90°$~~

$= \cos^2 26° + \cos(90° - 26°) \times \sin 26° + \frac{\tan 36°}{\cot(90° - 36°)}$

$= \cos^2 26° + \sin 26° \times \sin 26° + \frac{\tan 36°}{\tan 36°}$

$= \cos^2 26° + \sin^2 26° + 1$

$\Rightarrow 1 + 1 = \boxed{2}$ ans

(2) $\frac{\sec 17°}{\operatorname{cosec} 73°} + \frac{\tan 68°}{\cot 22°} + \cos^2 44° + \cos^2 46°$

$= \frac{\sec 17°}{\operatorname{cosec}(90° - 17°)} + \frac{\tan 68°}{\cot(90° - 68°)} + \cos^2(90° - 46°) + \cos^2 46°$

$= \frac{\sec 17°}{\sec 17°} + \frac{\tan 68°}{\tan 68°} + \sec^2 46° + \cos^2 46°$

$= 1 + 1 + 1$

$= \boxed{3}$ ans.

(7i) $\frac{\sin 65^\circ}{\cos 25^\circ} + \frac{\cos 32^\circ}{\sin 58^\circ} - \sin 28^\circ \sec 62^\circ + \text{cosec}^2 30^\circ$

$= \frac{\sin(90^\circ - 25^\circ)}{\cos 25^\circ} + \frac{\cos(90^\circ - 58^\circ)}{\sin 58^\circ} - \sin 28^\circ \times \sec(90^\circ - 28^\circ) + \text{cosec}^2$

$= \frac{\cos 25^\circ}{\cos 25^\circ} + \frac{\sin 58^\circ}{\sin 58^\circ} - \sin 28^\circ \times \text{cosec}\, 28^\circ + \text{cosec}^2$

$= 1 + 1 - 1 + (2)^2$

$= 2 - 1 + 4$

$= \boxed{5}$ ans.

(2) $\frac{\sec 29^\circ}{\text{cosec}\, 61^\circ} + 2 \cot 8^\circ \cot 17^\circ \cot 45^\circ \cot 73^\circ \cot 82^\circ - 3(\sin^2 38^\circ + \sin^2$

$= \frac{\sec 29^\circ}{\text{cosec}(90^\circ - 29^\circ)} + 2 \cot(90^\circ - 82^\circ) \times \cot(90^\circ - 73^\circ) \times 1 \times \frac{1}{\tan 73^\circ} \times \frac{1}{\tan 82^\circ} - 3(\sin^2 38^\circ + \sin^2(90^\circ - 38^\circ))$

$= \frac{\sec 29^\circ}{\sec 29^\circ} + 2 \tan 82^\circ \times \tan 73^\circ \times 1 \times \frac{1}{\tan 73^\circ} \times \frac{1}{\tan 82^\circ} - 3(\sin^2 38^\circ + \cos^2 38^\circ)$

$= 1 + 2 \times 1 - 3 \times 1$

$= 3 - 3$

$= \boxed{0}$ ans.

(8i) $\frac{\sin 35^\circ \cos 55^\circ + \cos 35^\circ \sin 55^\circ}{\text{cosec}^2 10^\circ - \tan^2 80^\circ}$

$= \frac{\sin 35° \times \cos(90° - 35°) + \cos 35° \times \sin(90° - 35°)}{\text{cosec}^2(90° - 80°) \times - \tan^2 80°}$

$= \frac{\sin 35° \times \sin 35° + \cos 35° \times \cos 35°}{\sec^2 80° - \tan^2 80°}$

$\Rightarrow \frac{\sin^2 35° + \cos^2 35°}{1} = \boxed{1}$ ans

(ii) $\sin^2 34° + \sin^2 56° + 2 \tan 18° \tan 72° - \cot^2 30°$

$= \sin^2 34° + \cos^2 34° + 2 \cot 72° \times \tan 72° - (\sqrt{3})^2$

$= 1 + 2 \times 1 - 3$

$\Rightarrow 3 - 3 = \boxed{0}$ ans.

(9i) $\left[\frac{\tan 25°}{\text{cosec } 65°}\right]^2 + \left[\frac{\cot 25°}{\sec 65°}\right]^2 + 2 \tan 18° \tan 45° \tan 72°$

$= \left[\frac{\tan 25°}{\sec 25°}\right]^2 + \left[\frac{\cot 25°}{\text{cosec } 25°}\right]^2 + 2 \tan 18° \times \cot 18° \times 1$

$= \frac{\sin^2 25°}{\cos^2 25°} \times \cos^2 25° + \frac{\cos^2 25°}{\sin^2 25°} \times \sin^2 25° + 2$

$= \sin^2 25° + \cos^2 25° + 2$

$\Rightarrow 1 + 2 = \boxed{3}$ ans

(ii) $(\cos^2 25° + \cos^2 65°) + \text{cosec } \theta \cdot \sec(90° - \theta) - \cot \theta \tan(90° - \theta)$.

$= \cos^2(90° - 65°) + \cos^2 65° + \text{cosec } \theta \times \text{cosec } \theta - \cot \theta \times \cot \theta$

$= \sin^2 65° + \cos^2 65° + \operatorname{cosec}^2 \theta - \cot^2 \theta$

$= 1 + 1$

$= 2$ ans.

(10i) $2(\sec^2 35° - \cot^2 55°) - \dfrac{\cos 28° \operatorname{cosec} 62°}{\tan 18° \tan 36° \tan 30° \tan 54° \tan 72°}$

$= 2(\sec^2(90° - 55°) - \cot^2 55°) - \dfrac{\cos(90° - 62°) \operatorname{cosec} 62°}{\tan 18° \tan 36° \tan 30° \tan 54° \tan$

$= 2(\operatorname{cosec}^2 55° - \cot^2 55°) - \dfrac{\sin 62° \times \operatorname{cosec} 62°}{}$

$= 2 \times 1 - \dfrac{1}{\tan(90° - 72°) \tan(90° - 54°) \tan 54° \tan 72° \times 1/\sqrt{3}}$

$= 2 - \dfrac{1}{\cot 72° \tan 72° \tan 54° \cot 54° \times 1\sqrt{3}}$

$\Rightarrow 2 - \dfrac{1}{1 \times 1 \times \frac{1}{\sqrt{3}}} = 2 - \dfrac{1}{1/\sqrt{3}}$

$= \boxed{2 - \sqrt{3}}$ ans.

(ii) $\dfrac{\operatorname{cosec}^2(90° - \theta) - \tan^2 \theta}{2(\cos^2 48° + \cos^2 42°)} - \dfrac{2 \tan^2 30° \sec^2 52° \sin^2 38°}{\operatorname{cosec}^2 70° - \tan^2 20°}$

$= \dfrac{\sec^2 \theta - \tan^2 \theta}{2(\sin^2 42° + \cos^2 42°)} - \dfrac{2(1/\sqrt{3})^2 \operatorname{cosec}^2 38° \sin^2 38°}{\operatorname{cosec}^2 70° - \tan^2 20°}$

$$= \frac{1}{2 \times 1} - \frac{2 \times 1 / 3 \times 1}{1}$$

$$\Rightarrow \frac{1}{2} - \frac{2}{3} \Rightarrow \frac{3-4}{6} = \boxed{\frac{-1}{6}} \text{ ans}$$

$\Rightarrow \frac{\sin\theta \cos\theta \cos\theta}{\sin\theta} + \sin^2\theta = 1$

$\Rightarrow \cos^2\theta + \sin^2\theta = 1$

$\Rightarrow 1 = 1$ proved!

(13i)

(4) $\sin(90° - \theta)\cos(90° - \theta) = \frac{\tan\theta}{1 + \tan^2\theta}$

$\Rightarrow \cos\theta \times \sin\theta = \frac{\sin\theta / \cos\theta}{1 + (\sin\theta/\cos\theta)^2}$

$\Rightarrow \cos\theta \times \sin\theta = \frac{\sin\theta}{\cos\theta} \times \cos^2\theta$

$\Rightarrow \cos\theta \times \sin\theta = \sin\theta \times \cos\theta$ proved

(12i) $(\sec A + \tan A)(1 - \sin A) = \cos A$

$\Rightarrow \sec A - \sec A \times \sin A + \tan A - \tan A \times \sin A$

$\Rightarrow \sec A - \frac{1}{\cos A} \times \sin A + \tan A - \frac{\sin A}{\cos A} \times \sin A$

$\Rightarrow \frac{1}{\cos A} - \frac{\sin A}{\cos A} + \frac{\sin A}{\cos A} - \frac{\sin^2 A}{\cos A}$

$\Rightarrow \frac{1 - \sin^2 A}{\cos A} \Rightarrow \frac{\cos^2 A}{\cos A}$

$\Rightarrow \cos A = \cos A$ proved!!