

**Avinashilingam Institute for Home Science and Higher Education for Women  
Coimbatore-641 043**

**Bachelor's Degree Examination—November 2017**

**I Semester**

**Class : I UG  
Major : Special Education & Rehabilitation  
and Mathematics**

**Time :3 hours  
Max.Marks: 100**

**15BSMC02 Trigonometry**

**Part-A  
Choose the correct answer**

**10x1=10**

1.  $n \cos^{n-1} \theta \sin \theta - \frac{n(n-1)(n-2)}{3!} \cos^{n-3} \theta \sin^3 \theta + \dots = \underline{\hspace{2cm}}$ .  
 a.  $\sin n\theta$                       b.  $\cos n\theta$                       c.  $\cos^n \theta$                       d.  $\sin^n \theta$
2. Coefficient of  $\cos^{n-1} \theta$  in the expansion of  $\frac{\sin n\theta}{\sin \theta} = \underline{\hspace{2cm}}$ .  
 a.  $2^n$                       b.  $2^{n-1}$                       c.  $2^{n+1}$                       d.  $2^{-n}$
3. If  $n$  is odd, the coefficient of  $\cos \theta$  in the expansion of  $2^{n-1} \cos^n \theta = \underline{\hspace{2cm}}$ .  
 a.  $nC_{n-1}$                       b.  $nC_{n-2}$                       c.  $nC_{(n-1)/2}$                       d.  $nC_{(n+1)/2}$
4.  $\theta - \frac{\theta^3}{3!} + \frac{\theta^5}{5!} - \dots = \underline{\hspace{2cm}}$ .  
 a.  $\sin \theta$                       b.  $\cos \theta$                       c.  $\tan \theta$                       d.  $\cot \theta$
5.  $\sinh^2 x + \cosh^2 x = \underline{\hspace{2cm}}$ .  
 a. 1                      b.  $\sinh 2x$                       c.  $\cosh 2x$                       d.  $\tanh 2x$
6.  $\cosh(i\theta) = \underline{\hspace{2cm}}$ .  
 a.  $\cosh \theta$                       b.  $-\cosh \theta$                       c.  $i \cos \theta$                       d.  $\cos \theta$
7. If  $z = x + iy$  then  $\theta = \underline{\hspace{2cm}}$ .  
 a.  $x^2 + y^2$                       b.  $\tan^{-1} \left( \frac{y}{x} \right)$                       c.  $\sqrt{x^2 + y^2}$                       d.  $\log z$
8. The principal value of the Logarithm of a negative quantity is  $\underline{\hspace{2cm}}$ .  
 a. real.                      b. imaginary                      c. many valued                      d. Both (a) & (b)
9.  $\cos \alpha + \cos \left( \alpha + \frac{2\pi}{n} \right) + \cos \left( \alpha + \frac{4\pi}{n} \right) + \dots + \text{to } n \text{ terms} = \underline{\hspace{2cm}}$ .  
 a. 1                      b. -1                      c. 0                      d.  $\pm 1$
10.  $\operatorname{cosec} \theta + \operatorname{cosec} 2\theta + \operatorname{cosec} 2^2\theta + \dots + \operatorname{cosec} 2^{n-1}\theta = \underline{\hspace{2cm}}$ .  
 a.  $\cot \theta - \cot 2^{n-1}\theta$                       b.  $\cot \frac{\theta}{2} - \cot 2^{n-1}\theta$                       c.  $\cot \frac{\theta}{2}$                       d.  $\cot 2^{n-1}\theta$

**Part B  
Answer the following**

**5X6=30**

11.a. Express  $\cos 8\theta$  in terms of  $\sin \theta$ .

(or)

11.b. Expand  $\tan n\theta$  in powers of  $\tan \theta$ .

