

**FOUNDATION DIPLOMA/CERTIFICATE**  
**Assignment II (02/03)**

Module Title : Foundation Mathematics  
Module Code : CMV6111  
Hand out : Week 25  
Hand in : Week 27

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**Section A** Multiple Choice (20 marks)

Answer ALL questions in this section.. Each question carries 4 marks.

1.  $\sin 234^\circ =$ 
  - A.  $\cos 54^\circ$
  - B.  $\sin 54^\circ$
  - C.  $-\sin 54^\circ$
  - D.  $-\cos 54^\circ$
  
2. The 5th term of the arithmetic sequence 7, 3, -1, ... is
  - A. -9
  - B. -12
  - C. -15
  - D. -16
  
3. The ratio of  $\tan 45^\circ$  to  $\sin 30^\circ$  is
  - A. 2.000
  - B. 1.500
  - C. 1.414
  - D. 0.866
  
4. Which one of the following is a G.P.?
  - A. 3, 4, 5, 6, ...
  - B.  $1^2, 2^2, 3^2, 4^2, \dots$
  - C. -10, 40, 90, 140, ...
  - D. 40, -20, 10, -5, ...
  
5. The number of solutions for the equation  $2\sin^2 x - 1 = 0$  for  $0^\circ < x < 360^\circ$  is
  - A. 1
  - B. 2
  - C. 3
  - D. 4

**Section B** Short Questions

(40 marks)

Answer ALL questions in this section. Each question carries 10 marks.

6. A sector has a radius 5 cm and arc length 8 cm.
- (a) Find the sector angle. (4 marks)
  - (b) Find the area of the sector. (6 marks)
7. Solve the equation  $6\sin x^2 - \sin x - 1 = 0$  where  $0^\circ \leq x < 360^\circ$  (10 marks)
8. An arithmetic sequence is given as follows:  
42, 30, 18, 6, ...
- (a) Find the common difference of the arithmetic sequence. (2 marks)
  - (b) Find the 6<sup>th</sup> term and the sum of the first 6 terms. (8 marks)
9. A bag contains 2 white balls, 3 green balls and 4 red balls.
- (a) A ball is drawn at random from the bag. Find the probability that the ball is red. (4 marks)
  - (b) Two balls are drawn at random from the bag without replacement. Find the probability that both balls are red. (6 marks)

**Section C** Long Questions

(40 marks)

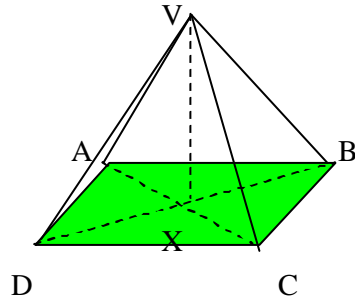
Answer All questions in this section. Each question carries 20 marks.

10. (a) Calculate the interest earned on a sum of \$12,000 compounded quarterly at 4% p.a. for 2 years. (8 marks)
- (b) ABC bank offers a saving product as follows: \$1,000 has to be deposited on the first day of each month for a consecutive 12 months. The interest is calculated at 0.4% per month compounded monthly. Find the amount accrued by a customer joining this saving scheme at the end of 1 year. (12 marks)

11. (a)

A right pyramid standing on a square base has a height  $5\sqrt{2}$  m. The length of one side of the base is 10m.

- (a) Find the length of a slant edge. (8 marks)  
(b) Find the total area of the slant surfaces. (8 marks)  
(c) Find the volume of the right pyramid. (4 marks)



END OF ASSIGNMENT II

## Suggested Solutions to Assignment II(02/03)

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1.C      2.A      3.A      4.D      5.D

6. (a) sector angle =  $L/r = 8/5 = 1.6$  rad  
 (b) area of sector =  $0.5 \times 5 \times 8 = 20$  cm<sup>2</sup>

7. since  $6\sin^2 x - \sin x - 1 = 0$   
 $(2\sin x - 1)(3\sin x + 1) = 0$   
 $\sin x = 1/2$  or  $\sin x = -1/3$   
 $x = 30^\circ$  or  $150^\circ$  or  $199.5^\circ$  or  $340.5^\circ$

8. (a) c.d. =  $30 - 42 = -12$   
 (b)  $T_6 = 42 + (6-1)(-12) = -18$   
 $S_6 = (42 + (-18)) \times 6 / 2 = 72$

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9. (a)  $P(\text{a ball is red}) = 4/9$   
 (b)  $P(\text{both balls are red without replacement}) = \frac{4}{9} \times \frac{3}{8} = \frac{1}{6}$

10. (a) Accrued amount after 2 years =  $\$12,000(1.01)^8 = \$12,994.28$   
 Interest earned =  $\$94.28$   
 (b) Accrued amount =  $\$1000[1.004^{12} + 1.004^{11} + 1.004^{10} + \dots + 1.004^2 + 1.004]$   
 $= \$1000 \left[ \frac{1.004^{12} - 1}{1.004 - 1} \right]$   
 $= \$12,316.62$

11. (a) Consider the base CXD,  $XD = [100/2]^{0.5} = 5\sqrt{2}$  m  
 the length of a slant edge =  $[5\sqrt{2}^2 + 5\sqrt{2}^2]^{0.5} = 10$  m  
 (b) the total area of the slant surfaces = 4 (area of VBC) (VBC is equilateral)  
 $= 4(0.5 \times 10 \times 10 \times \sin 60^\circ)$   
 $= 173.2$  m<sup>2</sup>  
 (c) the volume of the right pyramid =  $\frac{1}{3}$  base area x height  
 $= \frac{1}{3} 100 \times 5\sqrt{2} = 235.7$  m<sup>3</sup>

**END OF ASSIGNMENT II**