




GRADE: XI Date:	MONTHLY TEST -02 (2023-24) APPLIED MATHEMATICS (241)	Marks: 20 Time: 50 minutes
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Name:

Class & Section:

Q.No.	Questions	Mark
SECTION A		
1	The base of binary number system is: (a) 0 (b) 1 (c) 2 (d) 10	1
2	The binary equivalent of 14 is (a) 110 (b) 011 (c) 1110 (d) 0111	1
3	The value of $\left(\frac{x^m}{x^n}\right)^{m+n} \times \left(\frac{x^n}{x^l}\right)^{n+l} \times \left(\frac{x^l}{x^m}\right)^{l+m}$ is: (a) x (b) 1 (c) 0 (d) -x	1
4	Consider the experiment of tossing two coins. Let A,B and C be the following events: A: no heads occurs B: exactly one heads occurs C: exactly two heads occurs Which of the following statements regarding the above events are true? (a) A and B are mutually exclusive (b) B and C are mutually exclusive (c) A and B are exhaustive (d) A,B and C are exhaustive	1

5	$2 \times \sqrt{-9} \times \sqrt{-16}$ is equal to (a) 24 (b) -24 (c) 48 (d) -48	1
SECTION B		
6	Simplify: $\left(\frac{81}{16}\right)^{\frac{-3}{4}} \times \left[\left(\frac{25}{9}\right)^{\frac{-3}{2}} \div \left(\frac{5}{2}\right)^{-3}\right]$	2
7	Consider the experiment of rolling a die. If A be the event "getting a prime number" and B is the event "getting an odd number", then write the sets representing the events (a) A or B (b) A and B (c) A but not B (d) not A	2
8	Simplify the expression: $i^{30} + i^{40} + i^{60}$	2
SECTION C		
9	Answer the following questions: (a) Find the value of $\log_2 \frac{\sqrt{64}}{\sqrt{8}}$ (b) Express $\frac{1}{2} \log 9 - 3 \log 4 + 3 \log 2$ as the logarithm of a single number.	3
10	Express $\frac{4i+1}{1-4i}$ in a+ib form and find the multiplicative inverse.	3
11	<p>Case Study: In a class of 60 students, 30 opted for NCC, 32 opted for NSS and 24 opted for both NCC and NSS.</p> 	

	<p>Based on the above information answer the following questions:</p> <p>If one of these students is selected at random, find the probability that</p> <ul style="list-style-type: none">(i) The student opted for NCC or NSS(ii) The student has opted neither NCC nor NSS(iii) The student has opted NSS but not NCC	<p>1 1 1</p>
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