# CONTINUOUS INTERNAL EVALUATION - 1

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| Dept: BS | Sem / Div: III/A,B | Sub: ADDITIONAL MATHEMATICS I | S Code: 18MATDIP31 |
| Date:24/02/2022 | Time:3:50-5:00 pm | Max Marks: 50 | Elective: N |

Note: Answer any 2 full questions, choosing one full question from each part.

| QN | | Questions | Marks |
|---|---|---|---|
| | | **PART A** | |
| 1 | a | Express $\frac{3+4i}{3-4i}$ in $a+ib$ form. | 8 |
| | b | If $z_1=2+3i, z_2=3-4i$ then evaluate $\lvert z_1\bar{z}_2\rvert$ | 8 |
| | c | Simplify the following :<br>(i) $(\cos 3\theta+i\sin 3\theta)^{-2}$ (ii) $(\cos 3\theta-i\sin 3\theta)^{-2}$ | 9 |
| | | **OR** | |
| 2 | a | Express $\frac{(1+i)(2+i)}{3+i}$ in $a+ib$ form. | 8 |
| | b | If $\vec{a}=3i-2j+4k, \vec{b}=i+j-2k$ then find $\vec{a}.\vec{b}$ | 8 |
| | c | If $\vec{A}=i+2j-3k, \vec{B}=3i-j+2k$ then P.T. $(\vec{A}+\vec{B})$ and $(\vec{A}-\vec{B})$ are orthogonal. | 9 |
| | | **PART B** | |
| 3 | a | Find the sine of the angle between the vectors $\vec{a}=4i+3j+k$ and $\vec{b}=2i-j+2k$ | 8 |

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| | b | If $\vec{a}=2i+3j-4k, \vec{b}=8i-4j+k$ then P.T. $\vec{a}$ is perpendicular to $\vec{b}$ | | 8 |
| | c | If $\vec{A}=i-2j-3k, \vec{B}=2i+j-k, \vec{C}=i+3j-k$ then find (i) $(\vec{A}X\vec{B})X(\vec{B}X\vec{C})$ (ii) $(\vec{A}X\vec{B}).\vec{C}$ | | 9 |
| | | **OR** | | |
| 4 | a | Find the angle between the vectors $\vec{a}=5i-j+k$ and $\vec{b}=2i-3j+6k$ | | 8 |
| | b | Find the unit vector perpendicular to both $\vec{a}$ and $\vec{b}$ where $\vec{a}=i-2j+3k, \vec{b}=2i+j+k$ | | 8 |
| | c | If $\vec{a}=3i+7j-2k, \vec{b}=2i+5j+10k$ find $(\vec{a}+\vec{b})x(\vec{a}-\vec{b})$ | | 9 |

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HOD
23/02