

DEPARTMENT OF MATHEMATICS
BARASAT GOVERNMENT COLLEGE
SELF ASSESSMENT TEST-1 [SAT-1]

SEMESTER-II, 2020

Subject: Mathematics

Course Code: MTMACORE04T

DATE OF SAT-1: 16/04/2020

Maximum Marks: 30

Time: 1Hr. 15 Min.

[Answer all questions]

1. a) Solve, using the method of undetermined coefficients: $(D^2 - 3D + 2)y = 14 \sin 2x - 18 \cos 2x$. [5]

b) Solve, $(x^2 D^2 - xD + 4)y = \cos(\log x) + x \sin(\log x)$, where $D \equiv \frac{d}{dx}$. [5]

2. a) Solve by method of variation of parameters: $(D^2 + a^2)y = \tan ax$. [5]

b) Solve, using the method of undetermined coefficients: $(D^2 + 4)y = x^2 \sin 2x$, where $D \equiv \frac{d}{dx}$. [5]

3. a) Solve, $(x^2 D^2 - 3xD + 5)y = x^2 \sin(\log x)$, where $D \equiv \frac{d}{dx}$. [5]

b) Solve by method of variation of parameters: $(D^2 + 4)y = \operatorname{cosec} 2x$, where $D \equiv \frac{d}{dx}$. [5]

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