

Burdwan Raj College
Department of Mathematics
Internal Assessment: Home Assignment

(To be Submitted to designated email id mentioned below by 15 November 2020)

Semester: IV

Subject: Mathematics (Gen)

Paper: SEC2

Send your assignments to (email id): r.bhowmick88@gmail.com

FH: 10

Paper: - BH A 4 SEC
(Vector Calculus, Theory of Equations, Number Theory)

Send to this mail id:-
r.bhowmick88@gmail.com.

Answer any five questions:-

- (1) If $\vec{r} = 3t\hat{i} + 3t^2\hat{j} + 2t^3\hat{k}$, find $\frac{d\vec{r}}{dt} \times \frac{d^2\vec{r}}{dt^2}$
- (2) If $\vec{u} = t^2\hat{i} - t\hat{j} + (2t+1)\hat{k}$, $\vec{v} = (2t-3)\hat{i} + \hat{j} - t\hat{k}$
Show that $\frac{d}{dt}(\vec{u} \times \vec{v}) = 7\hat{j} + 3\hat{k}$, at $t=1$
- (3) If $A = x^3y\hat{i} - xz\hat{j} + 4yz\hat{k}$,
then show that $\text{curl curl } A = (4+2x)\hat{j}$
- (4) If α, β, γ be the roots of $x^3 + px^2 + qx + r = 0$
find the value of $\sum \alpha^2\beta$
- (5) Find the nature of roots of
 $7x^3 - 12x^2 - 6x - 5 = 0$
- (6) Solve by Cardan's method: $x^3 - 5x + 2 = 0$
- (7) Show that number of primes is infinite.
- (8) Show that $2 \cdot 7^n + 3 \cdot 5^n - 5$ is divisible
by 24

Procedure of Appearing in the Internal Examination:

1. Download the question paper from the "online examination" section of the College portal:
www.burdwanrajcollege.ac.in
2. Write your assignment on blank white A4 size papers.
3. The assignment must carry the following details of the student:

- a. Name of the Student
 - b. University Roll Number
 - c. University Registration Number
 - d. Name of the Paper
 - e. Mobile Number of the Student
- 4. Examinees will have to submit their own hand-written answer scripts electronically to the mail id specified by the College in a single pdf file.**
 - 5. On the subject-line of the mail write your Name and University Roll No.**