(Residential Autonomous College affiliated to University of Calcutta)							
			B.A. /B.Sc Mic	SECOND YEAR [2017-20] :. FOURTH SEMESTER (January – June) 2019 I-Semester Examination, March 2019			
Date	: 2	27/03/2019		MATHEMATICS (General)			
Time	::	1pm – 2pm		Paper: IV	Full Marks: 25		
			[Use separa	te Answer Book <u>for each group]</u>			
				<u>Group - A</u>			
Answer <b>any two</b> questions: [2×							
1.	Tes	st for converge	nce of the follow	ing integrals:			
	a)	$\int_{0}^{\infty} \frac{x}{\left(1+x\right)^{3}} dx$	b)	$\int_{0}^{1} \frac{\mathrm{d}x}{\sqrt{1-x^2}}$	[2.5×2]		
2.	a)	Evaluate $\int_{a}^{b} (x) dx$	$(b-a)^3(b-x)^2dx$	using Beta Function.			
	b)	Evaluate $\Gamma\left(\frac{1}{2}\right)$	$\left(\frac{7}{2}\right)$		[3+2]		

**RAMAKRISHNA MISSION VIDYAMANDIRA** 

3. Evaluate 
$$\iint_{R} x^2 y^2 dx dy$$
, where  $R = \left\{ (x, y) : x^2 + y^2 \le 1 \right\}$ . [5]

## **Group - B**

Answer any three questions:

Items of

Expenditure

Food

Clothing

Rent

Light and Fuel

Miscellaneous

[5] 4. The budget of two families is given below. Represent the data by bar diagram and comment on it.

Family B

(in Rs.)

1200

320

480

160

240

Family A

(in Rs.)

1600

800

600

200

800

5.	The mode of the following frequency distribution of heights of students of a class is 153 cm. Find the
	missing frequency of the distribution:

Height in cm	140 - 145	145 - 150	150 - 155	155 - 160	160 - 165
No. of Students	10	20	35	?	10

[3×5]

[5]

6. Find out the standard deviation from the following table giving the age distribution of 540 members. [5]

Age in years	30	40	50	60	70
No. of members	64	132	153	140	51

- There are 2 urns. Urn I contains 2 white and 3 red balls while Urn II contains 3 white and 4 red balls. An urn is chosen at random and 1 ball is drawn from it. The ball turns out to be white. What is the probability that Urn II was chosen?
- 8. Find expectation and variance of a Binomial distribution with parameters n and p. [5]

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(2)