

American International University-Bangladesh

**Faculty of Science & Technology**

**Department of Mathematics**

**MAT1205: Integral Calculus and Ordinary Differential Equations (Sections: All)**

Midterm Examination Spring 2018-2019

Total Marks: 40 Time: 2 hours

Course coordinators: Dr. M. Mostafizur Rahman and Ayesha Siddiqua.

**Instructions: 1. Results using programmable calculator without showing necessary steps will not be accepted.**

**2. Sharing or borrowing calculators and any other materials with others are not allowed.**

**3. Marks are indicated in the right margin.**

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| --- | --- | --- | --- | --- | --- |
| **1.** |  | Answer any **FOUR** of the following. | | | **8** |
|  | **a.** |  | **b.** | **c.** |  |
|  | **d.** |  | **e.** | **f.** |  |
|  |  |  | | |  |
| **2.** |  | Evaluate using **middle Riemann** sum with 4 subintervals. | | | **4** |
|  |  |  | | |  |
| **3.** |  | Answer any **ONE** of the following. | | | **4** |
|  | **a.** | Sketch the region bounded by the curves. Also find its area of the bounded region. | | |  |
|  | **b.** | Sketch the region bounded by the curves Also find the area of the bounded region. | | |  |
|  |  |  | | |  |
| **4.** |  | Answer any **ONE** of the following. | | | **4** |
|  | **a.** | Sketch the region bounded by the curves . Find the volume of solid generated by revolving the region about the axis. | | |  |
|  | **b.** | Sketch the region bounded by the curves . Find the volume of solid generated by revolving the region about the axis. | | |  |
|  |  |  | | |  |
| **5.** |  | Evaluate any **TWO** of the following integrals (using **Gamma/ Beta functions**). | | | **8** |
|  | **a.** |  | **b.** | **c.** |  |
|  |  |  | | |  |
| **6.** |  | Evaluate any **THREE** of the following integrals. | | | **12** |
|  | **a.** |  | **b.** **c.** | |  |
|  | **d.** |  | **e.** | |  |