**西南大学 计算机与信息科学学院**

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**《离散数学》课程试题【A】卷参考答案和评分标准**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2018～2019学年 第2学期** | | | | | | | | | | | **期末考试** | | |
| **考试时间** | | **120分钟** | | **考核方式** | | **闭卷笔试** | | | **学生类别** | | **本科** | **人数** | **400** |
| **适用专业或科类** | | | | **计科、软工、自动化专业** | | | | | | | **年级** | **2018级** | |
| **题号** | **一** | | **二** | **三** | **四** | | **五** | **六** | | **七** | **八** | **九** | **合计** |
| **得分** |  | |  |  |  | |  |  | |  |  |  |  |
| **签名** |  | |  |  |  | |  |  | |  |  |  |  |

**阅卷须知：阅卷用红色墨水笔书写，得分用阿拉伯数字写在每小题题号前，用正分表示，不得分则在题号前写0；大题得分登录在对应的分数框内；统一命题的课程应集体阅卷，流水作业；阅卷后要进行复核，发现漏评、漏记或总分统计错误应及时更正；对评定分数或统分记录进行修改时，修改人必须签名。**

**特别提醒：学生必须遵守课程考核纪律，违规者将受到严肃处**

**1 Fill the blanks（3 marks each, 15 marks in total）**

(1) is (2)  (3) 0; (4)  (5) .

**2.**(15 points). (1)—(5): ABCDD

**3.** (1) **Solution**

   (4 points)

   (4 points)

(2) **Solution** Adding *BA*: *y* = 1, *x* from 1 to -1 and applying Green’s Theorem (2 points)

= =2e (6 points).

(3) **Solution** =  (4 points)

=  (4 points)

(4) **Solution** Adding *S*1： upward. (2 points)

Applying Gauss’ Formula, = (3 points)

=

=0 (3 points)

(5)**Solution**  (3 points)

= (5 points)

**4.**

(1) **Proof** *f* is clearly continuous at every point (*x*, *y*) ≠ (0, 0). (4 points)

Since, *f*(*x*,*y*) is not continuous at (0, 0) (6 points)

(2) **Solution** Since , the series converges for |*x*|<1 and diverges if |*x*|>1. At , implies the series diverges. It follows the interval of convergence of the given series is (-1, 1). (4 points)

As ，  

  (6 points)

(3) **Solution** The gradients of *f* and *g* are and . (2 marks)

To find the critical points, we solve the equations and *g*=0, i.e., , , , and . (3 marks)

Thus the critical point is , which is the only critical point. (3 marks)

Therefore, the minimum of f subject to the constraint g=0 is  (2 marks)