**西南大学计算机与信息科学学院**

∣

∣

∣

∣

∣

∣

∣

∣

∣

密

∣

∣

∣

∣

∣

∣

∣

∣

∣

∣∣

封

∣

∣

∣

∣

∣

∣

∣

∣

∣

∣

∣

线

∣

∣

∣

∣∣

∣

∣

∣∣

∣

学院 专业 年级 姓名 学号

**《** 高等数学IB **》课程试题 【B】卷参考答案和评分标准**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2019～2020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** |  |
| **适用专业或科类** | | | | **计信院计科、软件工程、自动化专业** | | | | | | | **年级** | **2019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**

**PLEASE ANSWER IN CHINESE OR IN ENGLISH OR BILINGUALISM!!**

1. **Fill the correct answer in the blanks (3 points each，15 points in all)**

(1)

(2) .

(3)

(4)或

(5)



1. **Choose the corresponding letter of the best answer that best completes the statement or answers the question among A, B, C, and D, and fill in the blanks (3 points each，15 points in all).**

(6)C(7)A(8)B(9)A(10)D

1. **Find the solutions for following problems by computing (8 points each，40 points in all)**

(11)Find the equation of the line through  that intersects the line  at a right angle.

The equation of the plane through the  perpendicular to the line 

2points

is , or equivalently .

. The required line intersects line  at .

2points

Let  be the direction vector of the line. Then . Choose.

2points

The equation of the required line is .

2points

(12)Suppose , where and , find .

2points

2points

**[Solution]** 



2points

2points

(13), where  is the solid bounded by , and .

**[Solution]** In cylindrical coordinate,  is .





2points

2points



2points

2points

(14), where *L* is the arc of parabola from  to .

**[Solution]** *L*： from  to . .

2points

2points

2points



2points

(15), whereis the part of conecontained in .

(15)**[Solution]** . 

2points



2points



2points

2points



2points

**4. Solve the following comprehensive problems (10 points each，30 points in all)**

(16)

1. Find the maximum and minimum values of  on the closed and bounded set .

2points

**[Solution]** ，; , ,.

The interior critical point, obtained by solving , is .

Since, is not a local extreme point. Thus the maximum and minimum must occur on the boundary of *S*.

Let .

2points

Solving , we have, or, or,or .

2points

, and 

2points

Thus, on the closed and bounded set, the maximum value of *f* is. The

Minimum value of *f* on *S* is.

2points

(17)

1. 

**[Solution]** Let . . So,  converges when .

When  the series, , diverges. When  the series, , diverges.

Thus, the convergence set of  is . Let .

3points

 

3points

2points

2points

(18)

1) , where is the surface of the solid bounded by  and



, taking to be outward normal.



**[Solution]** Let,, and.Then,, and.

3points

, taking  to be upward normal.  is the solid Bounded byand.

.

3points

By Gauss’s Theorem,







2points





2points