



OBSERVATIONAL  
TEST  
PLANETARIUM

PART I

**READ  
CAREFULLY**

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**Inside the dome:**

- 1) The observational round in the planetarium consists of two parts, one inside the dome and the other outside the dome.
- 2) The inside part consists of 3 questions and takes 30 minutes.
- 3) When you enter the dome, you will be directed to your seat. Here you will find a clipboard with your answer sheet attached, one data table and a flashlight. During the adaptation time the students may stand and change the position around his place, but they are not allowed to communicate with each other. During the observation you can stand and turn in order to make a comfortable observation.
- 4) Fill your student ID in the box on the answersheet.
- 5) PAY ATTENTION TO THE ASSISTANTS, and follow their instructions.
- 6) The timing for the first part is as follows:
  - a) **8 minutes for your eye adaptation to the darkness;**
  - b) **10 minutes for the first question;**
  - c) **6 minutes for the second question;**
  - d) **6 minutes for the third question;**
- 7) Use the flash light only when you need it and point it only to your paper.
- 8) When you leave the dome, leave everything on your seat.
- 9) PLEASE WRITE ONLY ON THE PRINTED SIDE OF THE ANSWER SHEET. DON'T USE THE REVERSE SIDE. The evaluator will not take into account what is written on the reverse of the answer sheet.

**GOOD LUCK!**



*Please write ONLY on this side of the paper*

**Question 1**

The sky projected in the dome corresponds to Suceava (Long  $26^0 15'$ ), at 18:00 UT, on a certain day of a certain month.

8 minutes – relax and familiarize your eyes with the darkness. During this time don't use the flash light.

Two arcs of circle will now be projected. The arcs are segmented. Each segment represents an interval of some degrees. This number is not the same for each arc.

**10 minutes – Question 1**

- a. Identify each arc by circling the correct name and give the angular size of each segment (in degrees).

|            |         |          |          |              |
|------------|---------|----------|----------|--------------|
| First arc  | Equator | Meridian | Ecliptic | Segment size |
|            |         |          |          |              |
| Second arc | Equator | Meridian | Ecliptic | Segment size |
|            |         |          |          |              |

- b. Estimate the local sidereal time of the sky you see in the dome.

$\theta_{\text{sidereal}}$

- c. Determine the month to which the projected sky would correspond at the given time. Fill in the box the number of the month (1 to 12).

Month number



*Please write ONLY on this side of the paper*

**Question 2 and 3**

For questions 2 and 3 the assistant will use a small red arrow pointer to point some objects in the sky. Each object will be pointed at for **2 minutes** (30 seconds arrow pointer on and 10 seconds off). Please pay attention to the assistant announcements.

**6 minutes – Question 2**

Location of three Messier objects will be pointed one by one. For each Messier object pointed, fill in the boxes the Messier catalog number of it and the number which indicates its type, as follows: **1 for galaxy, 2 for nebula, 3 for open cluster, 4 for globular cluster.**

Also, for each object, fill in the appropriate box the IAU abbreviation of the constellation where the star is located. Use **Table 1** for this purpose.

|                                |  |                                 |  |                                       |  |
|--------------------------------|--|---------------------------------|--|---------------------------------------|--|
| 1 <sup>st</sup> Messier object |  | Number which indicates the type |  | IAU abbreviation of the constellation |  |
| 2 <sup>nd</sup> Messier object |  | Number which indicates the type |  | IAU abbreviation of the constellation |  |
| 3 <sup>rd</sup> Messier object |  | Number which indicates the type |  | IAU abbreviation of the constellation |  |

**6 minutes – Question 3**

Three stars will be pointed successively. Each star will be pointed 2 minutes. Fill the appropriate box the name of the star (or Bayer designation) and the number which indicates its type (**1 for single, 2 double**). Also, for each star, fill in the appropriate box the IAU abbreviation of the constellation where the star is located. Use for that **Table 1**.

|                      |  |                                 |  |                                       |  |
|----------------------|--|---------------------------------|--|---------------------------------------|--|
| 1 <sup>st</sup> Star |  | Number which indicates the type |  | IAU abbreviation of the constellation |  |
| 2 <sup>nd</sup> Star |  | Number which indicates the type |  | IAU abbreviation of the constellation |  |
| 3 <sup>rd</sup> Star |  | Number which indicates the type |  | IAU abbreviation of the constellation |  |

You have finished the first part. Verify if you have written your student ID on every page. Put the clipboard with the answer sheets attached and the flashlight on your seat, and leave the dome.