Student ID code: ☐☐☐–☐☐

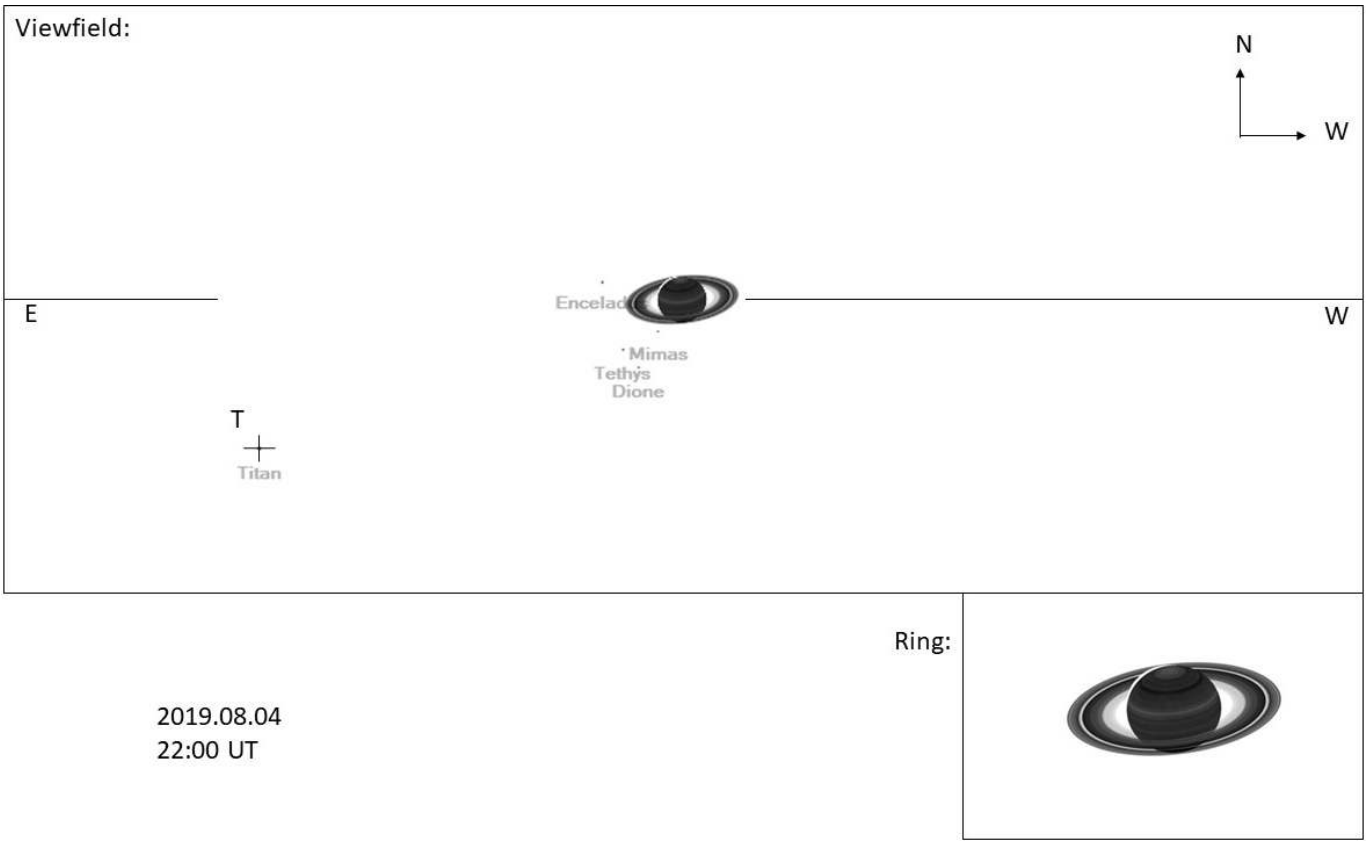
OBSERVATIONAL ROUND – SOLUTIONS & MARKING SCHEME

NO - TASK 1: ALIGNMENT OF FINDERSCOPE WITH THE MAIN TELESCOPE **TOTAL: 5 p**

Evaluation of the alignment and marking is done by the telescope assistants. **Max.: 5 points**

NO - TASK 2: SATURN AND TITAN **TOTAL: 15 points**

2019.08.04 22:00 UT



d_{Titan}: 164″
d: 148-180″ **3 points**
d: 139-189″ **2 points**
d: 123-205″ **1 point**

PA_{Titan}: 109°
PA: 99 – 119° **4 points**
PA: 89 – 129° **2 points**

OBSERVATIONAL ROUND – SOLUTIONS & MARKING SCHEME
TRANSPARENT TEMPLATE FOIL 1 FOR TITAN POSITION 08.04

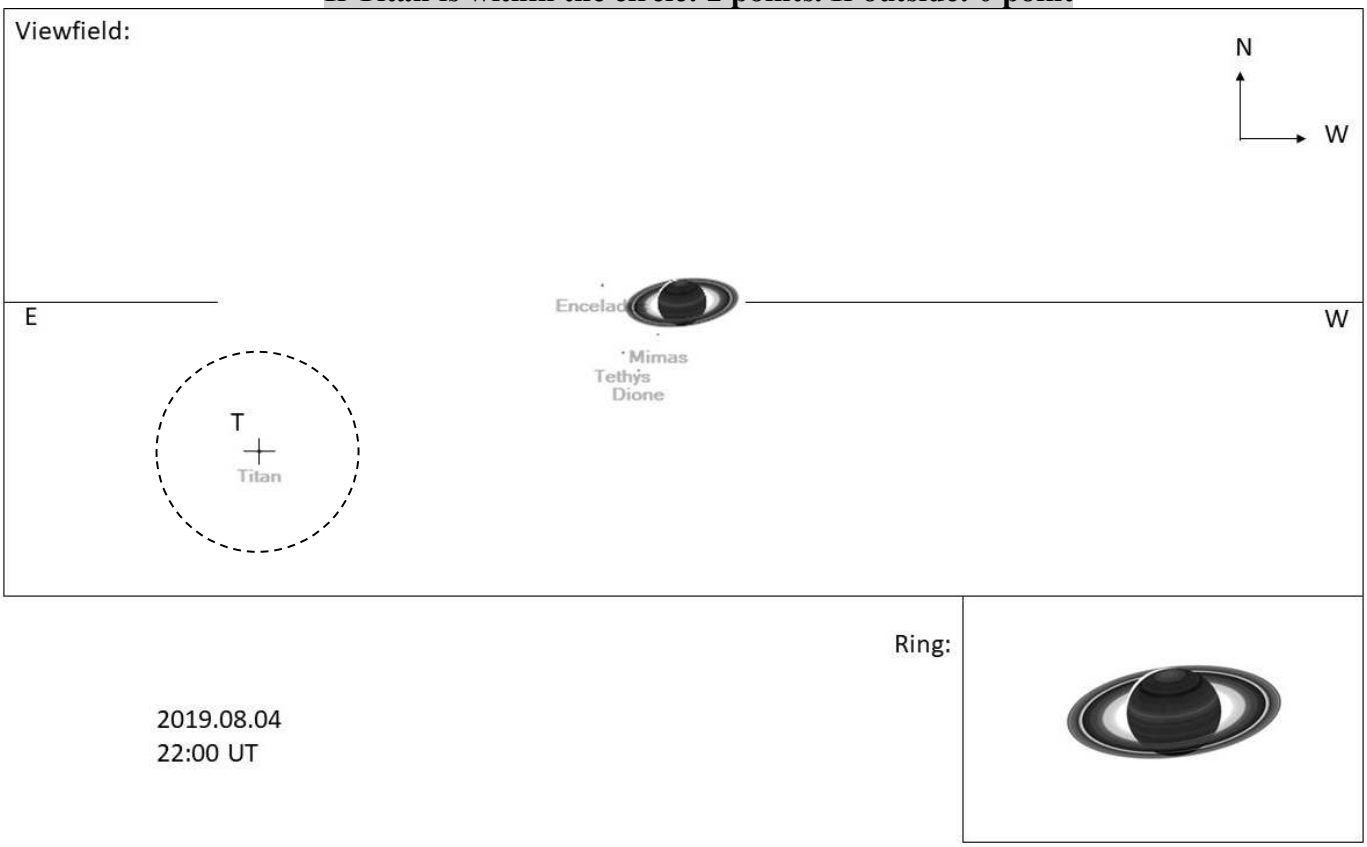
NO - TASK 1: ALIGNMENT OF FINDERSCOPE WITH THE MAIN TELESCOPE **TOTAL: 5 p**

Evaluation of the alignment and marking is done by the telescope assistants. **Max. : 5 points**

NO - TASK 2: SATURN AND TITAN **TOTAL: 15 points**

2019.08.04 22:00 UT

If Titan is within the circle: 2 points. If outside: 0 point

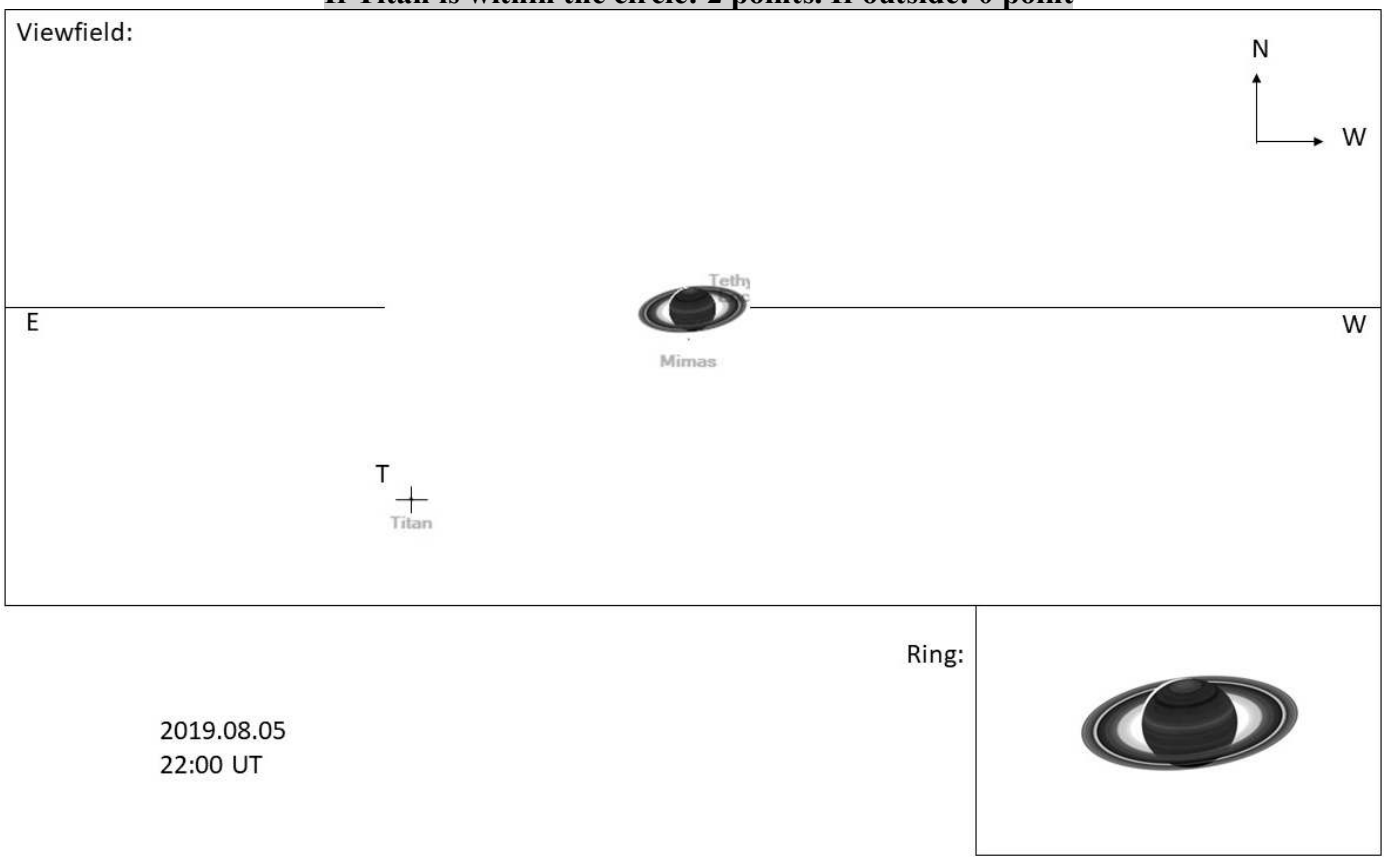


d_{Titan}: 164″
d: 148-180″ **3 points**
d: 139-189″ **2 points**
d: 123-205″ **1 point**

PA_{Titan}: 109°
PA: 99 – 119° **4 points**
PA: 89 – 129° **2 points**

2019.08.05 22:00UT **Solution and marking scheme of NO**

If Titan is within the circle: 2 points. If outside: 0 point



d_{Titan}: 129″
d: 116-131″ **3 points**
d: 110-148″ **2 points**
d: 97-161″ **1 point**

PA_{Titan}: 124°
PA: 114-134° **4 points**
PA: 104-144° **2 points**

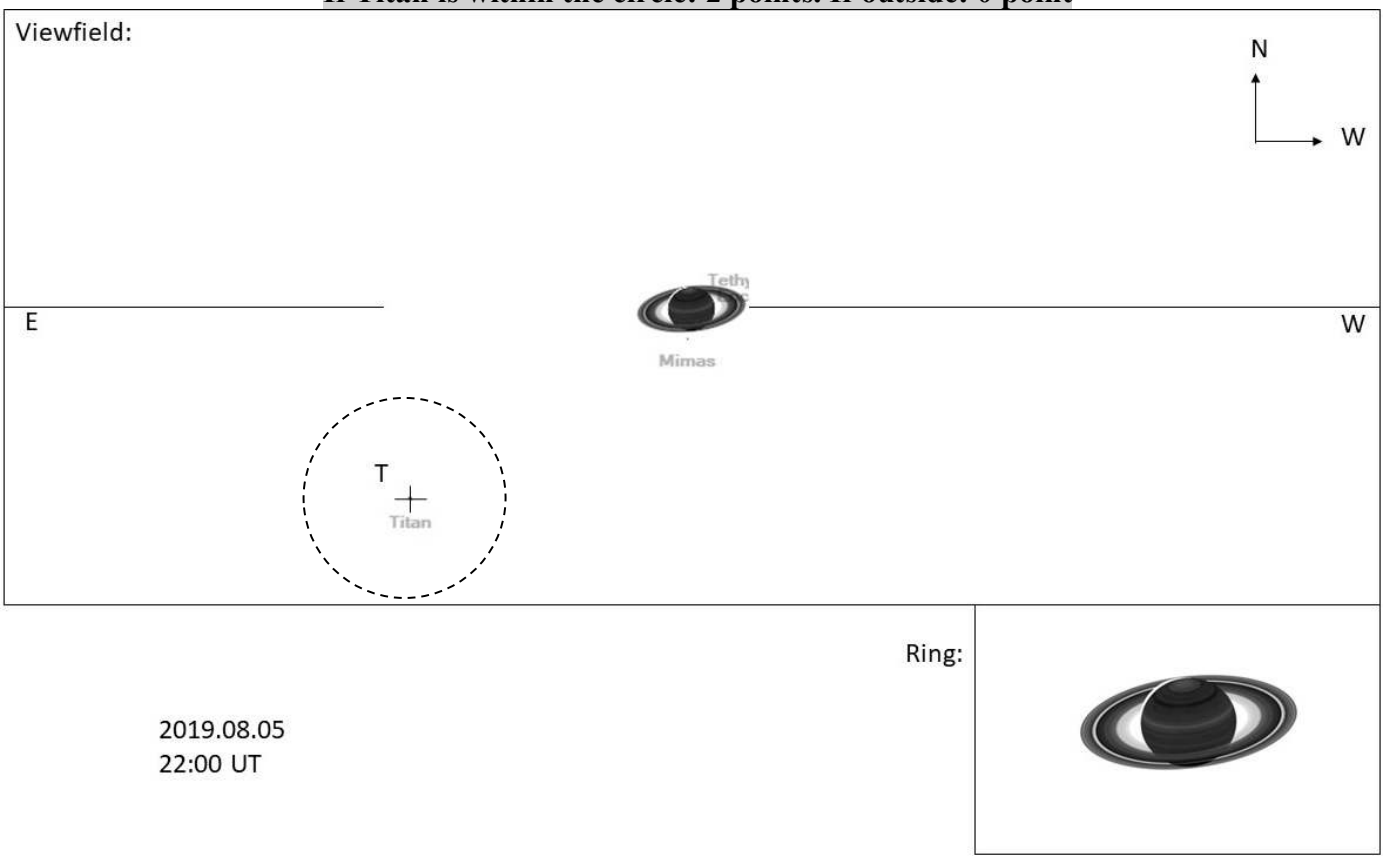
Scoring:

Titan position + name:		**2 points**
Titan is outside the circle:		**0 point**
Ring continuity in front of the disk is proper		**2 points**
Ring tilt towards Earth is proper		**2 points**
ring does not exceed northern pole, ring is not too thin		
Ring tilt towards sky E-W direction is proper		**2 points**
PA measurement of Titan:	±10°	**4 points**
	±20°	**2 points**
Distance calculation of Titan	±10%	**3 points**
	±15%	**2 points**
	±25%	**1 point**

2019.08.05 22:00UT **Solution and marking scheme of NO**

TRANSPARENT TEMPLATE FOIL 2 FOR TITAN POSITION 08.05

If Titan is within the circle: 2 points. If outside: 0 point



d_{Titan}: 129″
d: 116-131″ **3 points**
d: 110-148″ **2 points**
d: 97-161″ **1 point**

PA_{Titan}: 124°
PA: 114-134° **4 points**
PA: 104-144° **2 points**

Scoring:

Titan position + name:		**2 points**
Titan is outside the circle:		**0 point**
Ring continuity in front of the disk is proper		**2 points**
Ring tilt towards Earth is proper		**2 points**
ring does not exceed northern pole, ring is not too thin		
Ring tilt towards sky E-W directions is proper		**2 points**
PA measurement of Titan:	±10°	**4 points**
	±20°	**2 points**
Distance calculation of Titan	±10%	**3 points**
	±15%	**2 points**

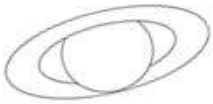
±25% **1 point**

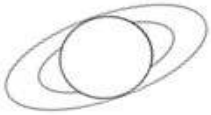
Solution and marking scheme of NO

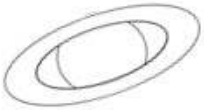
Saturn drawing evaluation scheme

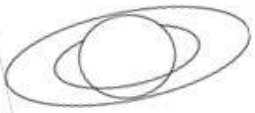
Ring and continuity in front of the disk – max 2 p

Ring:  proper – 2p

Ring:  inverse – 0p

Ring:  improper – 0p

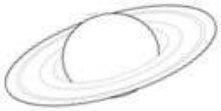
Ring:  improper – 0p

Ring:  too wide ring – 0p

Ring:  too narrow ring – 0p

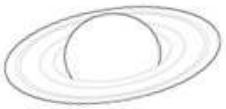
Ring tilt towards Earth – max 2p sub-Earth Phi=24,8°

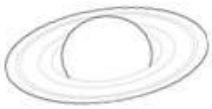
Ring:  24,8° – 2p

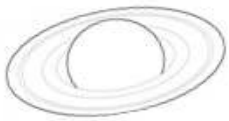
Ring:  22,8° – 2p

Ring:  20,8° – 1p, S pole visible

Ring:  16,8° – 0p, too thin

Ring:  26,8° – 2p

Ring:  28,8° – 1p, very thick

Ring:  30,8° – 0p, too thick

Saturn drawing evaluation scheme

Ring tilt towards sky E-W direction – max 2p PA equatorial: 6,4°

Ring:  6,4° – 2p

Ring:  9,4° – 2p

Ring:  12,4° – 1p

Ring:  15,4° – 0p

Ring:  6,4° – 2p

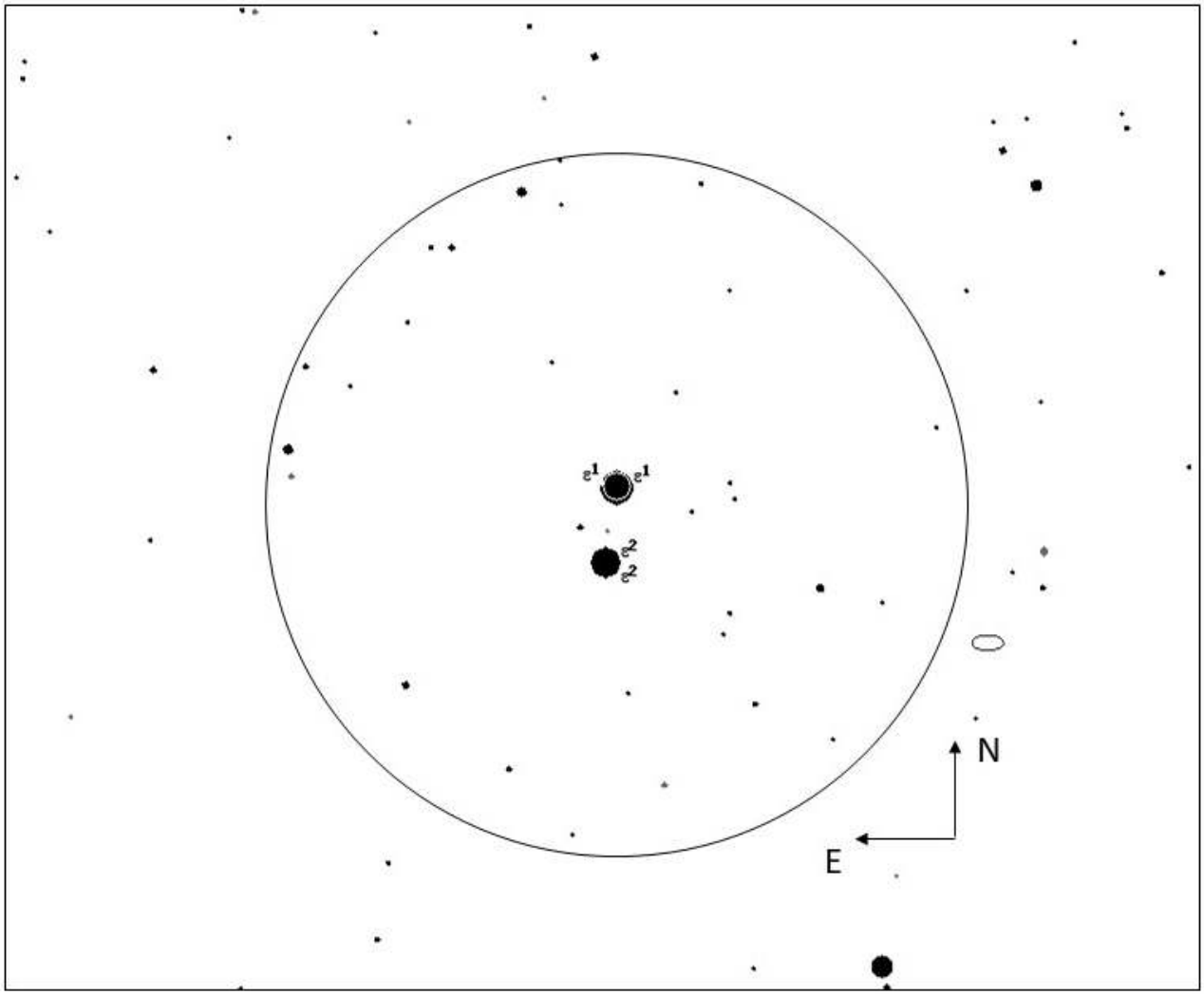
Ring:  3,4° – 1p

Ring:  0° – 0p

NO - TASK 2 / alternative: OBSERVING EPSILON LYR **TOTAL: 15 points**

Checking the object in the FOV, and pointing is evaluated by the telescope assistant. (**0-3 points**)

FOV with 10 mm eyepiece: The components of the close pairs are not resolved.



FOV drawing: star field and directions:

Correct direction & labelling of North and East relative to the star field:	**2 points**
Correct drawing of at least 3 stars in the FOV:	**1 point**
Correct drawing of at least 6 stars in the FOV:	**2 points**

Wide pair distance: **208" = 3,47'** **2 points**

Wide pair PA: **172°** **3 points**

Correct estimation of the relative angle of close pairs: **3 points**

Distance estimation of wide pair: $d_{\varepsilon 1\text{-}\varepsilon 2}$ = 3.2 – 3.8′ **2 points**
$d_{\varepsilon 1\text{-}\varepsilon 2}$ = 2.8 – 4.2′ **1 point**

Position angle of the wide pair: $PA_{\varepsilon 2}$ = 170-175° **3 points**
$PA_{\varepsilon 2}$ = 167-177° **2 point**
$PA_{\varepsilon 2}$ = 162-182° **1 point**

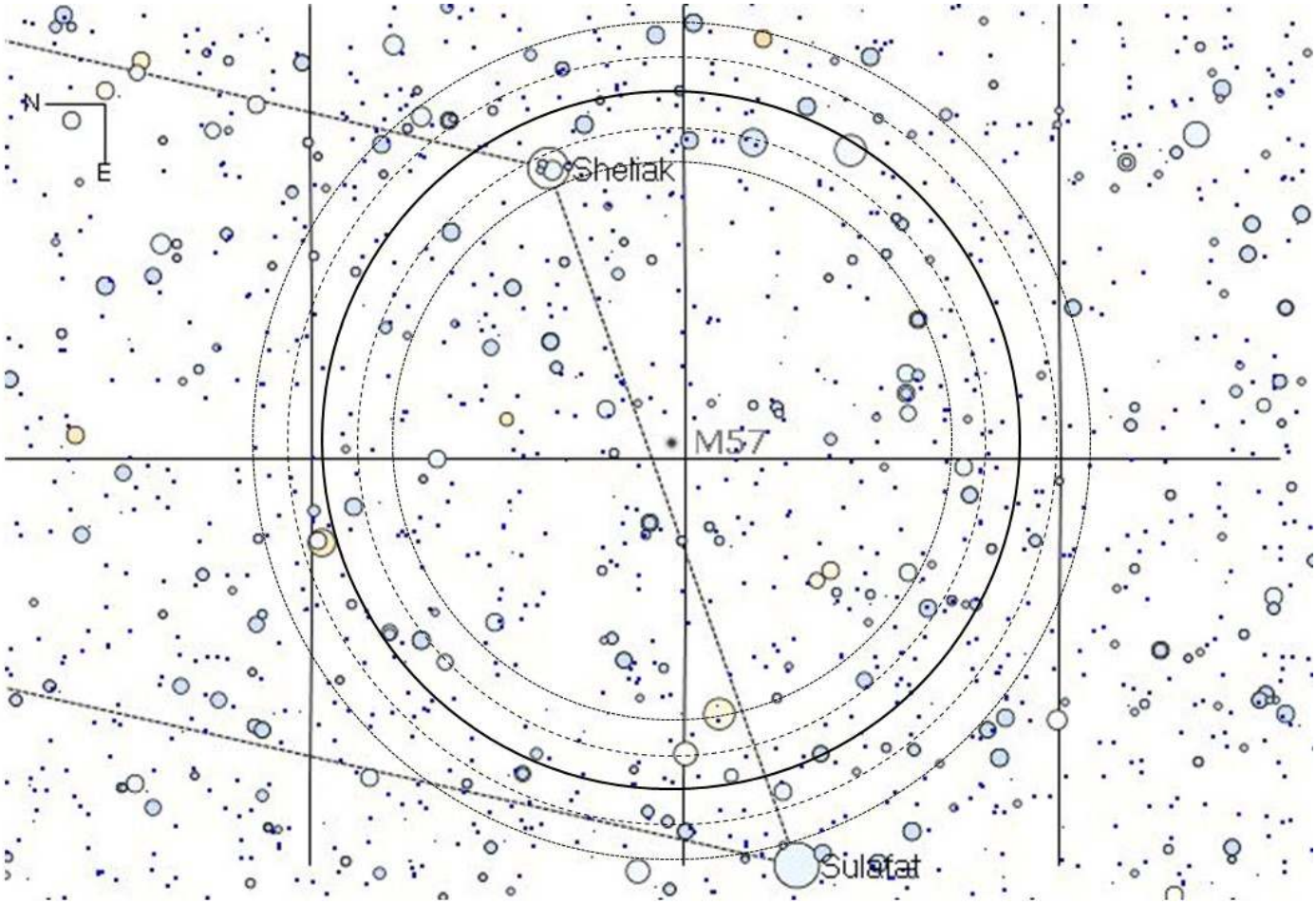
Relative angle between the direction of lines fitted onto the two close pairs: 92° (also the 88° complementary angle is acceptable – referring to this, the evaluation bands are centered to 90°)

85-95° **3 points**
80-100° **2 points**
75-105° **1 point**

NO - TASK 3: SURROUNDING OF M57 (RING NEBULA) **TOTAL: 10 points**

Checking the object in the FOV, and pointing is evaluated by the telescope assistant. (**0 - 4 points**)

Field of view (in 25 mm eyepiece):



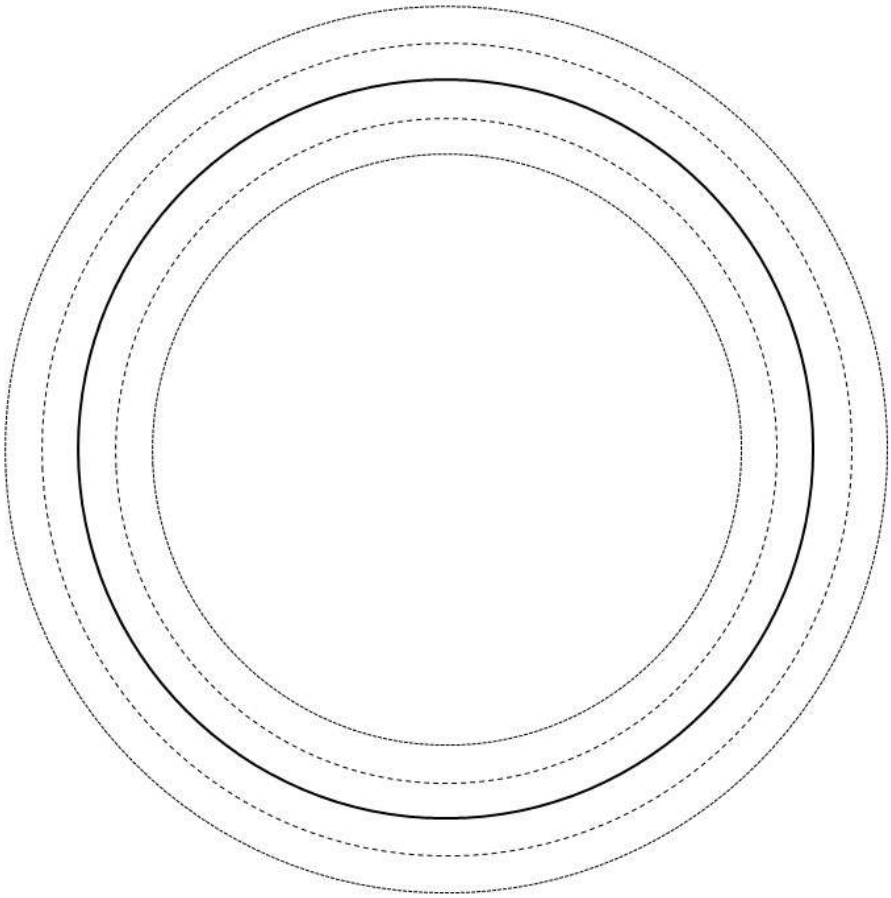
Accuracy within ±10% : **6 points**

Accuracy within ±20% : **3 points**

NO - TASK 3: TRANSPARENT TEMPLATE FOIL FOR TASK 3

Checking the object in the FOV, and pointing is evaluated by the telescope assistant. (**0 - 4 points**)

Field of view (in 25 mm eyepiece):



Accuracy within ±10% : **6 points**

Accuracy within ±20% : **3 points**

NO - TASK 4: VISUAL MAGNITUDE ESTIMATION OF AF CYGNI **TOTAL: 15 p**

Checking the object in the FOV, and pointing is evaluated by the telescope assistant. (**0 - 8 points**)

Brightness estimation:

	mag	Date, time:	UTC

Magnitude ±0.2 mag: **6 points**
Magnitude ±0.3 mag: **4 points**
Magnitude ±0.4 mag: **2 points**

Time in UTC (if corrected for Summer Time and Time Zone differences): **1 point**

Reference estimation: according to 3 independent visual amateur observations during the night.

NO - TASK 5: NAKED EYE MAGNITUDE ESTIMATION OF 2 STARS **TOTAL: 5 p**

Brightness estimation of STAR 2: **4.3** mag (zeta UMi)

Brightness estimation of STAR 1: **3.0** mag (gamma UMi)

Values within ±0.2 mag: **2-2 points**
Values within ±0.3 mag: **1-1 point**

Angular distance estimation between γ UMi and Polaris: **19°**

Values within ±3°: **1 point**