



Observation and Simulated Sky

Points: 75p (17 questions in 45 minutes)

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(Academic Committee for simulated sky test)

Topic: Sky Observation (Answers)

SOLUTION

On the projection screen in front of you, a series of images will be projected. Look at the image and answer the following questions:

(Image 1)

2 mins (2+2+2 points)

1. Identify the drawn lines on the image:

Line Number:	1	2	3
Celestial Equator		✓	
Ecliptic			✓
Local Meridian	✓		
Local Vertical			
Zero RA			
Galactic Equator			

(Image 2)

2 mins (3 points)

2. This image was taken from the town of Fada in Chad. What is the latitude of this place?

- A. 10°
- B. 17°**
- C. 22°
- D. 33°

(Image 3)

3 mins (4 points)

3. Two of the following stars are transiting the meridian in the image. Tick the boxes to those stars.

Arcturus	Mizar	Spica	Regulus
	✓	✓	

(No Image for questions 4, 5 and 6)

8 mins

4. If the age of the Moon is 27.5 days, in which direction should we observe it and at what time? (2 points)

- A. Before sunrise to the east**
- B. After sunset to the west
- C. Close to zenith at sunrise
- D. At 9 am rising in the East



5. Which of the Right Ascensions (RA) listed below will approximately coincide with the local meridian at Pune, India (74° E) on April 10 at 19:15 local time? Select only one choice. (5 points)

- A. 6 h
- B. 7 h
- C. 8 h**
- D. 9 h
- E. 10 h

6. At what time during this night (April 10) would we find the Regulus [α Leo (RA = 10h 08m 22.3s, DEC = $+11^{\circ} 58' 02''$)] at its maximum altitude as seen from Pune, India? (4 points)

- A. 18:00h
- B. 19:00h
- C. 20:00h
- D. 21:00h**
- E. 22:00h

(Image 4 for questions 7, 8, 9 and 10)

The projected sky now corresponds to **-30° of latitude (South)** with **-74° longitude (West)**.

7. Select the constellation pack that crosses the celestial equator on the image. 2 mins (3 points)

- A. Ori, Tau, Cet, Eri, Psc, Aqr, Aql, Ser**
- B. Mic, Tau, Per, Cae, Mon, Aql, And, Ser
- C. Gru, Tau, Cha, Ara, Aqr, Aql, And, Aps
- D. For, Tri, Cet, Psc, Sct, Aql, And, Ser





8. Choose the name of stars indicated by the arrows (tick in the correct cell) 2 mins (6 points)

Star Number:	1	2	3
Achernar		✓	
Alnair			
Altair	✓		
Alnath			
Ankaa			
Canopus			✓

9. Are the following Messier objects presented in the projected sky?. Select (X) YES or NO depending on the case. 3 mins (6 points)

Object	YES	NO
M15 (Peg)	✓	
M16 (Aql)	✓	
M27 (Vul)	✓	
M6 (Sco)	✓	
M15 (Cas)		✓
M27 (CMi)		✓

10. Choose the name of the selected stars (tick in the correct cell). If the same object is listed more than once, choose the option with the correct constellation. 3 mins (3 points)

Star Number:	1	2	3
Miaplacidus (Car)			✓
Miaplacidus (Lac)			
Sham (Sge)	✓		
Sham (For)			
The Persian (Gru)			
The Persian (Ind)		✓	

(Image 5, for questions 11 and 12.

4 mins

11. From the list below select the option that contain the constellations that are along the line of the ecliptic:

(4 points)

- A. Psc, Cap, Sgr, Oph
- B. Lib, Sco, Oph, Sgr**
- C. Cap, Sge, Lib, Vir
- D. Sgr, Oph, Sco, Vir
- E. CrA, Sco, Oph, Leo



12. Which constellation / its part is encircled in the image? (3 points)

- A. Sagittarius (Sgr)
- B. Corvus (CrV)
- C. Telescopium (Tel)
- D. Corona Australis (CrA)**

(Image 6)

13. You are making an observation through a telescope pointed towards the centre of the galaxy. You find an interesting object as shown in the image 6. What is this object?

2 min (3 points)

- A. M42 - Orion Nebula
- B. M31 - Andromeda Galaxy
- C. NGC 2024 - Flame Nebula
- D. M8 - Lagoon Nebula**
- E. M20 - Trifid Nebula

(Image 7)

14. In the Messier Astronomical Catalogue there's a mysterious object: a galaxy. This object in the image cannot be easily identified. Some astronomers had said that it was a duplicate of another Messier Object, but here we have it as an original and awesome galaxy. Which object is this?

2 min (5 points)

- A. M31 - Andromeda Galaxy
- B. M33 - Triangulum Galaxy
- C. M51 - Whirlpool Galaxy
- D. M101 - Pinwheel Galaxy
- E. M102 - Spindle Galaxy**

(Image 8)

15. Estimate the magnitude of Shaula in the constellation Scorpio. 2 mins (2 points)

- A. 1
- B. 1.5
- C. 2 1 point**
- D. 2.5 2 points**
- E. 3 1 point

(Image 9)

16. Several stars have been indicated in image 9. Tick the stars indicated in the table below. (8 points)

Star Number:	1	2	3	4
Acubens				
Adhara				
Aludra		✓		
Alzirr			✓	
Ameb				
Gomeisa	✓			



α Mon				✓
Mebsuta				
Murzim				
Wasat				

(Image 10)

17. Several stars have been indicated in image 9. Tick the stars indicated in the table below. (8 points)

Object Number:	1	2	3	4
M 41				✓
M 42				
M 46		✓		
M 45				
M 48	✓			
M 50			✓	
M 64				
M 93				