

[61]

SARDAR PATEL UNIVERSITY  
B. Sc, 5<sup>th</sup> Semester (Under CBCS NC)  
Monday, 16<sup>th</sup> April 2018  
Session: Evening, Time: 02:00 PM to 05:00 PM  
Subject Code: (PHYSICS) US05CPHY06  
Course Title: Astronomy and Astrophysics

Max Marks: 70

- NB: i All symbols have their usual meaning.  
ii Figure at the right side of the question indicates full marks.

Que.1 Write correct answer for each of the following MCQs. [10]

- 1 Diffraction grating is a surface consisting of large number of finely placed closed \_\_\_\_\_ lines.
 

a) Transmission	b) Equidistance
c) Dispersion	d) None of above
- 2 Photometry is used for recording the \_\_\_\_\_ of stars and heavenly objects.
 

a) Image	b) Brightness
c) Spectrum	d) Photograph
- 3 In construction of HST \_\_\_\_\_ is specially design to study very faint object at high angular resolution.
 

a) High resolution spectrograph	b) Faint object camera
c) Faint object spectrograph	d) Wild field planetary camera
- 4 \_\_\_\_\_ prominence is not a type of prominence.
 

a) Quiescent	b) Eruptive
c) Inactive	d) Sunspot type
- 5 \_\_\_\_\_ is not a type of binary stars.
 

a) Eclipsing	b) Spectroscopic
c) Visual	d) Spectrometric
- 6 The thermal ionization process in stars does not depend on \_\_\_\_\_.
 

a) Mass	b) Density
c) Pressure	d) Temperature
- 7 \_\_\_\_\_ is a multiple star system.
 

a) Eclipsing	b) Spectroscopic
c) Trapezium	d) none of these
- 8 The principal 'actors' of highly interesting galactic drama are \_\_\_\_\_.
 

a) Galaxies	b) Comets
c) Stars	d) Cosmic rays
- 9 The line absorption is produced by the interstellar gas in the spectra of distant \_\_\_\_\_.
 

a) Hot stars	b) Galaxies
c) Granules	d) Clusters
- 10 Positive radial velocities are observed in stars at \_\_\_\_\_ galactic longitudes.
 

a) 90° and 270°	b) 45° and 255°
c) 135°	d) 315°

Que. 2 Write answers of any ten questions in brief.

[20]

- 1 What is  $f/a$  ratio of telescope?
- 2 Define the terms :(1) optical telescope (2) radio telescope
- 3 What are radiometric magnitudes?
- 4 What is a reversing layer?
- 5 Define Plages and Filaments.
- 6 Define solar wind.
- 7 Write notes on optical double stars and binary stars.
- 8 Draw light curves from different binaries.
- 9 Write a note on Sirius.
- 10 Define 'hyperfine splitting'.
- 11 Draw a diagram explaining the structure of our galaxy.
- 12 What is REDDENING EFFECT of distant stars in the plane of galaxy?

Que. 3 [A] What is an optical telescope? Discuss various factors of optical telescope. [06]  
[B] Explain photographic photometry. [04]

OR

Que. 3 [A] Write short notes on earth's atmosphere and electromagnetic radiation. [06]  
[B] Explain only construction and working of slit spectrograph and slit less spectrograph. [04]

Que. 4 [A] Write a detail note on chromosphere. [06]  
[B] What are solar flares? Explain this phenomenon in detail. [04]

OR

Que. 4 [A] Write a note on 11 year cycle of sunspots. [06]  
[B] How are various forms of solar activities related to sun's magnetic field? [04]

Que. 5 Explain in detail H-R diagram of stars. [10]

OR

Que. 5 Derive mass luminosity relation. [10]

Que. 6 [A] Explain in brief the radio observation of galaxy at 21-cm wavelength. [06]  
[B] What is a rotational curve of galaxy? [04]

OR

Que. 6 [A] Enlist the rotational parameters of galaxy and discuss them. [06]  
[B] Write a short note on 'cosmic rays'. [04]

