

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
ONLINE END SEMESTER EXAMINATION
DECEMBER 2021

Course: ASTRONOMY AND ASTROPHYSICS

Semester: V

Course Code: PHYS 3013

Programme: BSc (H): PHYSICS

Max. Marks: 100

Instructions: Read the section headings carefully for Sections A, B and C

Total pages : 02

SECTION A

(Scan and upload)

(5Qx 4M = 20 Marks)

Q1	Match the following: i. Heliocentric ii. Triton iii. Titania iv. Geocentric	a. Uranus b. Ptolemy c. Copernicus d. Neptune	CO1
Q2	What are the different types of Binary Star systems? Describe them briefly.		CO1
Q3	Star A and star B are both equally bright as seen from Earth, but A is 60 pc away while B is 15 pc away. Which star is intrinsically brighter? By how much?		CO1
Q4	List the different spectral classes of stellar spectra. Give further subdivisions too.		CO1
Q5	Photons of energy 7.5×10^{-19} J are determined to be the cause of transitions observed in a stellar spectra. The frequency and wavelength of such photons are and respectively. (Given $h = 6.626 \times 10^{-34}$ Js).		CO1

SECTION B

(Scan and upload)

(4Q x 10M = 40 Marks)

Q6	What are the different types of telescopes? Explain the different parts of a typical telescope and their functions. [3 + 7]	CO1
Q7	What is H-R diagram in astronomy? Give its significance.	CO1
Q8	What are active galaxies? Construct a classification of active galaxies. [4 + 6]	CO4

Q9	<p>The 'Big Bang' theory is not the only theory of our universe. Compare the Big Bang theory with any other scenarios of the Universe.</p> <p style="text-align: center;"><u>OR</u></p> <p>What is CMB? Apprise its significance in understanding our universe.</p>	CO4
<p>Section C</p> <p>(Scan and upload) (2Q x 20M = 40 Marks)</p>		
Q10	<p>List some prominent theories of solar system formation. Describe and analyze in detail the theory that explains for all the prominent features of our solar system. [6 + 14]</p> <p style="text-align: center;"><u>OR</u></p> <p>Sun is not a homogenous ball of gas and fire! Analyze in detail, and describe in your own words the different regions of the Sun.</p>	CO2
Q11	<p>Stars are born, they grow and then die, like some living being. Invoking the relevant physics, chart in words the evolution path of stars more massive than our Sun, till their end.</p>	CO3