


Name:			
Enrolment No:			
<b>UPES</b> <b>End Semester Examination, December 2023</b>			
Course: <b>FUNDAMENTALS OF ASTRONOMY</b>			
Semester: <b>V</b>			
Program: <b>B.Sc (H) Physics</b>		Time : 03 hrs.	
Course Code: <b>PHYS 3023</b>		Max. Marks: 100	
<b>Instructions: All questions in Section A are mandatory, while question # 9 and 11 of Sections B and C, respectively, have internal options.</b>			
<b>SECTION A</b> <b>(5Qx4M=20Marks)</b>			
S. No.		Marks	CO
Q 1	Explain using a proper diagram as to why Venus is never observed at midnight.	4	CO2
Q 2	What are solstices on earth in positional astronomy?	4	CO2
Q 3	Differentiate between asteroids and comets.	4	CO2
Q 4	On one hand we hear that Black holes are such that even light doesn't escape it, and on the other we hear of a 'radiation' from Black hole! How do you explain that?	4	CO4
Q 5	Do white dwarfs turn black dwarfs, or is it the other way? And either way, do they become brown dwarfs on the way?	4	CO4
<b>SECTION B</b> <b>(4Qx10M= 40 Marks)</b>			
Q 6	Discuss the principal reason for the occurrence of seasons on earth. Also, briefly mention the false reasons implied for them.	7+3	CO1
Q 7	The evolution of stars is very neatly expressed and understood in terms of a plot. What is it called and what are its co-ordinates? Discuss how that plot explains the evolution of stars.	2+2+6	CO1
Q 8	Astronomy in present times is done over the entire range of the electromagnetic spectrum. However, we hear of observatories only in the visible and radio wave lengths on earth. Why? If there are, very briefly, what can be the differences in the optical and radio telescopes?	6+4	CO2
Q 9	In ancient times, how could man estimate the diameter of the earth and also the distance to Sun?  <b>OR</b>  Discuss in appropriate brief, the striking developments made in ancient India in the field of astronomy.		CO3

**SECTION-C**  
**(2Qx20M=40 Marks)**

Q 10	a. What is CMB? Evaluate its significance in cosmology. b. Apprise the concept of gravitational waves and its significance.	<b>3+9+4+4</b>	<b>CO4</b>
Q 11	One of the most celebrated models of our universe is the Big Bang model. Analyze the features of Big Bang model which makes it so acceptable.  <b>OR</b>  The Steady State Model is yet another model of our universe. Appraise its features which make it acceptable, and also its drawbacks.	<b>20</b>	<b>CO4</b>