

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2025)

CLASS: IMSc
BRANCH: PHYSICS

SEMESTER : VI
SESSION : SP/2025

SUBJECT: PH331 ASTRONOMY AND ASTROPHYSICS

TIME: 02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

Q.1(a)	What are apparent and absolute magnitudes of a shining object?	[2]	I	I
Q.1(b)	Assume two stars of apparent magnitudes m_1 and m_2 are at the distances d_1 and d_2 , respectively. Calculate the difference between the absolute Magnitude of the stars.	[3]	I	IV
Q.2(a)	Change $5^h 16^m 27^s$ into angle unit (degree, arc minutes and arc second).	[2]	I	VI
Q.2(b)	For a celestial sphere, explain the poles, equator and meridian.	[3]	I	II
Q.3(a)	Discuss about the atmospheric distortion of starlight.	[2]	II	VI
Q.3(b)	Discuss in brief about the salient features of a telescope.	[3]	II	VI
Q.4(a)	Explain the Kepler's laws of planetary motion.	[2]	II	V
Q.4(b)	State and Prove the Virial theorem.	[3]	II	V
Q.5(a)	Develop the Doppler red-shift in the radiations coming from the cosmic object.	[2]	III	III
Q.5(b)	At what wavelength the sun emits maximum number of photons. Surface temperature of the sun is 6000K.	[3]	III	I

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