CLASS: I.M.Sc.   SEMESTER : VI
BRANCH: PHYSICS   SESSION : SP/2023

SUBJECT: PH320 ATMOSPHERIC PHYSICS

TIME: 3 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Defined Hydrostatic Balance of the atmosphere and derive the expression for it.	[5]	1	1
Q.1(b)	Describe the various components of the Atmospheric boundary layer.	[5]	1	1
Q.2(a)	Derive the expression for Pressure gradient force.	[5]	2	1
Q.2(b)	What are the fundamental atmospheric forces, briefly describe them.	[5]	2	1
Q.3(a)	Show that the low-frequency limit of Planck's Law reduces to the Rayleigh-Jeans Law and in the high-frequency limit reduces to Wien's Law.	[5]	3	1
Q.3(b)	Calculate the equivalent blackbody temperature TE of the solar *photosphere* (i.e., the outermost visible layer of the sun) based on the following information. The flux density of solar radiation reaching the Earth, Fs, is 1368 W m^{-2}. The Earth–sun distance d is 1.50 x 10^{11} m and the radius of the solar photosphere Rs is 7.00 x10^8 m.	[5]	3	1
Q.4(a)	Derive the expression for maximum range of the Radar.	[5]	4	1
Q.4(b)	Describe the Elastic-backscatter lidar.	[5]	4	3
Q.5(a)	Describe Aerosols? What are the different types of aerosols?	[5]	5	1
Q.5(b)	Discuss the Radiative forcing in detail.	[5]	5	5

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