



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.A. DEGREE EXAMINATION – PHILOSOPHY

2 SEMESTER – APRIL 2024

PPL2MC01 – PHILOSOPHY OF NATURE

Date: 15-04-2024

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

SECTION A – K1 (CO1)

Answer ALL the questions

(5 x 1 = 5)

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| 1 | MCQ |
| a) | The uncertainty principle is a fundamental concept in:
i) Classical mechanics ii) Quantum mechanics iii) General relativity iv) Special relativity |
| b) | Kuhn in his account of philosophy of science refutes falsification theory of
i) Ian Hacking ii) Newton iii) Popper iv) Hempel |
| c) | Aristotle's view of the universe was primarily based on:
i) Observation and experimentation ii) Mathematical equations
iii) Geocentric model iv) Heliocentric model |
| d) | The Cosmic Microwave Background (CMB) radiation is considered as evidence for:
i) The existence of dark matter ii) The inflationary theory of the universe
iii) The steady-state theory of the universe iv) The existence of black holes |
| e) | The concept of "time dilation" arises from Einstein's theory of special relativity and implies that time:
i) Slows down in strong gravitational fields
ii) Slows down when an object approaches the speed of light
iii) Speeds up in regions of low gravitational potential
iv) Is absolute and unaffected by motion or gravity |

SECTION A – K2 (CO1)

Answer ALL the questions

(5 x 1 = 5)

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| 2 | Match the following |
| a) | General relativity Shift in the frequency or wavelength of a wave due to motion |
| b) | Doppler effect Fundamental principles describing motion and force |
| c) | Newton's laws Heisenberg |
| d) | Thomas Khun Theoretical framework describing gravity on cosmic scales |
| e) | Uncertainty Principle Paradigm is a framework in which Scientists do normal science |

SECTION B – K3 (CO2)

Answer any THREE of the following in 100 words each.

(3 x 10 = 30)

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|----------|---|
| 3 | Explain Aristotle's view of Cosmos. |
| 4 | Describe the four idols that the scientist must avoid in order to acquire true knowledge. |
| 5 | Explain the steady state theory and critically examine it. |
| 6 | What does the Lambda-CDM model of the universe say about our present universe? |
| 7 | Describe and evaluate the 'Big Rip' theory of the universe. |

SECTION C – K4 (CO3)

	Answer any TWO of the following in 200 words each.	(2 x 12.5 = 25)
8	How is science distinguished from non-science?	
9	How is classical mechanistic physics different from the Quantum physics	
10	Explain the Special Theory of Relativity and its implications.	
11	Describe and evaluate the 'heat-death' theory of the universe	

SECTION D – K5 (CO4)

	Answer any ONE of the following in 500 words	(1 x 15 = 15)
12	Critically analyze the Big Bang Cosmogony	
13	Critically analyse the Mechanistic view of science highlighting the contributions of Kepler's law of planetary motion, Galileo's law of inertia and Newton's three laws of motion.	

SECTION E – K6 (CO5)

	Answer any ONE of the following in 1000 words	(1 x 20 = 20)
14	How do concepts such as the "Big Crunch," "Heat Death," and "Big Rip" relate to the end of the universe? Discuss.	
15	Write an essay on the chief characteristics of empirical sciences with example for each characteristic and critically evaluate with the ideas of Thomas Kuhn whether science can have objectivity in its method.	

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