



ED-765

M.A./M.Sc. 4th Semester
Examination, May-June 2021

MATHEMATICS

Optional - B

Paper - III

Cosmology-II

Time : Three Hours] [*Maximum Marks* : 80

Note : Answer any **two** parts from each question. All questions carry equal marks.

Unit-I

1. (a) State and explain Einstein's model of universe and discuss its physical properties.
 - (b) Write a note on cosmological model.
 - (c) State and explain Einstein's modified field equation with cosmological term.
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(Turn Over)

(2)

Unit-II

2. (a) Derive de Sitter model of the universe and discuss its physical properties.
- (b) Derive de Sitter's line element for static homogeneous universe.
- (c) Compare de Sitter model with actual universe.

Unit-III

3. (a) State and explain Hubble's law.
- (b) Derive line element of Robertson-Walker metric.
- (c) Discuss red shift in Robertson-Walker line element.

Unit-IV

4. (a) State and explain Friedmann's model of the universe.
- (b) Write the difference between open universe and closed universe.
- (c) Write a short note on the age of the universe and matter dominated era of the universe.

(3)

Unit-V

5. (a) State and explain steady state cosmology and its property.
- (b) State and explain Einstein-de Sitter model.
- (c) Write a short note on Eddington-Lemaitre model.
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