Roll No. .....

DD–765

M. A./M. Sc. (Fourth Semester)
EXAMINATION, 2020

MATHEMATICS

(Optional—B)

Paper Third

(Cosmology—II)

Time : Three Hours

Maximum Marks : 80

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

Unit—I

1. (a) State and explain static cosmological model.

   (b) Write a note on Mach's principle.

   (c) Explain Einstein's model of universe and compare with actual universe.

Unit—II

2. (a) Obtain the line element for de-Sitter's cosmological model.

   (b) Write Einstein's concept of homogeneous and isotropic universe.

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(c) Obtain the line element for Einstein universe and discuss its property.

Unit—III

3. (a) Obtain the line element for Robertson's non-static cosmological model.

(b) Derive Hubble's law from Robertson walker's metric.

(c) State and explain red-shift in Robertson Walker's line element.

Unit—IV

4. (a) State and explain Friedmann's model of the universe.

(b) Find present age of the universe in closed FRW space time.

(c) Write a short notes on open and closed universe.

Unit—V

5. (a) Find expression for particle horizon for closed universe.

(b) State and explain Einstein-de Sitter's model.

(c) State and explain steady state cosmology in brief.