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M4MAT02-CT14

M. Sc. IV Semester Examination, 2017

PART - A

UNIT - I

1. (i) State principle of equivalence.

(ii) What is geodesic postulate ?

UNIT - II

(iii) What do you mean by spheuically symmetric ?

(iv) What are isotropic co-ordinates ?

UNIT - III

(v) What is relativistic effect of gravitation on the path of a planet ?

(vi) What do you mean by "Radar Echo Delay" ?

UNIT - IV

(vii) What is cosmological principle ?

(viii) Write de'sitter line element.

UNIT - V

(ix) What is Hubble's law ?

(x) What do you mean by particle horizon ?

PART - B

UNIT - I

2. Explain the principle of general covariance.

3. Explain Mach's principle.

UNIT - II

4. What is clock-paradox, explain it in general theory of relativity.

5. Obtain isotropic form of schwarzschild exterior line element.

UNIT - III

6. Discuss radar echo delay.

7. Explain analogues of Kepler's laws.

UNIT - IV

8. Discuss doppler effect in Einstein inverse.

9. Write physical properties of de-sitter universe.

UNIT - V

10. What is Weyl's postulate ? Explain it briefly.

11. Explain cosmological red shift for Robertson-Walker model.

PART - C

UNIT - I

12. Show that in the newtonian approximation, the metric component g_{44} plays the role of gravitational potential.

UNIT - II

13. Obtain Einstein field equations by using Schwarzs-child enterior solution.

UNIT - III

14. Dsicuss relativistic treatment of the bending of light rays in gravitational field.

UNIT - IV

15. Show that Einstein inverse is not an Einstein space where as the de-Sitter's universe is.

UNIT - V

16. Discuss Friedmann-Robertson-Walker cosmological model corresponding to pressureless dust distribution in a non-static universe.