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Code No. : 16503 AS N (A)

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (Mech. Engg.: CBCS) VI-Semester Advanced Supplementary Examinations, July-2019

Manufacture and Inspection of Gears
(Elective – I)

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Name the different types of gears with respective axis of the shaft.
2. What are hypoid gears? How it is different from a gear?
3. Define back angle and pitch cone in conical gears.
4. Explain the method of selecting gear cutter for cutting helical gear.
5. What are the necessary requirements for a gear material?
6. Outline the importance of inoculation in cast iron as a gear material.
7. List out the advantages of gear finishing?
8. Compare the gear finishing by lapping and honing.
9. What is G-TRAC gear broaching?
10. List out the different types of gear boxes are used in Automobiles.

Part-B (5 × 10 = 50 Marks)

- 11.a) Explain any two kinds of internal gear cutting methods. [5]
- b) With the help of a neat sketch explain the principle of gear cutting with the help of a 'Rack-type shaper cutter'. [5]
- 12.a) Illustrate the Gleason Reva cycle method for production of conical gears. [5]
- b) Interpret the process of bevel gear generator machine for manufacturing of straight bevel gears. [5]
- 13.a) Why non-ferrous alloys are not widely used for gear materials? And write the properties of any two non-ferrous alloys. [5]
- b) List the properties and applications of gears made by tin bronze and manganese bronze. [5]
- 14.a) Explain any two methods of gear grinding. [5]
- b) What are the reasons for gear failures and write their remedies? [5]

- 15.a) Explain gear generation by stamping and powder metal process and write merits and demerits of both the methods. [7]
- b) Distinguish between gear production cell and mass production. [3]
- 16.a) Explain the precision gear hobbing. Write the various factors affecting its performance. [5]
- b) Discuss the machine cutter in the production of conical gears. [5]
- 17. Answer any *two* of the following:
 - a) List and explain various nitriding methods to improve the hardness of gears. [5]
 - b) Distinguish between Crossed-axis shaving and Warm wheel shaving. [5]
 - c) Classify gear production systems and explain any one of the system. [5]

