Hall Ticket Number:

Code No. : 16505 N (B)

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (Mech. Engg.: CBCS) VI-Semester Main Examinations, May-2019

Manufacture and Inspection of Gears

Time: **3** hours Max. Marks: **70**

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

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	How the gears are broadly classified	2	4	1	3
2.	Illustrate the drawing procedure of involutes profile of the gear tooth.	2	1	1	3
3.	List out the different conical gear manufacturing methods?	2	2	2	4
4.	Explain about spiral bevel gear generation.	2	2	2	4
5.	List out gear material used for power transmission, high-speed applications and write properties of material.	2	2	3	3
6.	What is case Hardening? Name case hardening methods.	2	1	3	4
7.	What is the necessity of gear finishing?	2	1	4	3
8.	Summarize the composite error measurement method.	2	2	4	4
9.	Compare and contrast the properties achieved by hot rolling and cold rolling.	2	4	5	4
10.	Summarize the significance of gear production cells.	2	2	5	4
	Part-B (5 × 10 = 50 Marks)				
11. a)	Classify the generating processes of cylindrical gear cutting and explain gear shaping method with a sketch.	5	4	1	3
b)	Demonstrate the Fellow process of gear shaping with a neat sketch.	5	2	1	4
12. a)	Explain with the help of a neat sketch, the 'Face hobbing' of generating gear teeth on a bevel gear blank.	6	2	2	3
b)	Illustrate the form milling method for forming straight bevel gear teeth.	4	2	2	4
13. a)	Illustrate the properties and types of gear materials used in non-metallic, non-ferrous and plastic gears.	4	2	3	3
b)	Summarize through hardening and nitriding of the gears with a neat sketch.	6	2	3	4
14. a)	Distinguish between gear shaving and gear honing methods with a neat sketch.	4	4	4	3
b)	What is gear inspection? Name types of errors occur in gear generation and how to find profile error of the gear tooth.	6	1	4	3

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15. a)	Name the various methods of production of plastic gears? Explain them.	5	2	5	3
b)	Explain Lean and Agile production practice for quality production of gears.	5	2	5	3
16. a)	Illustrate CNC gear hobbing method with a sketch.	5	2	1	4
b)	Explain with the help of a neat sketch, the 'Coniflex' processes of generating gear teeth on a bevel gear blank.	5	2	2	4
17.	Answer any ***two*** of the following:				
a)	Explain flame hardening and induction hardening of gears with a neat sketch.	5	2	3	5
b)	Discuss the following gear finishing operations: (a)Roll finishing (b) Gear burnishing (c) Gear lapping (d) Gear grinding.	5	6	4	4
c)	Elaborate the process of G-TRAC Generating.	5	6	5	3

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	75.78
2	Knowledge on application and analysis (Level-3 & 4)	13.68
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	10.52

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