Hall Ticket Number:

Code No. : 13119G

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (CBCS) III-Semester Main Examinations, December-2018
Basic Mechanical Engineering
(Open Elective-I)

Time: 3 hours

Max. Marks: 60

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.	In a heat transfer process heat transfer rate is 250 kW and heat transfer area is 25m² find heat flux.	2	1	1	1,6
2.	Distinguish between parallel flow and counter flow heat exchanger.	2	2	1	1,6
3.	Sketch Otto cycle on P-v and T-s plane and label the processes.	2	1	2	3
4.	Define mechanical efficiency and brake specific fuel consumption.	2	1	2	3
5.	Show 10TR into i) kW and ii) KJ/min.	2	1	3	1
6.	Define DBT and WBT.	2	1	3	1
7.	List various engineering applications of welding.	2	4	4	6
8.	Select any four metal cutting operations among drilling, casting, welding, knurling, boring, down milling, facing.	2	1	4	6
9.	Sketch the temperature profiles of parallel flow and counter flow heat exchangers.	2	1	1	1,6
10.	List the applications of Additive manufacturing.	2	4	4	6
	Part-B (5 × 8 = 40 Marks)				
11. a)	Name any three applications of conduction heat transfer and discuss the Fourier's law of conduction.	4	1	1	1,6
b)	In a double pipe heat exchanger, water is heated from 35°C to 155°C and hot gases are cooled from 200°C to 105°C. Solve for LMTD i)Parallel flow mode and ii) Counter flow mode.	4	5	1	1,6
12. a)	Illustrate the working principle of four stroke diesel engine with a neat sketch.	4	2	2	7
b)	Draw the layout of open cycle gas turbine power plant and discuss its working.	4	1	2	7
13. a)	Explain the working of Air refrigeration system with a line diagram.	4	2	3	7
b)	Sketch i) Heating & humidification ii) Cooling &dehumidification processes on psychrometry chart.	4	1	3	7
14. a)	Explain the working of Arc welding process with a sketch.	4	2	4	6
b)	List various metal cutting operations using a milling machine.	4	4	4	6
15. a)	List various components of a two stroke engine and discuss its working with a diagram.	4	4	2	7
b)	Compare petrol engines with diesel engines.	4	4	2	7

			M	L	CO	PO
16.	a)	A Reversed Carnot cycle working between -5°C and 35°C. Analyze its COP results if it is working as i) Refrigerator and ii) Heat pump.	4	6	3	3
	b)	Explain the function of Compressor, condenser, expansion valve and capillary in VCR cycle.	4	2	3	7
17.		Answer any *two* of the following:				
	a)	Distinguish between conduction heat transfer and convection heat transfer.	4	4	1	1,6
	b)	Classify the refrigerants and list their applications.	4	4	3	7
	c)	Sketch the layout of lathe machine and list different operations performed using lathe machine.	4	4	4	6

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)	57.5
2	Knowledge on application and analysis (Level-3 & 4)	33.75
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	8.75

*****