10/7/24 (FN)

Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, APR / MAY 2024

ELECTRICAL AND ELECTRONICS ENGINEERING
I Semester
BE 3152 BASIC MECHANICAL ENGINEERING
(Regulation 2023)

Time: 3hrs

Max. Marks: 100

CO1	Discuss the basic concepts of casting, forming, and machining processes
CO2	Explain welding, and Additive manufacturing
CO3	Discuss the basics laws and application of thermodynamics
CO4	Summarize the basics of IC engines, electric vehicles.
CO5	Explain various power generation methods

BL – Bloom's Taxonomy Levels
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A (10x2=20Marks)
(Answer all Questions)

Q. No.	Questions	Marks	CO	BL
1	List the steps involved in producing a casting.	2	1	L1
2	Mention one example for a sheet metal operation.	2	1	L1
3	What is a welding process? How different it is from other metal joining process?	1+1	2	L1
4	Additive manufacturing is an old manufacturing technique – True / False	2	2	L2
5	Write down the mathematical relation of I law of thermodynamics.	2	3	L1
6	State the application of Zeroth law?	2	3	L2
7	Mention two differences between petrol and Diesel engines.	2	4	L2
8	List two differences between electric vehicle and an IC engine.	2	4	L2
9	How power is generated in a hydro-electric power plant?	2	5	L1
10	List the type of nuclear power plant operating in Kudankulam, Tamilnadu.	2	5	L1

PART- B (5 x 13 = 65 Marks)
(Restrict to a maximum of 2 subdivisions)

Q. No.	Questions	Marks	CO	BL
11 (a)	i) Briefly explain the forging and rolling processes of manufacturing with a schematic. ii) Draw a line sketch of turning, facing and chamfering process.	5+5 3	1	L2 L2
	OR			
11 (b)	i)Draw a simple schematic of a lathe and label the parts. ii) Discuss briefly about the blanking and punching operation.	7 6	1	L2 L2
12 (a)	Describe the Arc welding and Gas welding process with a sketch.	6+7	2	L2
	OR			
12 (b)	What is additive manufacturing? Explain how a component is manufactured using additive manufacturing with a sketch.	3+10	2	L3

13 (a)	Explain the vapour compression cycle with a sketch. Also mention the application of this cycle.	10+3	3	L3
	OR			
13 (b)	Discuss about I, II, and III law of thermodynamics. Also mention about the practical implications of II and III law.	7+6	3	L3
14 (a)	i)Compare two stroke and four stroke petrol engine. ii)With a schematic explain the functioning of a four stroke Diesel engine.	6 7	4 4	L2 L2
	OR			
14 (b)	List the challenges in adopting to electric vehicles for road transport. List the different types of electric vehicles along with their schematic.	4+9	4	L2,L3
15 (a)	Explain the operation of a thermal power plant with a sketch.	7+6	5	L2
	OR			
15 (b)	Draw a schematic of solar and wind power generation. Discuss how electric power is generated from these.	3+3+4 +3	5	L2

PART- C (1x 15=15Marks)

(Q.No.16 is compulsory)

Q. No.	Questions	Marks	CO	BL
16.	i) Briefly discuss about the operation of a refrigerator. Support your answer with a simple sketch. ii) Draw a sketch of a hydro-electric power plant.	4+5 6	4 5	L3 L2