Q. Code:507317

Reg. No. | | | | | | | | | | | | | |

B.E. / B.TECH DEGREE EXAMINATIONS, MAY 2024

First Semester

ME22152 – BASICS OF MECHANICAL ENGINEERING

(Common to Biotechnology & Chemical Engineering)

(Regulation 2022)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Understand the various energy resources and the principle of their operations.	**2**
CO 2	Identify the types of IC engines and will calculate the various parameters.	**3**
CO 3	Understand the principle of refrigeration and Air-conditioning.	**2**
CO 4	Learn the various Engineering Materials and the manufacturing processes.	**2**
CO 5	Know the recent trends in I.C. engines and manufacturing.	**1**

PART- A (20 x 2 = 40 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	List the advantage of renewable power plant.	**1**	**2**
2.	Differentiate SOLAR & WIND power plant.	**1**	**2**
3.	Write the advantages and disadvantages of Fuel cell.	**1**	**2**
4.	List down the functions of control rods. Mention the materials used for control rods.	**1**	**2**
5.	Identify the engine which is using fuel injector?	**2**	**2**
6.	Write any two principles of hybrid electric vehicles?	**2**	**3**
7.	List the applications of IC Engines.	**2**	**2**
8.	Identify the materials used for Connecting Rod.	**2**	**3**
9.	Write down the good qualities of refrigerants.	**3**	**2**

10.	List the air-conditioning components.	**3**	**2**	
11.	Identify the refrigerant for pharma industries.	**3**	**3**	
12.	List the need for insulation in refrigerators.	**3**	**2**	
13.	Identify the Positive, & Negative Manufacturing Process.	**4**	**2**	
14.	Identify the suitable alloys to improve the ductility property.	**4**	**3**	
15.	Identify the tool material for Drilling machine.	**4**	**2**	
16.	Identify the applications of Articulated Arm Robot.	**4**	**2**	
17.	List the components used in Fused Deposition Modelling 3D Printing machine.	**5**	**2**	
18.	Write the uniqueness of metal additive manufacturing method.	**5**	**2**	
19.	List the 2 HEVs and its purpose.	**5**	**2**	
20.	Differentiate RPP and RRP robot.	**5**	**3**	

PART- B (5 x 10 = 50 Marks)

			Marks	CO	RBT LEVEL
21. (a)		Illustrate Steam power plant.	**(10)**	**1**	**3**
		(OR)			
(b)		Identify a power plant employ Non-renewable source, with a neat diagram explain its operations.	**(10)**	**1**	**3**
22. (a)	**(i)**	Illustrate the 2-Stroke & 4-Stroke Engines.	**(5)**	**2**	**2**
	(ii)	Differentiate 2-Stroke & 4-Stroke.	**(5)**	**2**	**2**
		(OR)			
(b)		What is the difference between Internal Combustion & External Combustion Engines. Give an example for each type.	**(10)**	**2**	**2**
23. (a)	**(i)**	Describe VCR system.	**(5)**	**3**	**2**

	(ii)	Differentiate between VCR & VAR System.	**(5)**	**3**	**2**
		(OR)			
(b)		Classify the Air-conditioners, and describe SPLIT AC. Write the advantages & disadvantages of SPLIT AC.	**(10)**	**3**	**2**
24. (a)	**(i)**	Describe hot forging and cold forging process.	**(5)**	**3**	**3**
	(ii)	Differentiate turret lathe and capstan lathe.	**(5)**	**3**	**3**
		(OR)			
(b)	**(i)**	List the neutral manufacturing process, and illustrate anyone.	**(5)**	**4**	**3**
	(ii)	Compare metal removal and metal addition manufacturing process.	**(5)**	**4**	**3**
25. (a)		What is the primary advantage of using a SCARA robot for assembly tasks over other types of industrial robots?	**(10)**	**5**	**4**
		(OR)			
(b)		Classification of Additive Manufacturing method based on raw materials, and illustrate fused filament fabrication (FFF) method.	**(10)**	**5**	**4**

PART- C (1 x 10 = 10 Marks)

(Q.No.26 is compulsory)

			Marks	CO	RBT LEVEL
26.		Identify the Hybrid Electric Vehicles for Commercial usages & illustrate it.	**(10)**	**5**	**5**

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