(Affiliated to University of Mumbai)	***End Semester Examination (R-24) SH 2025 Answer Key with marking scheme***
Branch: All	Course: Applied Chemistry
Year/ Semester: I	Course code: FEC1022
Time: 03 hours	Marks: 80

		Marks
Q. 1	Attempt any FOUR. (All questions carry equal marks)	
A.	Properties…….3M Application of Maglev Trains…….2M	
B.	Min Five Points……5M	
C.	Definition with example ……2.5M each	
D.	Min Five Points with necessary Diagram ……5M	
E.	Formula of HCV ----------1M Substitution----------0.5M Answer----------1M (5538.9 Kcal/Kg) ……1.5M Formula of LCV ----------1M Substitution----------0.5M Answer----------1M (5327.58 Kcal/Kg) ……1.5M	
F.	Explanation of Composite Materias……2M Classification……3M	
Q.2	Attempt any FOUR. (All questions carry equal marks)	
A.	(i)Explanation of Organic Electronic Materials……3M Advantages……..2M (ii) Definition of Optical Fibre…….1M Diagram with explanation……..3M Application……..1M	
B.	(i) (i) Mn= N1M1+N2M2+N3M3/N1+N2+N3……..0.5M Mn= 100x100+ 200x1000 + 300x10,000/100+200+300…….0.5M Mn=5.35 X 10^3……...1M Mw: Formula + substitution…...1M Mw=9.4 X 10^3……1M PDI= 1.757……1M (ii) Any 02 properties ----------2.5M each	
C.	(i) Def of Eutectic Point……1M Diagram……2M Explanation of Curves……2M	

	(ii) 1kg alloy contains 250g Cd and 750g Bi……1M Eutectic system contains Cd=40% and Bi=60%.....1M Hence, corresponding to 250g Cd, mass of Bi= 250 x 60/40= 375g……2M Hence, Total mass of eutectic in 1Kg of alloy= 250g + 375g= 625g ……1M	
D.	(i) Necessary Electrochemical conditions……1.5 M Acidic Medium Explanation……1.5 M Diagram…….1M Reactions……..1M (ii) 2.5M each for each factor	
E.	(i) **Constituent** / **% by weight** / **Weight /Kg of fuel** C / 54 / 0.54 O / 3 / 0.03 H / 6.5 / 0.065 *Table*..……..1M Amount of air required= 100/23 [2.67C + 8H + S + O]…….1M =100/23 [2.67 x 0.54 + 8 x 0.065 – 0.05] kg =100/23 [1.404 + 0.52 – 0.03] Kg =100/23 [1.894] Kg = 8.235 Kg…….1M Amount for 2 Kg of fuel= 2 X 8.235 = 16.47 Kg Formula and substitution…….1M Answer (12. 748 m^3)……..1M (ii) Definition……..2M Min. characteristics……..3M	
F.	(i) Marix Phase Introduction……..2M Functions of Matrix Phase (min.5)……3M (ii) Continuous Fiber Composites……2.5M Discontinuous Fiber Composite……..2.5M	
Q.3	**Attempt any FOUR. (All questions carry equal marks)**	
A.	Definition of Optical Fibre…….2M Properties (min 3)……1.5M Application (min 3)……1.5M	
B.	Explanation of Tg……3M Factors affecting……..2M	
C.	Stainless Steels…….2M Ni and Co……..1.5M each	

D.	Definition of Metallic Coatings……2M Galvanizing ……..3M	
E.	Synthesis of Power Alcohol with reaction……..3M Advantages(min 4)……..2M	
F.	Explanation of Structural Composite…….1M Type …….2M Diagram……..1M Example…….1M	