Se	at No.	Enrolment No.
		THE CHARUTAR VIDYAMANDAL UNIVERSITY M.Sc. SURFACE COATING TECHNOLOGY – SEMESTER IV April 2022 (REGULAR) EXAMINATION
		Code(s): 101470401
Co	ourse	Title: COATING APPLICATIONS & SPECIALTY COATINGS
To	tal Pr	rinted Pages : 02
Da	te: 11/	04/2022 Time: 01.30 PM to 03.30 PM Maximum Marks: 60
ns	• Atte	ns: empt all questions.
	• Nui	mbers to the right indicate full marks for each question.
ı	• Ma	ke suitable assumptions wherever necessary. Answer the following MCQ's (12)
	1.	Which of the following treatment applies to improve adhesion on plastics?
		(a) Oxygen inhibition (b) Oxidizing flame (c) Fluoride accelerator (d) Wire Brushes
	2.	The smart coatings serve as vibration sensors consist of
		(a) Poly dimethyl siloxane (b) Zinc lons (c) Self Stratifying (d) Lead zirconate titanate
	3.	Transfer efficiency in paint application is lowest in
		(a) Airless Spray (b) Air assisted spray (c) Conventional Spray (d) Electrostatic Spray
	4.	Which one is consider 'Smart Coatings"
		(a) Furniture Enamel (b) Tank Application (c) Hammer tone Finish (d) Bio Weapon
	5.	The Principal of electro static spraying is
		(a) Atomize paint to fine spray (b) Paint droplet to charge
		(c) Self-stratifying (d) Photo oxidation
	6.	'Disc and Bell' are associated with application.
		(a) Hot Spray (b) Curtain coating (c) Electrostatic Spray (d) Airless Spray
	7.	High build technique of corrosion inhibition of coating is
		(a) Barrier (b) Electrical (c) Chemical (d) Optical
	8.	Crazing is development of
		(a) Pinholes (b) Large minute cracks (c) Orange peel (d) Agglomerates
	9.	With Airless Spray gun high build or solvent less coating will apply up to thickness in
		one pass of the gun.
		(a) 3 μm (b) 30 μm (c) 300 μm (d) 3000 μm
	10.	Incans, a coated blank is formed into a shallow cup and then drawn two further times to
		achieve desire height.
		(a) DWI (b) DRD (C) FDA (d) CFR
	11.	In latex paint used to reduce surface tension so as to wet the pigment.
		(a) Solvent (b) Monomer (c) Initiator (d) Surfactant
	12.	Concentration of Zinc Phosphating solution is% as a water solution in Zinc
		Phosphate treatment.

Page 1 of 2

(a)10-15% (b) 1-5% (c) 15-20% (d) 10-15%

Q. 2		Answer the following Short question (Any Eight)	(16)
	(1)	What are the requirements of paint for coil coatings?	
	(2)	Which are two principles on which coater exist? Explain with diagram Single coater &	
		Double coater.	
	(3)	Draw limits of movements of "Robot painter".	
	(4)	What is "smut"?	
8	(5)	How Piezoelectric paints can be useful as smart coatings?-Explain.	
	(6)	Write about tastings of conversion coatings.	
	(7)	Why Teflon uses as non-stick coatings?	
	(8)	How smart coatings technologies can be used as sensors?	
	(9)	How 'direct pull out' test performs for testing of adhesion.	
	(10)	Write down advantages of airless spraying.	
Q. 3	a.	Explain flow coatings in details.	(04)
Person	b.	What are different types of paint application? Explain Electro coatings with diagram. OR	(04)
Q. 3	a.	Explain in detail about electrostatic paint application with Disc & Bell system.	(04)
	b.	What is the principle involved in conventional spray application? Explain in details	(04)
		conventional spray application with diagram showing main parts of it.	(/
Q. 4		Give the brief account of Zinc Phosphate, Iron Phosphate, and Chromates with chemical	(08)
		reactions as conversion coatings.	
		OR	
Q. 4		Write in details about dip application. Also different criteria of paint requirement to be used for	(08)
		application? Explain curtain coatings in details with diagram.	,
Q. 5	a.	Give brief on account of coil coatings. What are the requirements of paint are for coil	(04)
		coatings applications?	
	b.	Write about non-stick coatings for cookware. Give quantative testing of non-stick	(04)
		Coatings.	
	W 4	OR	
Q. 5	a.	Give details about adhesion to plastics with various techniques.	(04)
	b.	Write about non-stick coatings for cookware.	(04)
Q. 6		Discuss manufacturing process of Powder Coatings in details. Explain various raw	(08)
		materials required for Powder Coatings	
		OR	
Q. 6	a.	Write in detail about covalent bonding to Glass by giving suitable example of silanol group.	(04)
	b.	100	(04)

Page 2 of 2

Seat No.	Enrolment No.
beat No.	

THE CHARUTAR VIDYA MANDAL UNIVERSITY

SURFACE COATING TECHNOLOGY – SEMESTER IV April 2022 (REGULAR) EXAMINATION

 Which of the following adsorbed layer is responsible for passivation of iron? a) Fe(OH)₂ b) Fe(OH) c) Fe₂O₃ d) All Which of the following factors can affect the corrosion? a) Temperature b) pH c) Humidity d) All one mill = part of inch. a) 1/1000 b) 100 c) 1000 d) None Which of the following can be used for dehumidification? a) Silica gel b) Na₂SO₃ c) CO₂ d) H₂O When Zn & Fe are electrically connected, which one gets corroded? a) Zn b) Fe c) Both at equal rate d) Can't be predicted Which is/are commonly encountered industrial pollutants? a) SOx b) NOx c) Both a & b d) None Zn gives corrosion protection by a) Sacrificial mechanism b) Barrier effect c) Inhibitive effect d) None Which of the following is most suitable biocide for antifouling paint? 	60 (12)
Date: 12/04/2022 Time: 01.30 PM to 03.30 PM Maximum Marks: Instructions: Attempt all questions. Numbers to the right indicate full marks for each question. Make suitable assumptions wherever necessary. Q. 1 Answer the following MCQ's Mich of the following adsorbed layer is responsible for passivation of iron? A) Fe(OH) ₂ b) Fe(OH) c) Fe ₂ O ₃ d) All Which of the following factors can affect the corrosion? A) Temperature b) pH c) Humidity d) All one mill = part of inch. A) 1/1000 b) 100 c) 1000 d) None Which of the following can be used for dehumidification? A) Silica gel b) Na ₂ SO ₃ c) CO ₂ d) H ₂ O When Zn & Fe are electrically connected, which one gets corroded? A) Zn b) Fe c) Both at equal rate d) Can't be predicted Which is/are commonly encountered industrial pollutants? A) SOx b) NOx c) Both a & b d) None Zn gives corrosion protection by A) Sacrificial mechanism b) Barrier effect c) Inhibitive effect d) None	
Instructions: Attempt all questions. Numbers to the right indicate full marks for each question. Make suitable assumptions wherever necessary. Q.1 Answer the following MCQ's 1. Which of the following adsorbed layer is responsible for passivation of iron? a) Fe(OH) ₂ b) Fe(OH) c) Fe ₂ O ₃ d) All 2. Which of the following factors can affect the corrosion? a) Temperature b) pH c) Humidity d) All 3. one mill = part of inch. a) 1/1000 b) 100 c) 1000 d) None 4. Which of the following can be used for dehumidification? a) Silica gel b) Na ₂ SO ₃ c) CO ₂ d) H ₂ O 5. When Zn & Fe are electrically connected, which one gets corroded? a) Zn b) Fe c) Both at equal rate d) Can't be predicted 6. Which is/are commonly encountered industrial pollutants? a) SOx b) NOx c) Both a & b d) None 7. Zn gives corrosion protection by a) Sacrificial mechanism b) Barrier effect c) Inhibitive effect d) None 8. Which of the following is most suitable biocide for antifouling paint?	
 Attempt all questions. Numbers to the right indicate full marks for each question. Make suitable assumptions wherever necessary. Q. 1 Answer the following MCQ's 1. Which of the following adsorbed layer is responsible for passivation of iron? a) Fe(OH)₂ b) Fe(OH) c) Fe₂O₃ d) All 2. Which of the following factors can affect the corrosion? a) Temperature b) pH c) Humidity d) All 3. one mill = part of inch. a) 1/1000 b) 100 c) 1000 d) None 4. Which of the following can be used for dehumidification? a) Silica gel b) Na₂SO₃ c) CO₂ d) H₂O 5. When Zn & Fe are electrically connected, which one gets corroded? a) Zn b) Fe c) Both at equal rate d) Can't be predicted 6. Which is/are commonly encountered industrial pollutants? a) SOx b) NOx c) Both a & b d) None 7. Zn gives corrosion protection by a) Sacrificial mechanism b) Barrier effect c) Inhibitive effect d) None 8. Which of the following is most suitable biocide for antifouling paint? 	(12)
a) Temperature b) pH c) Humidity d) All 3. one mill = part of inch. a) 1/1000 b) 100 c) 1000 d) None 4. Which of the following can be used for dehumidification? a) Silica gel b) Na ₂ SO ₃ c) CO ₂ d) H ₂ O 5. When Zn & Fe are electrically connected, which one gets corroded? a) Zn b) Fe c) Both at equal rate d) Can't be predicted 6. Which is/are commonly encountered industrial pollutants? a) SO ₂ b) NO ₂ c) Both a & b d) None 7. Zn gives corrosion protection by a) Sacrificial mechanism b) Barrier effect c) Inhibitive effect d) None 8. Which of the following is most suitable biocide for antifouling paint?	
 a) 1/1000 b) 100 c) 1000 d) None 4. Which of the following can be used for dehumidification? a) Silica gel b) Na₂SO₃ c) CO₂ d) H₂O 5. When Zn & Fe are electrically connected, which one gets corroded? a) Zn b) Fe c) Both at equal rate d) Can't be predicted 6. Which is/are commonly encountered industrial pollutants? a) SOx b) NOx c) Both a & b d) None 7. Zn gives corrosion protection by	
 a) Silica gel b) Na₂SO₃ c) CO₂ d) H₂O 5. When Zn & Fe are electrically connected, which one gets corroded? a) Zn b) Fe c) Both at equal rate d) Can't be predicted 6. Which is/are commonly encountered industrial pollutants? a) SOx b) NOx c) Both a & b d) None 7. Zn gives corrosion protection by	
a) Zn b) Fe c) Both at equal rate d) Can't be predicted 6. Which is/are commonly encountered industrial pollutants? a) SOx b) NOx c) Both a & b d) None 7. Zn gives corrosion protection by a) Sacrificial mechanism b) Barrier effect c) Inhibitive effect d) None 8. Which of the following is most suitable biocide for antifouling paint?	
a) SOx b) NOx c) Both a & b d) None 7. Zn gives corrosion protection by a) Sacrificial mechanism b) Barrier effect c) Inhibitive effect d) None 8. Which of the following is most suitable biocide for antifouling paint?	
a) Sacrificial mechanism b) Barrier effect c) Inhibitive effect d) None8. Which of the following is most suitable biocide for antifouling paint?	
a) CuO b) CuCl ₂ c) Cu ₂ O d) Cu(OH) ₂	
9. $E_{Ni}^{0}^{+2}/Ni = -0.25V$, $E_{Pb}^{0}^{+2}/Pb = -0.13V$, $E_{cell}^{0} = \phantom{AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA$	
 Which is following technique is used to protect pipeline against corrosion? a) Use of Sacrificial anode b) ICCP c) Both a & b d) None 	
 Which of the following is not a unit to measure corrosion? a) mg/dm²/day (mdd) b) inch/year (ipy) c) milsyear (mpy) d) m²/litre/day (mld) 	
12. When a iron is plated with zinc, a) Iron will corrode first b) Zinc will corrode first c) Both will corrode at equal rate d) Nothing can be predicted	

Page 1 of 2

Q. 2		Answer the following Short question (Any eight)	(16)
	(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)	Describe anodic and cathodic reaction taking place on iron in neutral condition. Define Pilling Bedworth rule. What is dealloying? List out some examples of direct losses of corrosion. What points are to be considered to minimize effect of corrosion. List out necessary requirement for galvanic corrosion. What is hydrogen damage from corrosion point of view? Define dew point. List of anticorrosive pigments. Describe biocides used in marine paint.	
Q. 3		Write a note on oxygen absorption type and hydrogen evolution type of corrosion cell.	(80)
Q. 3		Write a note on indirect losses due to corrosion.	(80)
Q. 4		Describe in detail causes of pitting corrosion, its mechanism and how one can prevent it. OR	(08)
Q. 4		i) Write a note on cavitation corrosion. ii) Describe Freting corrosion.	(80)
Q. 5		Describe in detail following environments responsible for causing corrosion. a) Marine b) Industrial c) Rural d) Indoor OR	(80)
Q. 5		Describe different techniques used to prevent corrosion.	(80)
Q. 6		Write a note on inorganic zinc primer. OR	(80)
Q. 6		Write a note on types of antifouling paint.	(80)

Page 2 of 2

Seat N	10		Enrolment No		
	3	M.Sc. SURFACE CC	R VIDYAMANDAL UNIVER DATING TECHNOLOGY - SEMES 2 (REGULAR) EXAMINATION	RSITY STER IV	
Cour	se C	ode(s): 101470403			
Cour	se Ti	tle: TECHNOLOGY O	F CONSTRUCTION CHEMICALS	5	
Total	Prin	ted Pages : 02	· · · · · · · · · · · · · · · · · · ·	i,	
Date:	13/04	/2022 Tim	ne: 01.30 PM to 03.30 PM	Maximum Marks	3: 60
Instruc		et all questions		150.00	
	Numb	ot all questions. ers to the right indicate full mar	ks for each question.	٠,,	
Q. 1	Make	suitable assumptions wherever Answer the following MC	necessary. O's		(12)
G. I	1.	Hydration of cement is che	mical reaction of cement with	er a., 1, 2, 2, 3, 4, 4	
		a) Base b) Acid c) Salt an	d Acid d) Water		
	2.	High strength concrete is d	lefined purely on the basis of	-	
		a) Tensile strength	b) Compressive strength		
	THE STREET	c) Good Aggregates	d) Poor Aggregates		
	3.	What are Superplasticizers	5?		
		a) Which reduces water for	r workability		
		b) Which oxidizes water for			
		c) Which decreases worka	bility at the same water content	•	
		d) Which adds water for we			
-	4.		e buildings is used to mean the coming out	of water from	
	The same of the sa	components like walls and	floors of the buildings.		
		a) Damp proofing	b) Termite proofing		71 8
		c) Water proofing	d) Dampness		
	5.		ling to EN 14891 is performed at		
			@ -20°C b) @ +23°C, @ +5°C and @		
			② -20°C d) @ -23°C, @ -5°C and @ +		1
	6.	Incozol® 4 is bis-oxazolidi	ne latent hardener is used in Wate	erproofing	
Sage 1		membrane.	*× •	V	
	Similary and	No.	s PU b) 2K Cementitious c) 1K Cementitiou	s d) None of these	
	7.	Which of the following ration	o is also known as water-cement ratio?	e šv	
		a) Weight of water to the v			
		b) Density of cement to th	e Density of cement		2 .0
		a) Weight of water to the v	weight of cement		

d) Volume of cement to the volume of cement

a) Dolly b) Peel c) Crosshatch d) Scratch

Adhesion on Concrete is being done by _____ test.

	9.	Super plasticizers reduce water requirement by%.	
		a) 12-30 b) 10-15 c) 30-42 d) 48	
	10.	What is the full form of ESD flooring?	
		a) Electrostatic Discharge b) Electric Software Discharge	
		c) Electronic Software Distribution d) Electronic Software Delivery	
	11.	The substances which are capable of uniting two other materials together by radhering	
	2	strongly to the surface of both are called	
		a) Organic conducting polymers b) Biodegra dable polymers	
		c) Adhesives d) Composites	
	12.	Which of the following is used as curtain-wall sealrants?	
		a) Alkyd b) Silicones c) Polyvinyl d) Cellulose derivatives	
Q. 2		Answer the following Short question (Any Elight)	(16)
	(1)	What is Superplasticizer? Write its importance.	
After 10	(2)	How does a Superplastizer work?	
	(3)	What is Bitumen Emulsion? What are the two main types of Bitumen emulsion?	
	(4)	What are different types of admixtures used in concrete?	
	(5)	Write about Viscosity modifying admixtures.	
	(6)	What are the characteristics of bonding agent?	
	(7)	What are concrete and screed used for?	
	(8)	Are Sealants and Adhesives the same?	
	(9)	Give the different types and uses of Sealants.	
	(10)	What is ESD Flooring?	
Q. 3		Write the structure of SNF, SMF, Vinyl Copolymers and PCE use 'ror superplastizr'er.	(80)
		OR	(00)
Q. 3		Difference between OPC and PPC cement	(08)
			(00)
Q. 4		Explain the Cementitious waterproofing methods along with the formulations.	(08)
		OR	(00)
Q. 4		Write the key differences between Dampproofing and Waterproofing.	(08)
			(00)
Q. 5		What is Industrial Floor? Explain the different types of Ir, dustrial Flooring	(08)
		OR	(00)
Q. 5		Write a note on Polyurethane (PU) Sealants?	(08)
			(00)
Q. 6		Differentiate Adhersives vs Sealants	(00)
		C/R	(80)
Q. 6	-	Give Classification of Adhesives based on Function, Source, Physical Form, Mode of	(00)
		Application and setting, Chemical composition and others.	(80)

Seat No.	4	Enrolment No.
----------	---	---------------

THE CHARUTAR VIDYA MANDAL UNIVERSITY

M.Sc. Surface Coating Technology – SEMESTER 4 APRIL (REGULAR) 2022 EXAMINATION

	Course Title: Enviro	nmental Manage	ement		
	Course Code: 10147	0407			
	Total Printed Pages:				
CONTRACT	Date: 14/04/2022	Time: 01:30	pm to 03:30 pm	Maximum Marks: 60	
I	Attempt all questions. Numbers to the right in Make suitable assumpt				
Q. 1 (1)	Answer the following reference chemists reduce a) Reducing the hazard b) Minimizing the use c) Inventing technological Developing recycled	risk by inherent in a chemic of all chemicals es that will clean up	al product or process		(12)
	d) Developing recycled	products			
(2)	The first listed of the 13	2 Principles of Green	Chemistry is		
()	a) Prevent waste	b) Catalysis	c) Atom economy	d) Benign solvents	
(3)	The term missing in Ri a) Exposure	sk = Hazard x b) Cancer	c) Benign	d) Reactivity	
(4)	Biochemical Oxygen D a) Industrial pollution b) Air pollution c) Pollution capacity of d) Dissolved O ₂ needed	effects	ompose organic waste.		r e
(5)	Acid rain caused due to a) Ozone and dust	b) CO ₂ and CO	c) SO ₃ and CO	d) SO ₂ and NO ₂	
(6)	is an aerobic metha) Landfilling	nod of decomposing of b) Composting	organic solid wastes. c) Incineration	d) None of the above	
(7)			s a carbon-source build e considered as c) both a & b	ing block, if the CO ₂ were d) none of these	
(8)	Which of the following a) Addition	reaction consider as b) Substitution	100 % atom economica c) Elimination	d) None of these	
(9)	The first option for soli a) Reuse	d waste management b) Reduce	c) Recycle	d) None of the above	

(10)	ISO stands for	
	a) International Organization for Standardization b) Indian Standard Organization	
	c) Indian Specification Organization d) None of the above	
(11)	ISO 14000 standard is related with	
	a) Environmental management systems b) Automotive quality standards	
	c) Eliminating poor quality d) Customer satisfaction	
9		
(12)	The total set of carbon emissions caused by an individual is called	
(/	a) Carbon cycle b) Carbon handprint c) Carbon footprint d) Carbon summary	
Q. 2	Attempt Any eight of the following.	(16)
(1)	Define Green Chemistry. Write its benefits.	(20)
(2)	Enlist chemical reaction and identify which one is more atom economical and why?	
(3)	Enlist tools of Green Chemistry.	
	Define air pollution and enlist major air pollutants.	
(4)		
(5)	List the various air pollution control methods.	
(6)	Explain why 'Waste reuse and recycling are the preferred options' when managing solid waste.	
(7)	What is a renewable and depleting feedstock? Give its example.	
(8)	How atom economy is different from yield?	
(9)	Define EMS according to ISO 14001 standards.	
(10)	Enlist Driver of EMS.	
0.0	W.:	(0.0)
Q. 3	Write a note on principles of Green Chemistry.	(08)
700 10	OR	(0.0)
Q. 3	Write a note on Green Solvent.	(08)
	, W. C. W. C.	
Q. 4	Write a note on solid waste management methods to reduce waste.	(08)
	OR	
Q. 4	What are BOD and COD? How it is determined?	(08)
Q. 5	Explain in detail about waste minimization methods for paint manufacturing industries.	(08)
	OR	
Q. 5	Explain in detail real-time, in-process analysis beneficial to green chemistry.	(08)
6.0		(55)
Q. 6	Explain in brief tools of EMS	(08)
6.0	OR	(30)
0.6	Write a note on Carbon foot print	(08)
