

## 11-03-2022\_EC-I\_FE\_Sem-I (R19)\_TSEC

1. The question paper will have MCQs (for 12 marks) and subjective/descriptive questions (for 48 marks).

2. MCQ correct options and subjective questions answers to be written on papers. Scan all pages of answer papers of Q1 to Q4 and create single file in pdf format to upload in the link given.

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\* Required

1. Enter your Name \*

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2. Enter your Exam Seat Number \*

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### Questions

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## 3. paste the question

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Atomic weights:- H=1, C= 12, O=16, N=14, S=32, Ca= 40, Mg=24, K= 39, Si= 28

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	What will be the strength of standard hard water if it is prepared by dissolving 5 g of $\text{CaCO}_3$ initially in dilute HCl and finally diluting to 2.5 litres of distilled water?
Option A:	2 mg $\text{CaCO}_3$ per litre
Option B:	2000 mg $\text{CaCO}_3$ per litre
Option C:	20 mg $\text{CaCO}_3$ per ml
Option D:	0.02 g $\text{CaCO}_3$ per ml
2.	Maximum capacity of any atomic orbital is _____
Option A:	Two electrons
Option B:	$2n^2$ electrons
Option C:	$4n$ electrons
Option D:	$(4n + 2)$ electrons
3.	Emulsion of oil in water system has _____ degrees of freedom.
Option A:	Zero
Option B:	Two
Option C:	one
Option D:	Three

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4. paste the question

4.	If a polymer contains 40% polymeric chains of molecular weight 20000 each and remaining chains of molecular weight 30000 each, the number average molecular weight of polymer is _____
Option A:	24000
Option B:	25000
Option C:	26000
Option D:	27500
5.	Nitrogen atom in Pyrrole is _____
Option A:	sp hybridised
Option B:	sp <sup>2</sup> hybridised
Option C:	sp <sup>3</sup> hybridised
Option D:	Non hybridised
6.	Which of the following salts cannot be removed by boiling and filtration?
Option A:	MgCO <sub>3</sub>
Option B:	Ca(HCO <sub>3</sub> ) <sub>2</sub>
Option C:	Mg(HCO <sub>3</sub> ) <sub>2</sub>
Option D:	CaCl <sub>2</sub>

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5. paste the question

<b>Q2</b>	<b>Solve any Four Questions out of Six</b>	<b>4marks each</b>
A	Distinguish between BOD and COD. Write significance of BOD and COD.	
B	Draw neat labelled diagram of Ag-Pb system and apply phase rule at eutectic point.	
C	What are the conditions for the formation of Molecular orbitals?	
D	After treating one million litres of hard water by ion exchange method, the cation exchange resin required 500 Litres of 0.2 N HCl. Calculate hardness of the above sample of water.	
E	Write brief account of Doped conducting polymers and give any two applications of conducting polymers.	
F	Write characteristics of aromatic compounds and hence comment on aromatic nature of cyclopentadienyl anion.	

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6. paste the question

<b>Q3</b>	<b>Solve any Four Questions out of Six</b>	<b>4marks each</b>
A	An alloy of A and B contains 30% B. Calculate the mass of eutectic in 5 kg of alloy, if the eutectic contains equal percentage of A and B.	
B	Describe desalination of brackish water by Reverse Osmosis.	
C	Explain with neat labelled diagram the process of 'Injection moulding'.	
D	Explain with diagram structure and bonding in Benzene.	
E	Define and explain with one example each : Phase and Component with reference to phase rule.	
F	Draw a neat labelled molecular orbital diagram of Oxygen molecule and calculate its bond order.	

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7. paste the question

<b>Q4</b>	<b>Solve any Four Questions out of Six</b>	<b>4 marks each</b>
A	Distinguish between bonding and antibonding molecular orbitals.	
B	Write a note on Glass Transition Temperature.	
C	25 ml of waste water sample was refluxed with 15 ml of 0.2 N $K_2Cr_2O_7$ and the excess dichromate required 8.5 ml of 0.1 N FAS solution. Blank of 25 ml distilled water on refluxing with 15 ml of same dichromate solution required 26 ml of 0.1 N FAS solution. Calculate the COD of waste water sample.	
D	Write statement of Phase rule and write its limitations.	
E	Calculate the weight average molecular weight of a polymer containing 100 molecules of molecular weight 1000, 200 molecules of weight 2000 and 300 molecules of weight 3000.	
F	Write principle and reactions for Ion exchange method of softening hard water and also draw a neat labelled diagram.	

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8. Upload all your answers as a single pdf file \*

Files submitted: