LEVEL : - THIRD   PROGRAM : SUGAR MANUFACTURING
COURSE CODE :- SMF308
COURSE NAME :- CHEMICAL PROCESS TECHNOLOGY
MAX. MARKS : 80   TIME : 3 HRS.   DATE :- 14/ 05 / 2018

Instruction :-

1) Answers must be written in the main answer book provided.(and supplements if required)
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	Question Text	R/U/A	CO SMF 308	Marks
Q.1		Attempt any **FOUR:**			08
	a)	Define i) Yield ii) Conversion.	R	1	
	b)	Name the types of chemical reactions.	R	2	
	c)	Identify the properties of sulfuric acid.	R	2	
	d)	Define size reduction with an suitable example.	R	2	
	e)	Classify the methods of production of Hydrochloric acid.	U	3	
	f)	Show the flow sheet of sulphate method of production of HCL.	U	3	
Q.2		Attempt any **FOUR:**			16
	a)	Explain the types of chemical processing with an suitable example.	U	1	
	b)	Identify the important aspects of equilllibrium reaction.	A	2	
	c)	Describe the Bosch-Haber process of Ammonia production.	A	3	
	d)	Draw the flow sheet of caustic soda manufacturing process.	U	3	
	e)	Explain the synthesis process of Hydro chloric acid.	U	3	
	f)	Restate the properties and application of washing soda.	R	3	
Q.3		Attempt any **TWO:**			16
	a)	List out and explain the types of chemical reactions.	R	2	
	b)	Describe the manufacturing process of sulfuric acid.	A	3	
	c)	Describe the solvays Ammonia soda process of washing soda.	A	3	

P.T.O.

LEVEL: **THIRD**   PROGRAM: **CE/ME/SM/MT**
COURSE CODE: **CEF/MEF313/MEE313/R228**   COURSE NAME: **HIGHER MATHEMATICS**
MAX. MARKS: **80**   TIME: **3 HRS.**   DATE: **19/05/2018**

Instruction:-
1) Answers must be written in the main answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**>Question No, **SQN**>Sub-Question No, **R**> Remembering, **U**>Understanding, **A**>Application **CO**>Course outcome

QN	SQN	Question Text	R U A	CO MEF313	Marks
Q.1		Attempt any **FOUR**			**(08)**
	a)	Express $f(x) = x^4 + 3x^2 - x + 5$ in factorial notation.	R	1	
	b)	Prove that $E\nabla = \nabla E = \Delta$	R	1	
	c)	Evaluate $\left(\dfrac{\Delta^3}{E^2}\right)x^2$	U	1	
	d)	State Euler's theorem on homogenous function.	R	2	
	e)	Prove that by Euler's theorem if $u = f\left(\dfrac{x}{y}, \dfrac{y}{z}, \dfrac{z}{x}\right)$ then $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} + z\dfrac{\partial u}{\partial z} = 0$	U	2	
	f)	If $u = x^2 \sin\left(\dfrac{y}{x}\right)$ then find $\dfrac{\partial u}{\partial x}$	A	2	
Q.2		Attempt any **FOUR**			**(16)**
	a)	Estimate $e^{3.5}$ from the following data using Newton's backward interpolation formula.	A	1	
	b)	Find the missing terms in the following table using forward difference table.	A	1	
	c)	Express $f(x) = 2x^4 + 3x^2 - 5$ in factorial notation & hence find the value of $\Delta^2 f(x)$ at $x = 0.5$	A	1	
	d)	Show that $JJ' = 1$ for $x = e^v \sec u$, $y = e^v \tan u$	U	2	
	e)	If $u = \sin^{-1}\left(\dfrac{x}{y}\right) + \tan^{-1}\left(\dfrac{y}{x}\right)$ then prove that $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} = 0$	U	2	
	f)	Verify Euler's theorem for $u = \log\left(\dfrac{x+y}{x-y}\right)$	A	2	
Q.3		Attempt any **FOUR**			**(16)**
	a)	Find $f(2)$ by Lagrange's interpolation formula.	A	1	

Q.2 a) table:

x	0	1	2	3	4
e^x	1	2.72	7.39	20.09	54.60

Q.2 b) table:

x	5	10	15	20	25	30	35
y	9	-	12	18	-	25	40

Q.3 a) table:

x	1	3	5	6
$f(x)$	5	9	13	15

P.T.O

LEVEL: **FOUR**   PROGRAM: **SUGAR TECHNOLOGY**
COURSE CODE: **SMF404**   COURSE NAME: **BY PRODUCT OF SUGAR INDUSTRY**
MAX. MARKS: **80**   TIME: **3 HRS.**   DATE: **19/05/2018**

Instruction:-
1) Answer to each section must be written in separate answer book.
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**>Question No, **SQN**>Sub-Question No, **R**> Remembering, **U**>Understanding, **A**>Application

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QN	S.Q.N	Question Text (Section – I)	Cognition Level R/U/A	Co Code (SMF 404)	Marks
Q.1		Attempt any **FOUR**			(08)
	a)	Restate true fiber & pith.	U	1	
	b)	Define calorific value.	R	1	
	c)	State the steps involved in paper manufacturing process.	R	1	
	d)	Restate fermentation.	U	2	
	e)	Define molasses.	R	2	
	f)	Define filter cake.	R	3	
Q.2		Attempt any **FOUR**			(16)
	a)	Define bagasse and write any four uses of bagasse.	R	1	
	b)	Write the composition of bagasse on dry & wet basis.	U	1	
	c)	Draw schematic flow sheet of fiber board manufacturing process.	U	1	
	d)	Write the characteristics of waste effluent generated from paper mills.	U	1	
	e)	Explain the alcoholic fermentation process of molasses.	U	2	
	f)	Write the composition of molasses.	U	2	
Q.3		Attempt any **TWO**			(16)
	a)	Describe the kraft process for the manufacturing of pulp with the help of flowchart.	A	1	
	b)	Describe the manufacturing process of rectified spirit from molasses.	A	2	
	c)	Summarize the utilization of filter cake as a fertilizer & animal feed.	A	3	

(P.T.O.)

LEVEL: **FIFTH**
COURSE CODE: **SME503**
MAX. MARKS: **80**

PROGRAM: **SUGAR MANUFACTURING**
COURSE NAME: **SUGAR INDUSTRY MANAGEMENT**
TIME: **3 HRS.**   DATE: **18/05/2018**

Instruction:-
1) Answer to **two sections** must be written in separate section answer book provided.
2) Figure to the right indicates marks.
3) Illustrate your answers with sketches wherever necessary.
4) Use of non-programmable pocket calculator is permissible.
5) Mathematical and other tables shall be made available on request.
6) Assume additional suitable data necessary.
7) Use of Mobile is strictly prohibited.

Section – I

Marks

Q.1   Attempt any **FOUR**   (08)

a) What is business?

b) State the necessity of factory Act 1948.

c) What is management?

d) List out four advantages of Government sector.

e) What are different forms of organization?

f) List out different types of motivation.

Q.2   Attempt any **FOUR**   (16)

a) Explain workman's compensation Act 1923.

b) Explain characteristics & challenges of sugar industry.

c) What are the advantages and disadvantages of planning?

d) Write difference between private sector and public sector.

e) State the objectives of training in industry.

f) Write the benefits of motivation.

Q.3   Attempt any **TWO**   (16)

a) Describe the concept and duties of management.

b) Explain functional organization with its merits and demerits.

c) Describe the function of personnel management.

P.T.O

LEVEL: **FOUR**   ROGRAM: **SUGAR MANUFACTURING**
COURSE CODE: **SMF402**   COURSE NAME: **SUGAR MANUFACTURING-I**
MAX. MARKS: **80**   TIME: **3 HRS.**   DATE: **16/05/2018**

Instruction:-
1) Answers to each section must be written in separate answer book provided.
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**>Question No, **SQN**>Sub-Question No, **R**> Remembering, **U**>Understanding, **A**>Application

SECTION - I

QN	S.Q.N	Question Text	Cognition Level R/U/A	Co Code (SMF 402)	Marks
Q.1		Attempt any **FOUR**			(08)
	a)	State the purpose of juice heating.	R	1	
	b)	Write brix and pH of mixed juice.	R	1	
	c)	List out moisture % and sugar % in filter cake.	R	2	
	d)	State types of clarifier used in sugar factories.	R	2	
	e)	Write temperature and pressure of exhaust applied to first body of evaporator.	R	3	
	f)	Write the reasons for inversion of sucrose.	R	3	
Q.2		Attempt any **FOUR**			(16)
	a)	Write different factors which affects juice heating.	U	1	
	b)	Compare Decanter and Vacuum filter.	A	2	
	c)	Specify the composition of scale.	U	3	
	d)	Classify different types of save all & write the function of save all.	U	3	
	e)	Draw neat sketch of Rapi-Dorr-444.	U	2	
	f)	Draw neat sketch showing multiple effect evaporator arrangement.	U	3	
Q.3		Attempt any **TWO**			(16)
	a)	Describe mode of raw juice and sulphur juice heating in brief.	A	01	
	b)	i) Write the reasons for high mud level.	U	2	
		ii) Summarize the working of vactium filter.	A	2	
	c)	Describe syrup sulphitation process with neat sketch.			
		SECTION - II			
Q.4		Attempt any **FOUR**			(08)
	a)	State limitation of metastable zone.	R	4	
	b)	Define the term vacuum.	R	5	
	c)	Write types of pan.	U	5	
	d)	Define the term super saturation.	R	6	
	e)	State the three zones of super saturation..	R	6	
	f)	Define the term solubility.	R	6	

[P.T.O]

LEVEL : - **THIRD**   PROGRAM : **SUGAR MANUFACTURING**
COURSE CODE :- **SMF304**
COURSE NAME :- **INTRODUCTION TO SUGAR MANUFACTURING**
MAX. MARKS : **80**   TIME : **3 HRS.**   DATE :- **15/ 05 / 2018**

Instruction :-

1) Answers must be written in the main answer book provided.(and supplements if required)
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	Question Text	R/U/A	Co SMF 304	Marks
Q.1		Attempt any **FOUR:**			08
	a)	Define the raw sugar.	R	1	
	b)	State the factors which effects the maturity of sugar cane.	U	3	
	c)	What is decomposition of sucrose?	U	3	
	d)	Write component take part in photosynthesis.	U	3	
	e)	What is mean by inversion of sucrose?	U	3	
	f)	Write molecular formula of sucrose and glucose.	R	3	
Q.2		Attempt any **FOUR:**			16
	a)	Explain history of sugar cane.	R	1	
	b)	Explain Indian sugar industry scenario.	R	1	
	c)	State composition cane juice.	U	1	
	d)	Summarize the factors that affect growth of sugar cane	A	2	
	e)	Describe pre-harvesting maturity survey.	A	2	
	f)	State physical properties of sucrose.	U	3	
Q.3		Attempt any **FOUR:**			16
	a)	Draw net labelled diagram of cane stalk.	R	1	
	b)	Explain colour matters in sugar cane juice.	U	1	
	c)	Write composition of sugar cane.	U	1	
	d)	Summarise the factors, that affects germination of sugar cane.	A	2	
	e)	Describe the harvesting of sugar cane .	A	2	
	f)	Write structural formula of sucrose.	U	3	

(P.T·o)

LEVEL: **THIRD**
COURSE CODE: **SMF302**
MAX. MARKS: **80**

PROGRAM: SUGAR MANUFACTURING
COURSE NAME: **BASIC SUGAR ENGINEERING**
TIME: **3 HRS.**   DATE: **03/05/2018**

Instruction:-

1) Answers must be written in the main answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**>Question No, **SQN**>Sub-Question No, **R**> Remembering, **U**>Understanding, **A**>Application **CO**>Course outcome

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QN	SQN	Question Text	RUA	CO SMF302	Marks
Q.1		Attempt any **FOUR**			**(08)**
	a)	Define Heterogeneous system.	R	1	
	b)	State properties of system.	R	1	
	c)	State the types of thermodynamics cycle.	R	2	
	d)	What is the thermodynamic process?	U	3	
	e)	State first law of thermodynamic.	R	3	
	f)	Stat boyles law.	R	3	
Q.2		Attempt any **FOUR**			**(16)**
	a)	Define specific heat & explain the same.	R	1	
	b)	State the types of system and explain in brief.	U	1	
	c)	Apply first law of thermodynamic to Boiler.	A	1	
	d)	Give the statement of clausius and Kelvin planks regarding second law of thermodynamic.	A	1	
	e)	Write the condition of reversibility of thermodynamic cycle.	R	2	
	f)	State relation between the cycle and engine.	R	2	
Q.3		Attempt any **FOUR**			**(16)**
	a)	Explain the term closed system	U	1	

P.T.O

LEVEL : - THIRD   PROGRAM : SUGAR MANUFACTURING

COURSE CODE :- SMF303

COURSE NAME :- BASIC SUGAR MANUFACTURING

MAX. MARKS : 80   TIME : 3 HRS.   DATE :- 04/ 05 / 2018

Instruction :-

1) Answers must be written in the main answer book provided.(and supplements if required)

2) Illustrate your answers with sketches wherever necessary.

3) Use of non-programmable pocket calculator is permissible.

4) Mathematical and other tables shall be made available on request.

5) Assume and mention suitable additional data if necessary.

6) Use of Mobile is strictly prohibited.

7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	Question Text	R/U/A	Co SMF303	Marks
Q.1		Attempt any **FOUR**:			08
	a)	Define plane of polarized light.	R	1	
	b)	State function of polarimeter.	R	1	
	c)	List out component of polarimeter.	R	1	
	d)	List out coloring matter in cane juice.	R	2	
	e)	Restate LMJ.	R	1	
	f)	Define PH.	R	1	
Q.2		Attempt any **FOUR**:			16
	a)	Draw neat sketch of compound Imbibition system of mill.	A	1	
	b)	Describe the term normal sugar solution.	A	1	
	c)	Explain the term Nicol prism with sketch.	U	1	
	d)	Interpret role of ammo acid in sugar manufacturing process.	U	3	
	e)	Classify composition of sugar cane.	U	2	
	f)	Explain the term Nicol's prism with neat sketch.	U	1	
Q.3		Attempt any **FOUR**:			16
	a)	State application of refract-meter for sugar industry.	R	1	
	b)	Summarise practical consideration while operating polarimeter.	U	1	
	c)	State composition of cane juice.	R	2	
	d)	Explain the term coloring formation in sugar manufacturing process.	U	2	
	e)	Explain role of phosphoric acid in sugar manufacturing process.	U	3	
	f)	Illustrate effect of reducing sugar on the process of sugar manufacturing	U	3	

P.T.O

LEVEL : - **THIRD**   PROGRAM : **SUGAR MANUFACTURING**
COURSE CODE :- **SMF306**
COURSE NAME :- **MECHANICAL & FLUID FLOW OPERATIONS**
MAX. MARKS : **80**   TIME : **3 HRS.**   DATE :- **08/ 05 / 2018**

Instruction :-

1) Answers must be written in the main answer book provided.(and supplements if required)
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	Question Text	R/U/A	Co SMF 306	Marks
Q.1		Attempt any **FOUR**:			**08**
	a)	Define work. State its unit	R	1	
	b)	State the Newton's second law of motion.	R	1	
	c)	Name any two crushing equipment.	R	1	
	d)	Draw a simple diagram of a typical agitated vessel.	A	2	
	e)	Define sedimentation.	R	2	
	f)	List few applications of screening in sugar industry.	R	3	
Q.2		Attempt any **FOUR**:			**16**
	a)	State and explain Dalton's law of partial pressures.	U	1	
	b)	Explain dimensional analysis and state its significance.	U	1	
	c)	Explain the factors affecting the product size in a ball mill.	U	1	
	d)	Construct simple sketch of a turbine. Explain its role and state two types of turbines.	A	2	
	e)	Explain Laboratory batch sedimentation with the help of a neat diagram.	U	2	
	f)	Compare ideal screen with an actual screen. List any two screening equipment.	U	2	
Q.3		Attempt any **FOUR**:			**16**
	a)	State and explain Bond's law and define work index.	U	1	
	b)	State the meaning of size reduction operations. List four different ways of size reduction.	R	1	
	c)	Explain vortex formation and suggest any two ways to prevent the same.	U	2	
	d)	Define baffles and explain necessity of baffling in an agitated vessel.	R & U	2	
	e)	Construct simple diagrams of two major types of impellers.	A	2	
	f)	Explain types of screening equipment.	U	3	

LEVEL : - **THIRD**   PROGRAM : **SUGAR MANUFACTURING**
COURSE CODE :- **SMF306**
COURSE NAME :- **MECHANICAL & FLUID FLOW OPERATIONS**
MAX. MARKS : **80**   TIME : **3 HRS.**   DATE :- **08/ 05 / 2018**

Instruction :-

1) Answers must be written in the main answer book provided.(and supplements if required)
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	Question Text	R/U/A	Co SMF 306	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	Define work. State its unit	R	1	
	b)	State the Newton's second law of motion.	R	1	
	c)	Name any two crushing equipment.	R	1	
	d)	Draw a simple diagram of a typical agitated vessel.	A	2	
	e)	Define sedimentation.	R	2	
	f)	List few applications of screening in sugar industry.	R	3	
Q.2		Attempt any **FOUR:**			**16**
	a)	State and explain Dalton's law of partial pressures.	U	1	
	b)	Explain dimensional analysis and state its significance.	U	1	
	c)	Explain the factors affecting the product size in a ball mill.	U	1	
	d)	Construct simple sketch of a turbine. Explain its role and state two types of turbines.	A	2	
	e)	Explain Laboratory batch sedimentation with the help of a neat diagram.	U	2	
	f)	Compare ideal screen with an actual screen. List any two screening equipment.	U	2	
Q.3		Attempt any **FOUR:**			**16**
	a)	State and explain Bond's law and define work index.	U	1	
	b)	State the meaning of size reduction operations. List four different ways of size reduction.	R	1	
	c)	Explain vortex formation and suggest any two ways to prevent the same.	U	2	
	d)	Define baffles and explain necessity of baffling in an agitated vessel.	R & U	2	
	e)	Construct simple diagrams of two major types of impellers.	A	2	
	f)	Explain types of screening equipment.	U	3	

LEVEL : - **THIRD**   PROGRAM : **SUGAR MANUFACTURING**
COURSE CODE :- **SMF305**
COURSE NAME :- **SUGAR FACTORY EQUIPMENT**
MAX. MARKS : **80**   TIME : **3 HRS.**   DATE :- **07/ 05 / 2018**

Instruction :-

1) Answers must be written in the main answer book provided.(and supplements if required)
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	Question Text	R/U/A	Co SMF305	Marks
Q.1		Attempt any **FOUR:**			08
	a)	List out equipments involved in boiling house.	R	1	
	b)	Write the function of sugar hopper.	R	1	
	c)	State different grades of sugar.	R	1	
	d)	Write various methods for juice and water weighment.	R	2	
	e)	State the types of juice heater used in sugar factory.	R	2	
	f)	Write the revolving speed of lime slaker.	R	2	
Q.2		Attempt any **FOUR:**			16
	a)	Enlist the equipment involved in cane preparation and write the function of each equipment.	R	1	
	b)	Explain how to start juice heater on exhaust.	U	2	
	c)	Explain calendria testing of juice heater.	A	2	
	d)	What is co-current and counter current type lime slaker?	U	2	
	e)	Write the benefits of MAPCON system.	U	3	
	f)	Draw neat sketch of Rapi-Dorr-444.	A	3	
Q.3		Attempt any **TWO:**			16
	a)	Describe the construction of juice heater.	A	2	
	b)	Describe the construction of juice sulphitation tank with neat sketch.	A	3	
	c)	Explain how testing of clarifier is carried out.	A	3	

P. T. O

LEVEL: **THIRD**　　　　PROGRAM: **SUGAR MANUFACTURING**
COURSE CODE: **SMF307**　　COURSE NAME: **MASS AND HEAT TRANSFER**
MAX. MARKS: **80**　　　TIME: **3 HRS.**　　DATE: **11/05/2018**

Instruction:-
1) Answers must be written in the main answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**>Question No, **SQN**>Sub-Question No, **R**> Remembering, **U**>Understanding, **A**>Application **CO**>Course outcome

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QN	SQN	Question Text	RUA	CO SMF307	Marks
Q.1		Attempt any **FOUR**			**(08)**
	a)	Restate steam consumption.	R	3	
	b)	Restate convection.	R	2	
	c)	Define heat flux.	R	1	
	d)	Give any four examples of heat transfer by conduction.	U	1	
	e)	Give any four examples of heat transfer by convection.	U	2	
	f)	State the principle of evaporation.	R	3	
Q.2		Attempt any **FOUR**			**(16)**
	a)	State any eight applications of heat transfer for process.	R	1	
	b)	Distinguish between natural convection & forced convection.	U	2	
	c)	Summarize the process of heat convection.	U	2	
	d)	Explain the process of evaporation.	R	3	
	e)	Summarize the heat transfer by radiation.	U	2	
	f)	Draw the sketch of horizontal tube evaporator.	U	3	
Q.3		Attempt any **TWO**			**(16)**
	a)	Describe the process of heat conduction through composite body. Also derive the heat flow rate through it.	A	4	

P.T.O

LEVEL: **FOURTH**   PROGRAM: **SUGAR MANUFACTURING**
COURSE CODE: **SMF406**   COURSE NAME: **CAPACITY DESIGN AND CALCULATION**
MAX. MARKS: **80**   TIME: **3 HRS.**   DATE: **23/05/2018**

Instruction :-
1) Answer to **two sections** must be written in separate section answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**>Question No, **SQN**>Sub-Question No, **R**> Remembering, **U**>Understanding, **A**>Application **CO**>Course outcome

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QN	SQN	SECTION -I Question Text	RUA	CO SMF406	Marks
Q.1		Attempt any **FOUR**			**(08)**
	a)	Calculate cane required for 3500 TCD plant for one crushing season.	A		
	b)	State consumption of line and sulphur % cane.	R		
	c)	Calculate capacity of juice weighing scale for 3000 TCD plant.	A		
	d)	List out disadvantages of badly construct layout. (any four)	R		
	e)	Calculate diameter of roller in mm, V=12m/min and n=4.77.	A		
	f)	Calculate capacity of pump in HP where H=25m, h=5m, p=0.6, ϕ=25kg/sec.	A		
Q.2		Attempt any **FOUR**			**(16)**
	a)	Sketch roller shell of the mill with dimension.	A	3	
	b)	Calculate capacity of lime slaker and milk of lime storage tank for 2500 TCD plant.	A	1	
	c)	A milling tandom is presided by a knife set and a fibrizer crushes 2000MT of cane/day. This size of mill is 800 x 1600mm. The mill rotates at 5.5 RPM. Determine the fibre % cane that the mill can handle.	A	2	
	d)	Calculate the capacity of the milling tandom by Hugot formula having following data. W=12, fibre %cane =15, Turbine speed =8000RPM, Roller size 800 x 1675 mm, Reduction Ratio =1400:1. The factory has a set of knifes followed by fibrizer.	A	3	
	e)	State the formula for mill capacity, Depth of the carrier, speed of roller.	R	1	
	f)	Mill size 800mm x 1600mm of five mill tandom having a fibrizer. The mill speed is 12m/min. Crushing 2500 M.T. cane/day. Calculate M.T.of fibre/hour handled by a milling plant.	A	2	
Q.3		Attempt any **TWO**			**(16)**
	a)	Describe criteria for selection of site for sugar industry.	A	1	
	b)	Describe factors affecting capacity of mill.	A	3	
	c)	Describe factors influencing milling work.	A	2	

P.T.O

LEVEL : - **FIFTH**   PROGRAM : **SUGAR MANUFACTURING**
COURSE CODE **SME502**
COURSE NAME :- **SUGAR INDUSTRY INPLANT TRAINING**
MAX. MARKS : **100**   TIME : **3 HRS.**   DATE :- **14 / 05/ 2018**

Instruction :-
1) Answer must be written in main answer book and supplement.
2) Figure to the right indicate marks.
3) Illustrate your answers with sketches wherever necessary.
4) Use of non-programmable pocket calculator is permissible.
5) Mathematical and other tables shall be made available on request.
6) Assume additional suitable data necessary.
7) Use of Mobile is strictly prohibited.

QN	SQN		Marks
		Q.1 is compulsory and attempt any FOUR from Q.2 to Q7.	20
Q.1		Give your observations while working in sugar industry any TEN	
	a)	List of any four varieties of cane crushed.	
	b)	State crushing capacity of the plant.	
	c)	State mill size.	
	d)	State Boiler details.	
	e)	State temperature of SO_2 gas at sulphitation tank.	
	f)	State sugar cane price given by sugar factory.	
	g)	pH of syrup.	
	h)	pH of clear juice.	
	i)	Temperature of outgoing molasses from conditioner.	
	j)	pH of spray water.	
	k)	Screen mesh of vacuum filter.	
	l)	Purity of mixed juice.	
	m)	Brix % of syrup.	
	n)	Imbibition water temperature.	
	o)	Vacuum required at quadruple set.	
Q.2			20
	a)	Describe with sketch compound imbibition system.	
	b)	State types of clarifier and explain working of Rapi Dorr 444 with neat sketch.	
Q.3			20
	a)	Describe with sketch Raw Juice and sulphur juice heating system.	
	b)	Draw ray diagram of 3m/c (Three massecuite) boiling scheme with Bx and purity.	
Q.4			20
	a)	Describe with neat sketch sulphur burning system and SO_2 generation.	
	b)	State Relliux principle and vapour bleeding arrangement.	

P.T.O.

LEVEL : - **FIFTH**   PROGRAM : **SUGAR MANUFACTURING**
COURSE CODE :- **SME506**
COURSE NAME :- **COGENERATION TECHNOLOGY**
MAX. MARKS : **80**   TIME : **3 HRS.**   DATE :- **22 / 05/ 2018**

Instruction :-
1) Answer to two sections must be written in separate section answer book provided.
2) Figure to the right indicate marks.
3) Illustrate your answers with sketches wherever necessary.
4) Use of non-programmable pocket calculator is permissible.
5) Mathematical and other tables shall be made available on request.
6) Assume additional suitable data necessary.
7) Use of Mobile is strictly prohibited.

QN	SQN	Section- I	Marks
Q.1		Attempt any **FOUR**:	08
	a)	Write any four applications of solar energy.	
	b)	Define cogeneration.	
	c)	Define commercial energy.	
	d)	Write application of heat energy.	
	e)	Define bagasse.	
	f)	Write G.C.V. & N.C.V. values for bagasse.	
Q.2		Attempt any **FOUR**:	16
	a)	Write difference between conventional and non-conventional energy sources.	
	b)	Explain green house effect.	
	c)	Write advantages and limitations of Tidal energy.	
	d)	Explain the need of cogeneration.	
	e)	Explain combined heat and energy production in sugar industry.	
	f)	Explain importance of bagasse saving.	
Q.3		Attempt any **TWO**:	16
	a)	Describe in detail classification of energy resources along with examples.	
	b)	Draw neat sketch of nuclear power plant and give the limitations in the use of nuclear energy.	
	c)	Describe bagasse based cogeneration process with flow chart.	

P.T.O.