V.S.B. ENGINEERING COLLEGE, KARUR

Department of Biotechnology

Academic Year: 2019-2020 (Odd Semester)

Assignment questions

Class: II year /III Semester BT
Sub: BT8305 Cell Biology
Name of the faculty: Ms. M. Sobana

Sl. No.	Roll. No	Reg. No	Name of the Student	Assignment questions
1	18BT8001	922518214001	ANANTHA LAKSHMI S	Discuss cytoskeletal proteins
2	18BT8002	922518214002	ARJUN K	Explain in detail Extracellular matrix
3	18BT8003	922518214003	ARUNADEVI S	Describe cell-cell junctions
4	18BT8004	922518214004	ATCHAYA V	Draw the structure of prokaryotic and eukaryotic cell and explain in detail
5	18BT8005	922518214005	AVINASH M	Discuss sub-cellular organelles and functions
6	18BT8006	922518214006	BANUPRIYA M	Explain organization of membrane proteins
7	18BT8007	922518214007	BARANITHARAN B	Explain cell cycle
8	18BT8008	922518214008	DEVI S	Explain control point of cell cycle
9	18BT8009	922518214009	DHARANI D	Explain in detail about mitosis and its significance
10	18BT8010	922518214010	GANGASRI R	Explain in detail about meiosis and its significance
11	18BT8011	922518214011	GOKULRAJ B	Discuss about cancer
12	18BT8012	922518214012	GOWTHAM S	Discuss about apoptosis and necrosis
13	18BT8013	922518214013	HARIPRIYA S	Explain in detail about stem cells
14	18BT8014	922518214015	JAYASHEELI RENISHA A	How to culture stem cells and its applications
15	18BT8015	922518214016	JAYASHREE M	Role of Ras and Raf in oncogenesis
16	18BT8016	922518214017	JAYASRI T S	Passive and active transport with an example
17	18BT8017	922518214018	JENO DEVA KIRUBA A	Discuss about ATP pumps
18	18BT8018	922518214019	KALAINAYA A	Discuss about permeases and ion channels
19	18BT8019	922518214020	KIRUBHAKARAN S	Explain uniport, symport and antiport with an example
20	18BT8020	922518214021	LOKESH NANDHA K	Describe ligand gated channel
21	18BT8021	922518214023	MANIKANDAPRABHU M	Describe voltage gated channel
22	18BT8022	922518214024	MATHIYAZHAGAN S	Explain about agonist and antagonist with an example
23	18BT8023	922518214025	MUTHU GAYATHRI D	Explain the role of caspases and its regulation
24	18BT8024	922518214026	NADHIYA S	Explain different classes of receptors with diagram
25	18BT8025	922518214027	NIVETHA M	Discuss extracellular signalling
26	18BT8026	922518214028	POOJASRI S	Explain cytosolic receptors with

				diagram
27	18BT8027	922518214029	PRASANNESH S	Explain the classes of cell surface receptors
28	18BT8028	922518214030	PREETHA S	Explain in detail about cAMP
29	18BT8029	922518214031	PRIYA P	Classify stem cell and immortalization of cells
30	18BT8030	922518214032	PRIYADHARSHINI K	Discuss flow cytometry with diagram
31	18BT8031	922518214033	RAJAKUMARI R	Describe Cell fractionation and explain light microscopy
32	18BT8032	922518214034	RAMYA M	Describe maintenance of stem cell population
33	18BT8033	922518214035	RAMYA V	Describe Morphology and identification of cells using TEM with pictorial representation
34	18BT8034	922518214036	RUTHRA S	Describe biomembrane with diagram and classify membrane proteins
35	18BT8035	922518214037	SARANYA M	Describe autocrine model and its description
36	18BT8036	922518214038	SASIDHARAN M	Explain the types of cell adhesion and its properties
37	18BT8037	922518214040	SATHYA R	Discuss $Na^+/K^+/Ca^{2+}$ pumps
38	18BT8038	922518214041	SEDHUPATHI S	Describe paracrine model and its description
39	18BT8039	922518214042	SHANMUGAPRIYA K	Explain in detail about cGMP
40	18BT8040	922518214043	SHELCIYA T	Describe endocrine model and its description
41	18BT8041	922518214044	SNEHA D	Explain in detail about secondary messenger molecules
42	18BT8042	922518214045	SUMAYA FATHIMA S	Describe Morphology and identification of cells using SEM with pictorial representation
43	18BT8043	922518214046	SURESH G	Describe working principle and draw the pictorial representation of SEM, TEM and confocal microscopy
44	18BT8045	922518214049	VARSHINI M	How to localize protein cells using immunostaining and discuss it
45	18BT8046	922518214050	VIGNESH R	Explain various classes of pumps with diagram
46	18BT8047	922518214051	VIGNESHWARAN G	Describe Morphology and identification of cells using confocal microscopy with pictorial representation

Staff i/c **HoD**

922518214001-ANANTHA LAKSHMI S
1. **1.1 . (A)**.The diameter and height of fermenter are 5m and 6m 6ft respectively. It is fill upto 75% height with inolocum contain nutrient medium, the biomass contain $CH_{1.4}\ O_{0.5}\ N_{0.7}$, the density of which is 1.6kg/l find the biomass in kg (yield) (B) A Minerals Weighing 500lb Occupies A Volume Of Fermenter 29.25, Calculate The Density By In Kg/dm3
922518214002-ARJUN K
2. **1.2.(A).** Nutrient medium contain carbon source (lactose) weighing 600 kg in mixed with 200 kg of nitrogen source (only sole NH_4) find the composition of the mixture in mass % and ii. mole % B. A microbial data for the growth of bacteria from experimental data the composition of $CH_{1.4}O_{0.2}N_{1.7}$ using different carbon source listed below calculate Mass % composition and molar mass of the nutrient medium.
922518214003-ARUNADEVI S
3. **1.3.** Processing of soya beans in three stages A feed of 10000 kg of soya beans is processed in a sequence of three stages or steps. The feed contains 35wt% protein, 27.1 wt % carbohydrate, 9.4%fiber and ash, 10.5 wt% moisture, and 18.0 wt% oil. In the first stage the beans are crushed and pressed to remove oil, giving an expressed – oil stream and a stream of pressed beans containing 6% oil. Assume no loss of other constituents with the oil stream, in the second step the pressed beans are extracted with hexane to produce an extracted-meal stream containing 0.5wt% oil and a hexane-oil stream. Assume no hexane in the extracted meal. Finally in the last step the extracted meal is dried to give a dried meal of 8wt% moisture. Calculate kg of pressed beans

from the first stage, kg of extracted meal from stage 2 and kg of final dried meal and the wt% protein in the dried meal.

922518214004-ATCHAYA V

4. **1. 4. A**. Gas composition- In the carbonation of a soft drink, the total quantity of carbon dioxide required is the equivalent of 3 volumes of gas to one volume of water at 0 °C and atmospheric pressure. Calculate (a) the mass fraction and (b) the mole fraction of the CO_2 in the drink, ignoring all components other than CO_2 and water.

   B. **Air Composition-** If air consists of 77% by weight of nitrogen and 23% by weight of oxygen calculate: (a) the mean molecular weight of air, (b) the mole fraction of oxygen, (c) the concentration of oxygen in mole/m^3 and kg/m^3 if the total pressure is 1.5 atmospheres and the temperature is 25 °C.

922518214005-AVINASH M

5. **2.1**. A 5.0-*ft3* cylinder containing 50.0 lb of propane (C_3H_8) staMs in the hot sun. A pressure gauge shows that the pressure is 665 psig. What is the temperature of the propane in the cylinder? Use van der Waals' equation. Repeat above Example, this time using the compressibility factor, i.e" the equation of state PV = *znRT.*"A 5-ft^3 cylinder containing 50.0 lb of propane (C_3H_8) stands in the hot sun. A pressure gauge shows that the pressure is 665 psig. What is the temperature of the propane in the cylinder?

922518214006-BANUPRIYA M

6. **2.2**. What is the minimum number of cubic feet of dry air at 20°C and 738 mm Hg that are necessary to evaporate 13.1 lb of alcohol if the total pressure remains constant at 738 mm Hg? Assume that the air is blown over the alcohol to evaporate it in such a way that the exit pressure of the air-alcohol mixture is

at 738 mm Hg. (ii) And another system A telescopic gas holder contains 10,000 ft^3 of saturated gas at 80°F and a pressure of 6.0 in. H_2O above atmospheric. The barometer reads 28.46 in. Hg. Calculate the wcig.ht of water vapor in the gas.
922518214007-BARANITHARAN B
7. **2.3**. Smokestack emission and pollution- A local pollution-solutions group has reported the Simtron Co. boiler plant as being an air polluter and has provided as proof photographs of heavy smokestack emissions on 20 different days in January and February. As the chief engineer for the Simtron Co., you know that your plant is not a source of pollution because you burn natural gas (essentially methane) and your boiler plant is operating correctly. Your boss believes the pollution-solutions group has made an error in identifying the stackit must belong to the company next door that burns coal. Is he correct? Is the pollution-solutions group correct?
922518214008-DEVI S
8. **2.4**. The weather man on the radio this morning reported that the temperature this afternoon would reach 94°F, the relative humidity would be 43 percent, the barometer29.67 in. Hg, partly cloudy to clear, with the wind from SSE at 8 mi/hr. How many pounds of water vapor would be in I mi3 of afternoon air? What would be the dew point of this air?
922518214009-DHARANI D
9. **2.5** Material balance with condensation-If the atmosphere in the afternoon during a humid period is at 90°F and 80 percent (barometer reads 738 mm Hg) while at night it is at 68°F (barometer reads 745 mm Hg), what percent of the water in the afternoon air is deposited as dew?

922518214010-GANGASRI R
10.2.6 Since 1917, Goodyear has built over 300 airships, most of them military. One of the newest is the America, which has a bag 192 ft long, is 50 ft in diameter, and holds about 202,000 ft^3 of helium. Her twin 210·hp engines produce a cruising speed of 30-35 *mi/hr* and a top speed of 50 mi/hr. The 23·ft gondola will hold the pilot and six passengers. Blimps originally were made of rubberimpregnated cotton, but the bag of the America is made of a two·ply fabric of Dacron polyester fiber coated with neoprene. The bag's outer surface is covered with an aluminized coat of Hypalon synthetic rubber. Assuming that the bag size cited is at I atm and 25° C, estimate the temperature increase or decrease in the bag at a height of 1000 m (where the pressure is 740 mm Hg) if the bag volume does not change. If the temperature remains 25°C, explain how you might estimate the volume change in the bag.
922518214011-GOKULRAJ B
11.2.7 (A) If 300 lb of air and 24.0 lb of carbon are placed in a reactor at 600°F and after complete combustion no material remains in the reactor, how many pounds of carbon will come out? How many pounds of oxygen? How many pounds total? (b) How many moles of carbon and oxygen enter? How many leave the reactor? (c) How many total moles enter the reactor and how many leave the reactor?
922518214012-GOWTHAM S
12. 2.9. A laboratory scale operation 2.00 L flask contains 3.00 g of CO_2 and 0.10 g of helium at a temperature of 17.0 ^oC. What are the partial pressures of each gas, and the total pressure? And a small scale system A tank of 20.0 liters

contains chlorine gas at a temperature of 20.00^0C at a pressure of 2.000 atm. If the tank is pressurized to a new volume of 1.000 L and a temperature of 150.00^0C, calculate the new pressure using the ideal gas equation, and the van der Waals equation.
922518214013-HARIPRIYA S
13.2.10. A. Describe the factors responsible for the deviation of the behavior of real gases from that of an ideal gas. Under which of the following sets of conditions does a real gas behave most like an ideal gas, and for which conditions is a real gas expected to deviate from ideal behavior? Explain High pressure, small volume High temperature, low pressure Describe the factors responsible for the deviation of the behavior of real gases from that of an ideal gas. Low temperature, high pressure
922518214015-JAYASHEELI RENISHA A
14.3.1. A. Mass Balance Calculation- This problem illustrates how a mass balance calculation can be used to check the results of an air pollution monitoring study. A fabric filter (bag filter) is used to remove the dust from the inlet gas stream so that outlet gas stream meets the required emission standards in cement, fertilizer and other chemical industries. During an air pollution monitoring study, the inlet gas stream to a bag filter is 1,69,920 m^3/hr and the dust loading is 4577 mg/m^3. The outlet gas stream from the bag filter is 1,85,040 m^3/hr and the dust loading is 57 mg/m^3. What is the maximum quantity of ash that will have to be removed per hour from the bag filter hopper based on these test results?

922518214016-JAYASHREE M
15.3.2. A. Material Requirement for Process Operations - A scrubber is used to remove the fine material or dust from the inlet gas stream with a spray of liquid (typically water) so that outlet gas stream meets the required process or emission standards. How much water must be continually added to wet scrubber shown in Figure below in order to keep the unit running? Each of the streams is identified by a number located in a diamond symbol. Stream 1 is the recirculation liquid flow stream back to the scrubber and it is 4.54 m^3/hr. The liquid being withdraw for treatment and disposal (stream 4) is 0.454 kg m^3/hr. Assume that inlet gas stream (number 2) is completely dry and the outlet stream (number 6) has 272.16 kg/hr of moisture evaporated in the scrubber. The water being added to the scrubber is stream number 5.
922518214017-JAYASRI T S
16.3.3. An effluent sample from a formaldehyde plant is found to contain methanol and formaldehyde. The analysis of the solution indicated that toc and thod are 350mg /l and 970 mg/l respectively, find the concentration of each of the compounds in the sample.
922518214018-JENO DEVA KIRUBA A
17.3.4. A spent acid solution from a nitration plant contains 45% H_2SO_4, 15%HNO_3 and 40%H_2O by mass. It is fed to a distillation system at the rate of 1000kg/h to separate into three fractions, A,B AND C 94% of HNO_3 in the feed is recovered in the fraction A while 6% is recovered in the fraction B.80%of water in the feed is recovered in the fraction B ABD 12% is recovered in the fraction A.95% of H_2SO_4 is recovered in fraction C and 4% is recovered in fraction B. calculate flow rates of the three fractions using the linear model method.

922518214019-KALAINAYA A
18.3.5 A batch reactor contains 1200 l of reactants mass, density of the mass is 1.2 kg/l and its ph is 6. It is required to raise ph of the reaction mass from 6 to 9 by adding 0.5% by mass naoh solution. Density of the naoh solution is 1.005kg/l calculate the mass of 0.5% NAOH solution required to be added to raise the Ph.
922518214020-KIRUBHAKARAN S
19.3.6. Balance across equipment in continuous centrifuging of milk If 35,000kg of whole milk containing 4% fat is to be separated in a 6 hour period into skim milk With 0.45% fat and cream with 45% fat, what are the flow rates of the two output streams from a continuous centrifuge which accomplishes this separation? Basis 1 hour's flow of whole milk
922518214021-LOKESH NANDHA K
20.3.7. Drying Yield- Potatoes are dried from 14% total solids to 93% total solids. What is the product yield from each 1000 kg of raw potatoes assuming that 8% by weight of the original potatoes is lost in peeling?
922518214023-MANIKANDAPRABHU M
21.3.8. A liquid ethanol fermentation medium at 45°C is pumped at the rate of 1000 kg/hr through enters at 75°C and leaves at 90°C, the average heat capacity of the medium and water is 3.986 and 5.21 kJ/kg K. respectively the medium stream and hot water stream are separated by a metal surface through which heat is transferred and do not physically with each other. Make the complete heat balance of the system and calculate the hot water flow and the amount of heat added to the fermentation medium assuming there is no heat loss in the system.

922518214024-MATHIYAZHAGAN S
22.3.9. A fertilizer plant produces ammonia by reforming naphtha with steam, the synthesis gas , obtained from the methanator is passed through the converter after mixing with the recycle stream. Based on the operating parameters of the converter, the conversion per pass is limited to 25%. The composition of the fresh feed (synthesis make-up gas) is CH4:0.7% Ar:0.3% H_2 :74.25 and N_2 24.75% on mole basis. The converter outlet gases pass the heat exchanger where it cools down. Later, the gases are passed through a chiller-cum-separator which separates 65% of the ammonia present converter outlet gas, non condensable gases and uncondensed ammonia are recycled back. In order to limit the concentration of inserts (CH_4+Ar) to 10mole% in the mixed feed , a portion of the recycle stream is purged. Based on a fresh feed rate of 100kmol/s, calculate A. the recycle feed rate and recycle ratio, b. the purge gas rate c. the product ammonia rate d. the composition of various streams.
922518214025-MUTHU GAYATHRI D
23.3.10. Pure sulphur is burnt in a burner at the rate of 0.3 kg/s. fresh dry air is supplied at 30°C and 100 kPa. The gases from the burner contain 16.5%SO_2, 3% O_2 and rest N_2 on SO_3 free volume basis. The gases leave the burner at 800°C and 101.325 kPa. Calculate the i. Fraction of sulphur burnt into SO_3 ii. The percentage excess air over the amount required to oxidize sulphur to SO_2 iii. The volume of dry air in m^3/s iv. The volume of burner gases in m^3/s.

922518214026-NADHIYA S
24.4. 1. Autoclave heat balance in canning-An autoclave contains 1000 cans of pea soup. It is heated to an overall temperature of 100 °C. If the cans are to be cooled to 40 °C before leaving the autoclave, how much cooling water is required if it enters at 15 °C and leaves at 35 °C? The specific heats of the pea soup and the can metal are respectively 4.1 kJ/ kg °C and 0.50 kJ/ kg °C. The weight of each can is 60g and it contains 0.45 kg of pea soup. Assume that the heat content of the autoclave walls above 40 °C is 1.6 x 104 kJ and that there is no heat loss through the walls. Let w = the weight of cooling water required; and the datum temperature be 40°C, the temperature of the cans leaving the autoclave.
922518214027-NIVETHA M
25.4.2. Draw a process flow chart for any product manufacture and List down the various guidelines required for material and energy balance. And draw a typical input output diagram for a process and indicate the various energy inputs and what is the purpose of material and energy balance?
922518214028-POOJASRI S
26.4.3. Calculation of work for a batch process One pound mole of *N,* is in a horizontal cylinder at 100 psia and 70°F. A I-in^2 piston of 5-lb weight seals the cylinder and is fixed by a pin. The pin is released and the N_2 volume is doubled. at which time the piston is stopped again. What is the work done by the gas in this process And Brief Discussion?

922518214029-PRASANNESH S
27.4.4 Energy balance- Steam that is used to heat a batch reaction vessel enters the steam chest, which is segregated from the reactants. at 250°C saturated and is completely condensed. The reaction absorbs 1000 Btu/lb of material in the reactor. Heat loss from the steam chest to the surroundings is 5000 Btu/hr. The reactants are placed in the vessel at 70°F and at the end of the reaction the material is at 2120°F. If the charge consists of 325 Ib of material and both products and reactants have an average heat capacity of *Cp* = 0.78 Btu/(Ib)(CF), how many pounds of steam are needed per pound of charge? The charge remains in the reaction vessel for I hr.
922518214030-PREETHA S
28.4.5The following are the cooling water requirements for a process industry: Heat exchanger 1: 300 m^3 /hr. at 3 kg/cm^2 Heat exchanger 2: 150 m^3 /hr. at 2.5 kg/cm^2 Heat exchanger 3: 200 m^3 /hr. at 1 kg/cm^2 Find out the total cooling water requirement per hour for the plant? (all heat exchangers are in parallel)
922518214031-PRIYA P
29.4.6. Combination of heats of reaction at 25°C The following heats of reaction are known from experiments for the reactions below at 25°C in the standard thermo chemical state: *Rxn* *kcal / g mole* I. $C_3H_6(g) + H_2(g) \sim C_3H_8(g)$ -29.6 2.$C_3H8(g) + 50_2(g) \sim 3CO_2(g) + 4H_2O(l)$ -530.6 3. $H_2(g) + 1/2O_2(g)$ -----+ $H_2O(!)$ -68.3

4. H_2O L ----- $H_2O(g)$ + 10.5

5. C (diamond) + $O_2(g)$ -----+ $CO_2(g)$ -94.50

6. C (graphite) + $O_2(g)$ -----+ $CO_2(g)$ -94.05

Calculate the following:

(a) The standard heat of formation of propylene (C_3H_6 gas).

(b) The standard heat of combustion of propylene (C_3H_6 gas).

(c) The net heating value of propylene in Btu/ft3 measured at 60°F and 30 in.Hg saturated with water vapor.

922518214032-PRIYADHARSHINI K

30.4.7 Calculation of DEL- H using heat capacity equations

The conversion of solid wastes to innocuous gases can be accomplished in incinerators in an environmentally acceptable fashion. However, the hot exhaust gases must be cooled or diluted with air. An economic feasibility study indicates that solid municipal waste can be burned to a gas of the following composition (on a dry basis):

CO_2 9.2

CO L5

O_2 7.3

N_2 82.0

100.0

What is the enthalpy difference for this gas between the bottom and the top of the stack if the temperature at the bottom of the stack is 550°F and the temperature at the top is 200°F? Ignore the water vapor in the gas. Because these are ideal gases, you can neglect any energy effects resulting from the mixing of the gaseous components.

922518214033-RAJAKUMARI R
31.4.8. Incomplete reactions -An iron pyrites ore containing 85.0 percent FeS_2 and 15.0 Percent gangue (inert, dirt , rock, etc.) is roasted with an amount of air equal to 200 percent excess air according to the reaction $4FeS_2 + 11O_2 \rightarrow 2Fe_2O_3 + 8So_2$, in order to produce SO_2. All the gangue plus the Fe_2So_3, end up in the solid waste product (cinder) which analyzes 4.0 percent FeS_2. Determine the standard beat of reaction per kilogram of ore.
922518214034-RAMYA M
32.4.9. Draw a simple sketch of the following processes; indicate the system boundary; and classify the system as open or closed: (a) Automobile engine. (e) A river. (b) Water wheel. (f) The earth and its atmosphere. (c) Pressure cooker. (g) An air compressor. (d) Man himself. (h) A coffee pot.
922518214035-RAMYA V
33.4.10. Refrigeration load- It is desired to freeze 10,000 loaves of bread each weighing 0.75 kg from an initial room temperature of 18°C to a final temperature of -18°C. The bread-freezing operation is to be carried out in an air-blast freezing tunnel. It is found that the fan motors are rated at a total of 80 horsepower and measurements suggest that they are operating at around 90% of their rating, under which conditions their manufacturer's data claims a motor efficiency of 86%. If 1 ton of refrigeration is 3.52 kW, estimate the maximum refrigeration load imposed by this freezing installation assuming (a) that fans and motors are all within the freezing tunnel insulation and (b) the fans but not their motors are in the tunnel. The heat-loss rate from the tunnel

to the ambient air has been found to be 6.3 kW.

922518214036-RUTHRA S

34.5.1 The main advantage of catalytic incineration of odorous gases or other obnoxious substances over direct combustion is the lower cost. Catalytic incinerators operate at lower temperatures-500°-900°C compared with 1100°-1500°C for thermal incinerators- and use substantially less fuel. Because of the lower operating temperatures. Materials of construction do not need to be as heat resistant, reducing installation and construction costs. In a test run, a liquid having the composition 88 percent C and 12 percent H_2 is vaporized and burned to a flue gas (fg) of the following composition:

CO2 13.4,O_2 3.6,N_2 83.0,TOTAL=100.0%

To compute the volume of the combustion device, determine how many pound moles of dry fg are produced per 100 lb of liquid feed. What was the percentage of excess air used?

922518214037-SARANYA M

35.5.2. Chemical Equation and Stoichiometry - The gas-phase reaction between methanol and acetic acid to form methyl acetate and water takes place in a batch reactor and proceeds to equilibrium.

$$\mathbf{CH_3OH + CH_3COOH} \Longleftrightarrow \mathbf{CH_3COOCH_3 + H_2O}$$

(A) (B) (C) (D)

When the reaction mixture comes to equilibrium, the mole fractions (y) of the four reactive species satisfy the relation

$$\frac{Y_C\, Y_D}{Y_A\, Y_B} = 4.87$$

a.If the feed to the reactor contains equimolar quantities of methanol and acetic acid and no other species,calculate the fractional conversion at equilibrium.

b. It is desired to produce 70 mol of methyl acetate starting with 80 mol acetic acid. If the reaction proceeds to equilibrium, how much methanol must be fed? Assume no products are present initially.

c. What is the composition of the final mixture at equilibrium in terms of the mole fractions?

922518214038-SASIDHARAN M

36.5.3. Antimony (Sb) is obtained by heating pulverized stibnite (Sb_2S_3) with scrap iron and drawing off the molten antimony from the bottom of the reaction vessel

2 Sb_2S_3 + 3Fe <======> **2Sb + 3FeS**

Suppose that 0.600 kg of stibnite and 0.250 kg of iron turnings are heated together to give 0.200 kg of Sb metal.

Determine: a. The limiting reactant

b. The percentage of the excess reactant

c. The degree of completion (fraction)

d. The percent conversion of stibnite

e. The mass yield relative to stibnite supplied

922518214040-SATHYA R

37.5.4 Stoichiometry- A limestone analysis shows the following composition:

$CaCO_3$ 92.89%

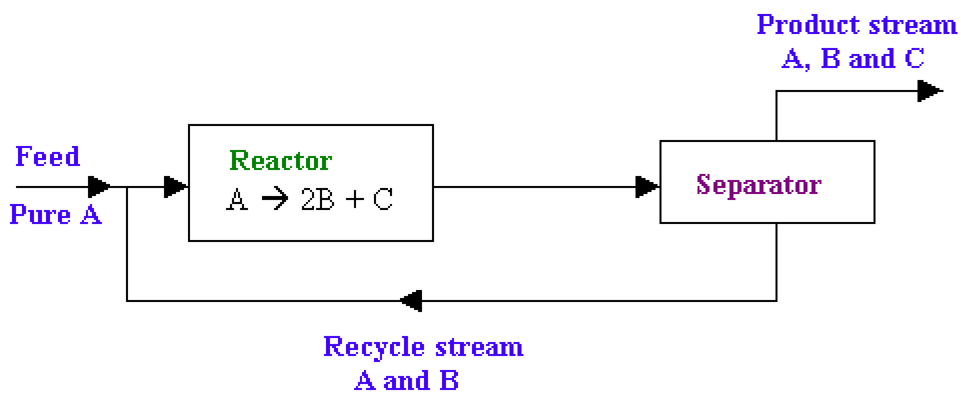
$MgCO_3$ 5.41% and Inert 1.70%

a. How many pounds of calcium oxide can be made from 5 tons of this

limestone? b. How many pounds of CO2 can be recovered per pound of limestone? c. How many pounds of limestone are needed to make 1 ton of lime (mixture of CaO, MgO, and inerts)? Chemical Equations: **$CaCO_3$** <======> **$CaO + CO_2$** **$MgCO_3$** <======> **$MgO + CO_2$**
922518214041-SEDHUPATHI S
38.5.6 steel plants produce ammonium sulphate fertilizer as a by-product from their coke oven gas. Outline the manufacture of the same with block diagram, reactions and the major equipment involved.
922518214042-SHANMUGAPRIYA K
39.5.5 List the potential pollutants from any specific chemical industry of your choice - include solid liquid gaseous waste plant wastes / effluents /emissions. Describe the treatment process for only the liquid effluent with a process flow diagram and its descriptions
922518214043-SHELCIYA T
40.5.9 The reaction A →2B + C takes place in a catalytic reactor (diagram is given below). The reactor effluent is sent to a separator. The overall conversion of A is 95%. The product stream from the separator consists of B, C and 0.5% of A entering the separator, while the recycle stream consists of the remainder of the unreacted A and 1% of B entering the separator. Calculate the

a. single pass conversion of A in the reactor

b. molar ratio of recycle to feed.



922518214044-SNEHA D

41.5.7 A naphtha based fertilizer plant is proposed to be set up for producing urea $CO(NH_2)2$ utilizing 1000M3/day feed naptha having 16% w/w H2 has a density of 752kg/m3,suggest a process that can achieve the maximum daily production of ammonia in the ammonia production section of a plant (atomic weight of C,N ,O, and H 12,14,16 and 1) what will be the maximum daily production of ammonium from this plant ? and explain why in manufacture of liquid nitrogen and oxygen in an air separations plant all modern plant use the **double column** configurations

922518214045-SUMAYA FATHIMA S

42.5.8 Molecular and Ionic Equations When carbon dioxide is dissolved in an aqueous solution of sodium hydroxide; the mixture reacts to yield aqueous sodium carbonate and liquid water. Write balanced molecular, complete ionic, and net ionic equations for this process.

922518214046-SURESH G
43.5.10. Methanol vapor can be converted into formaldehyde by the following reaction scheme: $CH_3OH + 0.5\ O_2 \rightarrow HCHO + H_2O$ $CH_3OH \rightarrow HCHO + H_2$ The fresh feed to the process was 0.5 kmol / hr of O_2 and an excess methanol. All of the O_2 reacts in the reactor. Formaldehyde and water are removed from the product stream first, after which H_2 is removed from the recycled methanol. The recycle flow rate of methanol was 1 kmol/hr. The ratio of methanol reacting by decomposition to that by oxidation was 3. Draw the flow diagram and then calculate the per pass conversion of methanol in the reactor and the fresh feed rate of methanol.
922518214049-VARSHINI M
44. An evaporator is fed with10000 kg/hr of a solution containing 1% solute by weight. It is to be concentrated to 1.5% solute by weight. The feed is at a temperature of 37^{o}C. The water is evaporated by heating with steam available at a pressure of 1.34 atm absolute, corresponding to a temperature of 108.3^{o}C. The operating pressure in the vapor space is 1 atm absolute. Boiling point elevation and other effects can be neglected. The condensate leaves at the condensing temperature. All the physical properties of the solution may be taken to be same as that of water. What is the quantity of steam required per hour? Data: Enthalpy of feed = 38.1 kcal/kg

Enthalpy of solution inside the evaporator (at 100^oC) = 98 kcal/kg Enthalpy of vapor at 100^oC = 644 kcal/kg Latent heat of vaporization of steam = 540 kcal/kg
922518214050-VIGNESH R
45. A liquid fermentation medium at 30°C is pumped at a rate of 2000 kg/h through a heater. Where it is heated to 70°C under pressure. The waste heat water used to heat this medium enters at 95°C and leaves at 85°C. The average heat capacity of the fermentation medium is 4.06kj/kg.K, and for water is 4.21 kj/kg.k from std.appendix. The fermentation stream and the waste water stream are separated by a metal surface through which heat is transferred and do not physically mix with each other. Make a complete heat balance on the system. Calculate the water flow and the amount of heat added to the fermentation medium assuming no heat losses and draw neat flow diagram as per above data.
922518214051-VIGNESHWARAN G
46. In many biochemical process, lactose is used as a nutrient, which is oxidized as follows $C_{12}H_{22}O_{11} + 12O_2 \rightarrow 12CO_2 + 11H_2O$ The heat of combustion del H C from appendix at 25 °C is $-5648.8x10^3$ j/gmol. Calculate the heat of complete oxidation combustion at 37° C, which is the temperature of many biochemical reactions, the c_{pm} of solid lactose is 1.20 j/g.K and the molecular weight is 342.3 gmass/gmol

V.S.B. ENGINEERING COLLEGE, KARUR

Department of Biotechnology

Academic Year: 2018-2019 (Even Semester)

Assignment questions (Case studies)

Class: II year / III Semester **Sub: BT 8303 Basic Industrial Biotechnology**

Sl. No.	Roll. No	Reg.No	Name of the Student	Assignment questions(Case studies)
1.	18BT8001	922518214001	ANANTHA LAKSHMI S	Traditional biotechnology help in the evolution biotechnology
2.	18BT8002	922518214002	ARJUN K	Global impact of Biotechnology
3.	18BT8003	922518214003	ARUNADEVI S	Fermentor: History, sketch and Applications
4.	18BT8004	922518214004	ATCHAYA V	Brewer’s yeast: Introduction, Microorganism, Block diagram, Applications
5.	18BT8005	922518214005	AVINASH M	Baker’s yeast: Introduction, Microorganism, Block diagrams, Applications.
6.	18BT8006	922518214006	BANUPRIYA M	Fermentation: Bacteria, Fungus, Yeast and its Applications
7.	18BT8007	922518214007	BARANITHARAN B	Citric acid: Industrial production, Applications
8.	18BT8008	922518214008	DEVI S	Lactic acid: Industrial production, Applications
9.	18BT8009	922518214009	DHARANI D	Acetic Acid: Industrial production, Applications
10.	18BT8010	922518214010	GANGASRI R	Amino acids: List of amino acid, classification and industrial production of L-glutamic acid
11.	18BT8011	922518214011	GOKULRAJ B	Lysine : Industrial production and its use of microorganisms
12.	18BT8012	922518214012	GOWTHAM S	Industrial production of Alcohols and applications.
13.	18BT8013	922518214013	HARIPRIYA S	Comparative study of primary and secondary metabolites.
14.	18BT8014	922518214015	JAYASHEELI RENISHA A	Industrial production of Penicillin using microorganism.
15.	18BT8015	922518214016	JAYASHREE M	Industrial production of Streptomycin using microorganism
16.	18BT8016	922518214017	JAYASRI T S	List of vitamins and industrial production of vitamin B12
17.	18BT8017	922518214018	JENO DEVA KIRUBA A	Industrial production of vitamin B2 using microorganism and its applications.
18.	18BT8018	922518214019	KALAINAYA A	Production of vitamin C and give therapeutic application
19.	18BT8019	922518214020	KIRUBHAKARAN S	What is steroid? Give one modern steroids, industrial process and its applications
20.	18BT8020	922518214021	LOKESH NANDHA K	General aspects of Enzyme’s production and give industrial process of Amylases
21.	18BT8021	922518214023	MANIKANDAPRABHU M	List of microbial biopesticides, Draw industrial process and its applications.
22.	18BT8022	922518214024	MATHIYAZHAGAN S	Biofertilizer: production, yield, and applications
23.	18BT8023	922518214025	MUTHU GAYATHRI D	Biopreservatives and its applications
24.	18BT8024	922518214026	NADHIYA S	Production of biopolymers
25.	18BT8025	922518214027	NIVETHA M	Industrial production of biodiesel

	18BT8026	922518214028	POOJASRI S	Cheese production and it applications
27.	18BT8027	922518214029	PRASANNESH S	Industrial beer production
28.	18BT8028	922518214030	PREETHA S	Single cell production(SCP)
29.	18BT8029	922518214031	PRIYA P	Mushroom culture
30.	18BT8030	922518214032	PRIYADHARSHINI K	rDNA Technology and therapeutic application
31.	18BT8031	922518214033	RAJAKUMARI R	Plant cell culture using bioprocess
32.	18BT8032	922518214034	RAMYA M	Animal cell culture using bioprocess
33.	18BT8033	922518214035	RAMYA V	Production of Rabies vaccine
34.	18BT8034	922518214036	RUTHRA S	rDNA technology for making smallpox vaccine
35.	18BT8035	922518214037	SARANYA M	Prevention, Diagnosis and cure of disease
36.	18BT8036	922518214038	SASIDHARAN M	Monoclonal antibody production
37.	18BT8037	922518214040	SATHYA R	Transgenic animals and uses
38.	18BT8038	922518214041	SEDHUPATHI S	Genomics and proteomics and give one application identification of tissue specific genes.
39.	18BT8039	922518214042	SHANMUGAPRIYA K	Bioinformatics tools in Analysis
40.	18BT8040	922518214043	SHELCIYA T	Animal cell and tissue organ culture
41.	18BT8041	922518214044	SNEHA D	Manipulation of reproduction and Trasgenic animals
42.	18BT8042	922518214045	SUMAYA FATHIMA S	Cyanobacterial –biofertilizers
43.	18BT8043	922518214046	SURESH G	Microbial pesticides applications
44.	18BT8045	922518214049	VARSHINI M	Biochips the biological computer
45.	18BT8046	922518214050	VIGNESH R	Biomass Conservation
46.	18BT8047	922518214051	VIGNESHWARAN G	Bio-Energy : Introduction ,process, applications

Staff i/c **HoD**

V.S.B. ENGINEERING COLLEGE, KARUR

Department of Biotechnology

Academic Year: 2019-2020 (Odd Semester)

Assignment questions

Class: II year /III Semester BT **Sub: BT8302 Applied thermodynamics for Biotechnologists**

Sl. No.	Roll. No	Reg.No	Name of the Student	Assignment questions
1	18BT8001	922518214001	ANANTHA LAKSHMI S	Discuss the Scope and limitation of thermodynamics
2	18BT8002	922518214002	ARJUN K	Discuss Definition and fundamental concepts of thermodynamics
3	18BT8003	922518214003	ARUNADEVI S	Explain the effect of temperature and pressure on chemical potential.
4	18BT8004	922518214004	ATCHAYA V	Show that ideal gases $C_p - C_v = R$
5	18BT8005	922518214005	AVINASH M	Explain in detail Volumetric properties of fluids of ideal gases
6	18BT8006	922518214006	BANUPRIYA M	Discuss the fugacity and fugacity coefficient for pure species..
7	18BT8007	922518214007	BARANITHARAN B	First law of thermodynamics for closed system
8	18BT8008	922518214008	DEVI S	The azeotrope of the ethanol- benzene system has a composition of 44.8% (mol) ethanol with a boiling point of 341.4 K at 101.3 kPa. At this temperature the vapor pressure of benzene is 68.9 kPa and the vapor pressure of ethanol is 67.4 kPa. What are the activity coefficients in a solution containing 10% alcohol?
9	18BT8009	922518214009	DHARANI D	Explain how the equilibrium constants expressed for gas and liquid phase reactions.
10	18BT8010	922518214010	GANGASRI R	Discuss the effect of temperature on equilibrium constant.
11	18BT8011	922518214011	GOKULRAJ B	Derive the equilibrium criteria for homogeneous chemical reactions.
12	18BT8012	922518214012	GOWTHAM S	Volumetric properties of fluids of real gases
13	18BT8013	922518214013	HARIPRIYA S	Derive the Lewis / Randell rule as applicable to ideal solutions.
14	18BT8014	922518214015	JAYASHEELI RENISHA A	Discuss the criteria for phase equlibria
15	18BT8015	922518214016	JAYASHREE M	Calculate the pressure developed by 1 kmol of gaseous ammonia contained in a vessel of 0.6m3 capacity at a constant temperature of 473 K by the following methods: (i) Using the ideal gas equation (ii) Using the vander Waals equation given that $a= 0.4233\ Nm4/mol^2$ $b=3.73 \times 10\text{-}5\ m^3/mol$

Sl. No.	Roll. No	Reg.No	Name of the Student	Assignment questions
				(iii)Using the Redlich – Kwong equation given that Pc=112.8 bar; Tc=405.5K
16	18BT8016	922518214017	JAYASRI T S	First law of thermodynamics for open system
17	18BT8017	922518214018	JENO DEVA KIRUBA A	Derive the equation relating equilibrium constant and standard free energy change.
18	18BT8018	922518214019	KALAINAYA A	Explain about the formation thermodynamics.
19	18BT8019	922518214020	KIRUBHAKARAN S	Phase diagram for binary solutions.
20	18BT8020	922518214021	LOKESH NANDHA K	Derive Herbert –Pirt Relation for electron donor consumption and explain the terms.
21	18BT8021	922518214023	MANIKANDAPRABHU M	State and derive Gibbs Duhem equation.
22	18BT8022	922518214024	MATHIYAZHAGAN S	At 300 K and 1 bar, the volumetric data for a liquid mixture of benzene and cyclohexane are represented by $V = 109.4 \times 10^{-6} - 16.8 \times 10^{-6} x - 2.64 \times 10^{-6}x^2$, where x is the mole fraction of benzene and V has the units of m3 ⁄ mol. Find the expressions for the partial molar volumes of benzene and cyclohexane.
23	18BT8023	922518214025	MUTHU GAYATHRI D	Write in detail about the correlations to find the amount of Gibbs energy generated in the anabolic reaction for the synthesis of 1 Cmol of synthesis.
24	18BT8024	922518214026	NADHIYA S	Discuss the effect of pressure on equilibrium constant.
25	18BT8025	922518214027	NIVETHA M	Describe the effect of reaction conditions on chemical equilibrium conversion.
26	18BT8026	922518214028	POOJASRI S	Explain in detail the PVT behavior of fluids
27	18BT8027	922518214029	PRASANNESH S	What is the influence of temperature on equilibrium constant and derive Van’t Hoff’s equation.
28	18BT8028	922518214030	PREETHA S	Discuss the consistency test for VLE Datas.
29	18BT8029	922518214031	PRIYA P	The enthalpy of a binary liquid mixture containing components 1 and 2 at 298 K and 1.0 bar is given by $H= 400x^1 + 600x^2 + x^1x^2(40x^1 + x^2)$ where H is in J/mol, Determine (i) Pure component enthalpies (ii) Partial molar enthalpies
30	18BT8030	922518214032	PRIYADHARSHINI K	Discuss the equations relating to the molar and partial molar properties.

Sl. No.	Roll. No	Reg.No	Name of the Student	Assignment questions
31	18BT8031	922518214033	RAJAKUMARI R	Giving example find the stoichiometric coefficient for calculation of the anabolic reaction for autotrophic growth.
32	18BT8032	922518214034	RAMYA M	At 750 mm Hg pressure, the A-B azeotrope boils at 65°C and contains 35 mole% of A. The vapor pressure of A and B are 1000 mm and 800 mm of Hg respectively at 65°C. Calculate the composition of vapour at this temperature in equilibrium with liquid analyzing 10 mole% of A. what is the total pressure at this condition?
33	18BT8033	922518214035	RAMYA V	Explain equation of state and concept of ideal gases.
34	18BT8034	922518214036	RUTHRA S	Discuss the vapor liquid equilibrium in ideal solutions.
35	18BT8035	922518214037	SARANYA M	From vapor liquid equilibrium measure ments for ethanol benzene system at 318K And 40.25 kPa it is found that the vapor in equilibrium with a liquid containing 38.4 % (mol) benzene contained 56.6% (mol) benzene. The system forms an azeotrope at 318 K. at this temperature, the vapor pressure of ethanol and benzene are 22.9 and 29.6 kPa respectively. Determine the composition and total pressure of the azeotrope. Assume that Van laar equation is applicable for the system.
36	18BT8036	922518214038	SASIDHARAN M	Giving example find the stoichiometric coefficient for calculation of the anabolic reaction for heterotrophic growth.
37	18BT8037	922518214040	SATHYA R	Discuss the effect and temperature and pressure on activity coefficients.
38	18BT8038	922518214041	SEDHUPATHI S	Explain in detail about calculation of the electron donor needed for anabolism using the balance of degree of reduction.
39	18BT8039	922518214042	SHANMUGAPRIYA K	Explain in detail about the methods available for calculation of Vapour Liquid Equilibria involving high pressures.
40	18BT8040	922518214043	SHELCIYA T	Ethanol-water mixture forms an azeotrope boiling at 351.4K under a pressure of 101.3kPa and its composition is 89.4% (mol) ethanol. The vapour pressures of ethanol and water at 351.4K are 100 kPa and 44 kPa respectively. Using Van Laar method and assuming that the ratio of vapour pressures remains constant. Calculate the composition of the vapor in equilibrium with a liquid

Sl. No.	Roll. No	Reg.No	Name of the Student	Assignment questions
				containing 80% ethanol.
41	18BT8041	922518214044	SNEHA D	Discuss the processes involving in ideal gases.
42	18BT8042	922518214045	SUMAYA FATHIMA S	How to calculate the heat in operational stoichiometry using the Herbert –Pirt Relation for Electron Donor.
43	18BT8043	922518214046	SURESH G	Explain phase equlibria in single component system.
44	18BT8044	922518214047	SURIYAMATHI R	Discuss about the thermodynamics of microbial growth stoichiometry.
45	18BT8045	922518214049	VARSHINI M	Methanol is produced by the following reaction: $CO(g) + 2H2(g) \rightarrow CH3OH(g)$. The standard heat of formation of CO(g) and CH3OH(g) at 298 K are -110,500 J/mol and -200,700 J/mol respectively. The standard free energies of formation are -137,200 J/mol and -162,000 J/mol respectively. Calculate the standard free energy change and determine whether the reaction is feasible at 298K. Determine the equilibrium constant at 400 K assuming that the heat of reaction is constant.
46	18BT8046	922518214050	VIGNESH R	Derive and explain Maxwell relations.
47	18BT8047	922518214051	VIGNESHWARAN G	Prove that Ka = Kf = Kp with example.

Staff i/c **HoD**

V.S.B. ENGINEERING COLLEGE, KARUR

Department of Bio-Technology

Academic Year: 2019-2020 (ODD Semester)

Assignment Questions

Class: II Year / III Semester B.Tech. Bio-Technology

Subject Code/ Subject Name : MA8353/ Transforms and Partial Differential Equations

Name of the faculty : Dr.C.Maharajan

Sl. No.	Reg. No.	Questions
1.	922518214001	Solve: $(x^2 - yz)p + (y^2 - zx)q = (z^2 - xy)$.
2.	922518214002	Solve : $p(1+q) = qz$.
3.	922518214003	Find the general solution of $(z^2 - y^2 - 2yz)p + (xy + zx)q = (xy - zx)$.
4.	922518214004	Solve the Lagrange's equation $(x + 2z)p + (2xz - y)q = x^2 + y$.
5.	922518214005	Solve: $[D^2 - DD' - 2D'^2]z = 2x + 3y + e^{2x+4y}$.
6.	922518214006	Solve: $z = px + qy + p^2q^2$
7.	922518214007	Solve: $(D^3 + D^2D' - 4DD'^2 - 4D'^3)z = \cos(2x + y)$.
8.	922518214008	Find the complete solution of $p^2 + x^2y^2q^2 = x^2z^2$.
9.	922518214009	Solve: $(D^2 - D'^2)z = e^{x-y}\sin(2x + 3y)$.
10.	922518214010	Solve: $(D^2 + 2DD' + D'^2)z = 2\cos y - x\sin y$.
11.	922518214011	Find the Fourier series expansion of $f(x) = \begin{cases} x, & 0 \le x \le \pi \\ 2\pi - x, & \pi \le x \le 2\pi \end{cases}$ also deduce that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \cdots \infty = \frac{\pi^2}{8}$.
12.	922518214012	Find the Fourier series expansion the following periodic function of period 4 $f(x) = \begin{cases} 2 + x, & -2 \le x \le 0 \\ 2 - x, & 0 < x \le 2 \end{cases}$. Hence deduce that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \cdots \infty = \frac{\pi^2}{8}$.

	922518214013	Solve: $(x^2 - yz)p + (y^2 - zx)q = (z^2 - xy)$.
14.	922518214015	Expand $f(x) = \begin{cases} 1 + \frac{2x}{\pi}, -\pi < x < 0 \\ 1 - \frac{2x}{\pi}, 0 < x < \pi \end{cases}$ as a full range Fourier series in the interval $(-\pi, \pi)$. Hence deduce that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \cdots \infty = \frac{\pi^2}{8}$.
15.	922518214016	Expand $f(x) = \begin{cases} -x, -\pi < x < 0 \\ x, 0 < x < \pi \end{cases}$ as a full range Fourier series in the interval $(-\pi, \pi)$. Hence deduce the sum of the series $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \cdots \infty$.
16.	922518214017	Obtain the Fourier cosine series expansion of $x \sin x$ in $(0, \pi)$. And hence find the value of $1 + \frac{2}{1.3} - \frac{2}{3.5} + \frac{2}{5.7} - \cdots \infty = \frac{\pi - 2}{4}$.
17.	922518214018	Obtain the Fourier cosine series of $f(x) = \begin{cases} kx, & 0 < x < \frac{l}{2} \\ k(l - x), & \frac{l}{2} < x < l \end{cases}$.
18.	922518214019	Find the complex form of the Fourier Series for the function $f(x) = e^{ax}$ in $-\pi < x < \pi$, where $'a'$ is a real constant. Hence deduce that $\sum_{n=-\infty}^{\infty} \frac{(-1)^n}{a^2 + n^2} = \frac{\pi}{a \sinh a\pi}$.
19.	922518214020	Determine the first two harmonics of Fourier series for the following data. x: 0, $\frac{\pi}{3}$, $\frac{2\pi}{3}$, π, $\frac{4\pi}{3}$, $\frac{5\pi}{3}$ f(x): 1.98, 1.30, 1.05, 1.30, -0.88, -0.25
20.	922518214021	Form the PDE by eliminating the arbitrary function 'f' and 'g' from $z = x^2 f(y) + y^2 g(x)$
21.	922518214023	Find the complete solution of $9(p^2 z + q^2) = 4$.
22.	922518214024	Find the general solution of $(z^2 - 2yz - y^2)p + (xy + zx)q = xy - zx$

23.	922518214025	Solve $(D^3-2D^2D')z = 2e^{2x}+3x^2y$.
24.	922518214026	Solve (r+s-6t)=y cosx.
25.	922518214027	Solve $(D^2+2DD'+D'^2-2D-2D')z = \sin(x+2y)$
26.	922518214028	Find a Fourier series with period 3 to represent $f(x) = 2x-x^2$ in (0,3).
27.	922518214029	Find the Fourier series expansion of the periodic function f(x) of the period 2 defined by $f(x) = l-x$, $0<x\le l$ $= 0$, $l<x\le 2l$. in $(0,2l)$
28.	922518214030	Find the half range sine series of $f(x) = x\cos\pi x$ in (0,1).
29.	922518214031	Find the half range cosine series expansion of $(x-1)^2$ in $0<x< l$.
30.	922518214032	Find the complex form of the Fourier series $f(x)=e^{-ax}$ in the interval; $-\pi<x<\pi$.
31.	922518214033	Find the complete solution of $p^2+x^2y^2q^2=x^2z^2$.
32.	922518214034	Find the Fourier series for the function $f(x) = \lvert\sin x\rvert$ over the interval $(-\pi,\pi)$.
33.	922518214035	Compute first two harmonic of the Fourier series for f(x) from the table below:**(AU-A/M-2010)(8)** x : 0 60^0 120^0 180^0 240^0 300^0 y: 1.98 1.30 1.05 1.30 -0.88 -0.25
34.	922518214036	Solve the Lagrange's equation $(x+2z)p+(2xz-y)q=x^2+y$.
35.	922518214037	Solve: $[D^2-DD'-2D'^2]z=2x+3y+e^{2x+4y}$.
36.	922518214038	Find the Fourier cosine series up to third harmonic to represent the function given by the following table:

x	0	1	2	3	4	5
y	4	8	15	7	6	2

	922518214040	Obtain the Fourier cosine series of $f(x) = \begin{cases} kx\,, & 0 < x < \frac{l}{2} \\ k(l-x), & \frac{l}{2} < x < l \end{cases}$.
38.	922518214041	Find the complex form of Fourier series of the function f(x) =sinx in $-\pi<x<\pi$
39.	922518214042	Find the complete solution of $p^2 + x^2y^2q^2 = x^2z^2$.
40.	922518214043	Solve: $(x^2 - yz)p + (y^2 - zx)q = (z^2 - xy)$.
41.	922518214044	Find a Fourier series with period 3 to represent $f(x) = 2x-x^2$ in (0,3).
42.	922518214045	Solve: $[D^2 - DD' - 2D'^2]z = 2x + 3y + e^{2x+4y}$.
43.	922518214046	Solve $(D^3-2D^2D')z = 2e^{2x}+3x^2y$.
44.	922518214049	Solve (r+s-6t)=y cosx.
45.	922518214050	Find the half range cosine series expansion of $(x-1)^2$ in 0<x< l.
46.	922518214051	Find the Fourier series expansion of the periodic function f(x) of the period 2 defined by $f(x) = l-x\,,\ 0<x\le l$ $= 0\,,\ l<x\le 2l$. in $(0,2l)$

Signature of the faculty member **HOD**

V.S.B. ENGINEERING COLLEGE, KARUR
Department of Biotechnology
Academic Year: 2019-2020 (Odd Semester)
Assignment Questions

Class: II Year /IIISemester/BT
Name of Subject: BT8304 Bioorganic chemistry
Name of Faculty member: Dr. N. Saravani

SL.No	Name of the Student	Assignment Questions
1.	ANANTHA LAKSHMI S	Explain about atom, electron, orbital, bonding, electronegativity and formal charge.
2.	ARJUN K	Discuss about acid-base equilibria and give Arrhenius and Bronsted Lowry theories
3.	ARUNADEVI S	Elaborate SP, SP2 and SP3 hybridization
4.	ATCHAYA V	Explain in detail about the various conformational analysis of ethane, butane and cyclohexane.
5.	AVINASH M	Write an essay on “optical activity and chirality”.
6.	BANUPRIYA M	Discuss about the conformation of the peptide bond and its stability.
7.	BARANITHARAN B	Explain diagrammatically and energetically the conformers of ethane, and n-butane.
8.	DEVI S	Explain Stereochemical activity around tetrahedral carbon.
9.	DHARANI D	Explain Conformation of the peptide bond. Why is trans confirmation stable?
10.	GANGASRI R	Elaborate SN1 and SN2 reactions on tetrahedral carbon
11.	GOKULRAJ B	Explain about nucleophilic addition reaction with Acetals and ketals.
12.	GOWTHAM S	Discuss Hydration mechanism of aldehydes and ketones in acidic and basic solution.
13.	HARIPRIYA S	Describe acid and base catalyzed ester hydrolysis
14.	JAYASHEELI RENISHA A	Write in detail about reactions of carbonyl group with amines, ester hydrolysis in base(saponification), hydrolysis of amides
15.	JAYASHREE M	Explain Ester enolates - Claisen condensation – Michael condensation.
16.	JAYASRI T S	Explain the mechanism of an elimination reaction with an example. Explain the effect of steric hindrance on the rate of SN2 reactions.
17.	JENO DEVA KIRUBA A	Explain reaction of carbonyl groups with amines, with an example. Explain the SN1 mechanism of nucleophilic substitution with hydrolysis of ter-butyl bromide along with energy diagram.
18.	KALAINAYA A	Explain condensation reactions.
19.	KIRUBHAKARAN S	Elaborate Kinetic method – Rate law and mechanism .
20.	LOKESH NANDHA K	Explain Transition states- Intermediates – Trapping of intermediates
21.	MANIKANDAPRABHU M	Discuss about Microscopic reversibility – Kinetic and thermodynamic reversibility
22.	MATHIYAZHAGAN S	Discuss Primary and secondary isotopes effects.
23.	MUTHU GAYATHRI D	Derive Arrhenius equation Eyring equation.
24.	NADHIYA S	Discuss in detail about ΔG, ΔS, ΔH, Thermodynamics of coupled reactions
25.	NIVETHA M	Explain about Coenzymes
26.	POOJASRI S	

		Discuss in detail about Proton transfer.
27.	PRASANNESH S	Elaborate metal ions.
28.	PREETHA S	Describe Intra molecular reactions.
29.	PRIYA P	Explain about Covalent catalysis
30.	PRIYADHARSHINI K	Describe Catalysis by organized aggregates and phases Inclusion Complexation
31.	RAJAKUMARI R	Explain in detail about proton transfer mechanism with the help of a co-enzyme catalyzed reaction
32.	RAMYA M	Explain in detail the mechanism of covalent catalysis with an example that you have studied.
33.	RAMYA V	Describe Catalysis by organized aggregates and phases Inclusion Complexation
34.	RUTHRA S	Elaborate Timing of Bond formation and fission with an example of C-C bond formation and fission
35.	SARANYA M	Explain about Acyl group transfer
36.	SASIDHARAN M	Discuss Catalysis of proton transfer reactions
37.	SATHYA R	Describe Transfer of hydride ion
38.	SEDHUPATHI S	Write in detail about Alkyl group Transfer and Terpene biosynthesis
39.	SHANMUGAPRIYA K	Explain Merrifield state peptide synthesis – Sanger method for peptide and DNA sequencing.
40.	SHELCIYA T	Explain in detail about terpene biosynthesis. Explain solid phase peptide biosynthesis with a diagram
41.	SNEHA D	Explain Sanger's methods for DNA sequencing.
42.	SUMAYA FATHIMA S	Discuss about transfer of alkyl group and hydride ion.
43.	SURESH G	Explain the mechanism of an elimination reaction with an example. Explain the effect of steric hindrance on the rate of SN2 reactions.
44.	VARSHINI M	Explain reaction of carbonyl groups with amines, with an example. Explain the SN1 mechanism of nucleophilic substitution with hydrolysis of ter-butyl bromide along with energy diagram
45.	VIGNESH R	Explain in detail the mechanism of covalent catalysis with an example that you have studied.
46.	VIGNESHWARAN G	Explain the stereochemistry of methyl methylene transformation with malate synthase reaction

Signature of the faculty with date **HOD**