BRAINWARE UNIVERSITY

Term End Examination 2020 - 21

Programme – Bachelor of Science (Honours) in Biotechnology

Course Name – Bioprocess Technology

Course Code - BBT501

Semester / Year - Semester V

Time allotted : 85 Minutes | Full Marks : 70

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 70=70

1. *(Answer any Seventy)*

(i) Single cell protein (SCP) is the production of ?

a) Extracellular proteins
b) Fermentation of waste products
c) Intracellular proteins extraction
d) Metabolites

(ii) The batch culture or fermentation can be used to produce _____

a) Organic acids
b) Amino acids
c) Single Cell Protein
d) Antibiotics

(iii) Which of the following is not a criterion to create a media?

a) It should be able to produce the maximum yield of product
b) It should be able to produce the maximum concentration of product
c) It should be easily sterilized.
d) It should permit the maximum rate of product formation, no matter how costly it is

(iv) Which of the following is absent in fermentation media?

a) Carbon
b) Nitrogen
c) Agar
d) Water

(v) Which of the following is not a Carbon source?

a) Blackstrap molasses
b) Corn molasses

c) Beet molasses
d) Yeast extract

(vi) Which of the following raw material is best useful for the production of alcohol?

a) Waste liquor
b) Molasses
c) Starch
d) Alkanes

(vii) Which of the following is the raw material for lactic acid and SCP production?

a) Fruit juices
b) Beet molasses
c) Cheese Whey
d) Hydrocarbons

(viii) Sulphite waste liquor is obtained from _____.

a) Paper pulp industry
b) Wood industry
c) Liquor industry
d) Sulphur production

(ix) Which of the following is not the constituent of Beet molasses?

a) Biotin
b) Thiamine
c) Inositol
d) Cobalamin

(x) Which of the following does not have the property of production of secondary metabolites?

a) Filamentous fungi
b) Filamentous bacteria
c) Sporing bacteria
d) Enterobacteria

(xi) Which of the following is used for glutamic acid production?

a) Sucrose
b) Hydrolyzed cassava starch
c) Oleic acid
d) Corn steep

(xii) Grapes are used in the production of

a) beer
b) wine

c) votka
d) None

(xiii) Which of the following is an upstream process?

a) Product recovery
b) Product purification
c) Media formulation
d) Cell lysis

(xiv) What is the basic function of the fermenter?

a) To sterilize the medium
b) To recover the product
c) To provide optimum growth conditions to organisms and obtain the desired product
d) To purify the product

(xv) Which of the following institute grades the steel?

a) TATA
b) AISI
c) JSW
d) SAIL

(xvi) Which of the metal is used to make stainless steel?

a) Cr
b) Pb
c) Mn
d) Fe

(xvii) Which of the following is not the property of Chromium film?

a) Non-porous
b) Soluble
c) Self-healing
d) Continuous

(xviii) Which of the following element does not enhances the property of stainless steel?

a) Nickel
b) Molybdenum
c) Silicone
d) Manganese

(xix) The AISI grade 316 contains _____ amount of chromium.

a) 0.15
b) 0.18
c) 0.2
d) 0.185

(xx) The AISI grade 317 contains _____ amount of molybdenum.

a) 5 – 10 %
b) 3 – 5 %
c) 1 – 2 %
d) 11 – 14 %

(xxi) The fermenter vessel must be provided with the facilities for

a) Temperature
b) pH
c) Media
d) All

(xxii) The Genetically engineered organisms are classified as _____ and _____

a) Harmless (Group II) and Potentially Harmful (Group I)
b) Harmless (Group I) and Potentially Harmful (Group II)
c) Potentially Harmless (Group I) and Harmful (Group II)
d) Harmless (Group II) and Harmful (Group I)

(xxiii) Which of the following is not a nitrogen source?

a) Waste liquor
b) Corn steep
c) Yeast extract
d) Peptones

(xxiv) Which of the following is not a product of fermentation?

a) Oxygen
b) Carbon dioxide
c) Ethanol
d) Lactate

(xxv) Nitrogen sources used in media formulation are following except _____

a) Peptones
b) Soybean meal
c) Pharmamedia
d) Hydrocarbons

(xxvi) Alcoholic fermentation is carried by yeast known as _____

a) Lactobacillus
b) Saccharomyces cerevisiae
c) Escherichia coli
d) Bacillus

(xxvii) Which of the following nitrogen source is used in bacitracin production?

a) Peanut granules
b) Corn steep liquor
c) Pharmamedia
d) Soybean meal

(xxviii) Which of the following is a 'defined media'?

a) Synthetic media
b) Crude media
c) Simple media
d) Complex media

(xxix) What is the basic principle of Industrial Microbiology?

a) To provide optimum growth conditions
b) To provide aseptic conditions
c) To produce a pure product
d) To create a pure form of media

(xxx) Which components of cell help in the manufacturing of new biological products?

a) Carbohydrates
b) Proteins
c) Lipids
d) Nucleic acids

(xxxi) Which of the following separation techniques is NOT used in the process of manufacturing of citric acid ?

a) Ultrafiltration
b) Ion-exchange
c) Crystallization
d) Distillation

(xxxii) What separation technique is used when a separation operation is accompanied by chemical reaction that facilitates separation?

a) Distillation
b) Fractional distillation
c) Reactive distillation
d) Fractional crystallization

(xxxiii) Which of the following statement is/are correct about Enzyme:

a) An Enzyme is a protein and is used as a catalyst to accelerate the reaction.
b) Life would not exist without the presence of enzymes.
c) Enzymes participate in cellular metabolic
d) All of these

processes.

(xxxiv) Which enzyme is used in making Baby Foods?

a) Amylase
b) Rennin
c) Trypsin
d) None of these

(xxxv) Name an enzyme that is derived from the stomachs of young ruminant animals and also used in dairy industry to produce cheese?

a) Trypsin
b) Pepsin
c) Liginase
d) Rennin

(xxxvi) Name an enzyme that digests fat?

a) Lipase
b) Sucrase
c) Maltase
d) Fructose

(xxxvii) The 'lock and key hypothesis' mechanism is related with:

a) Digestion of fat in the body.
b) For enzyme specificity
c) For the formation of vacuole
d) Explosives

(xxxviii) The bench-top bioreactor comes under which type of bioreactor?

a) Solid-state bioreactor
b) Photo bioreactors
c) Airlift bioreactors
d) Stirred tank bioreactors

(xxxix) Yeast-cell crops harvested from the vats are used to produce which of the following compounds?

a) alcoholic beverages
b) enzymes
c) antibiotics
d) organic acids

(xl) What is the range of protein content in yeast cells?

a) 0.6899999999999999
b) 12-15%
c) 20-40%
d) 40-50%

(xli) The culture medium should not _____

a) Be sterilized
b) Be cheap and readily available
c) Contain desired products
d) Allow high yield of undesired products

(xlii) A _____is a biocatalyst that increases the rate of the reaction without being changed.

a) Aluminum oxide
b) Silicon dioxide
c) Enzyme
d) Hydrogen peroxide

(xliii) What is the nature of an enzyme?

a) Vitamin
b) Lipid
c) Carbohydrate
d) Protein

(xliv) What is an apoenzyme?

a) It is a protein portion of an enzyme
b) It is a non-protein group
c) It is a complete, biologically active conjugated enzyme
d) It is a prosthetic group

(xlv) Name the coenzyme of riboflavin (B2)?

a) NAD or NADP
b) FAD and FMN
c) Coenzyme A
d) Thiamine pyrophosphate

(xlvi) Name the enzyme which catalyzes the oxidation-reduction reaction?

a) Transaminase
b) Glutamine synthetase
c) Phosphofructokinase
d) Oxidoreductase

(xlvii) Mark the CORRECT function of enzyme, Peptidase?

a) Cleave phosphodiester bond
b) Cleave amino bonds
c) Remove phosphate from a substrate
d) Removal of H2O

(xlviii) Which of the following reaction is catalyzed by Lyase?

a) Breaking of bonds
b) Formation of bonds
c) Intramolecular rearrangement of bonds
d) Transfer of group from one molecule to another

(xlix) Blocking of enzyme action by blocking its active sites is
a) feedback inhibition.
b) allosteric inhibition.
c) competitive inhibition.
d) non-competitive inhibition.

(l) The fastest enzyme is
a) carbonic anhydrase.
b) pepsin.
c) DNA polymerase.
d) DNA gyrase

(li) Which of the following products have higher acidity and lacks aroma?
a) Cultured buttermilk
b) Cultured sour cream
c) Bulgarian milk
d) Acidophilus milk

(lii) Shredded cabbage is the starting product for which of the following fermented food?
a) Sauerkraut
b) Pickles
c) Green olives
d) Sausage

(liii) Which of the following microbes are used for the commercial production of citric acid?
a) Xanthomonas citri.
b) Asparagine.
c) Asparagus.
d) Aspergillus.

(liv) Saccharomyces cerevisiae is used primarily for
a) Baking.
b) Bleaching.
c) Biofuel.
d) None of these

(lv) What is the property of an ideal or perfect fluid?

a) Compressible and zero viscosity
b) Compressible and zero density
c) Incompressible and zero viscosity
d) Incompressible and zero density

(lvi) Fluids which undergo strain rates proportional to the applied shear stress are termed as?

a) Newtonian fluid
b) Inviscid fluid
c) Non- Newtonian fluid
d) Viscous fluid

(lvii) Which of the following is not an example of a Non- Newtonian fluids?

a) Gels
b) Water
c) Suspensions
d) Pudding

(lviii) What do you mean by the term "Rheology"?

a) Study of materials with only solid characteristics
b) Study of materials with only fluid characteristics
c) Study of materials with both solid and fluid characteristics
d) Study of material with both fluid and gas characteristics

(lix) Upstream processing includes

a) preparation of medium
b) inoculum developement
c) sterlization
d) All of these

(lx) strain improvement is used for-

a) ability to improve for production
b) purification process
c) isolation of organism
d) None of these

(lxi) Baffles provide-

a) Introduce sterile air or oxygen to the media
b) better mixing by disrupting the vortex formation
c) maintains the temperature of process
d) Detect the presence of the foam

(lxii) performance of the airlift bioreactors is dependent on the

a) pumping (injection) of air
b) circulation of liquid
c) both of these
d) none of these

(lxiii) The aspect ratio for the vessel used for bubble column bioreactors is

a) 1-2
b) 2-3
c) 3-4
d) 4-6

(lxiv) The diameter of the impeller in CSTR should be

a) is usually 1/2 nd of the vessel diameter.
b) usually 1/3 rd of the vessel diameter.
c) is usually 1/3 th of the vessel diameter.
d) equal to the vessel diameter

(lxv) aspect ratio for animal cell culture in CSTR is-

a) less than 2
b) More than 2
c) 5
d) 3

(lxvi) Downstream processing which involves -

a) separation of cells from the fermentation broth
b) purification
c) concentration of desired product
d) all of these

(lxvii) The vessel of bioreactor is draining from _____

a) Top
b) Below
c) Bottom
d) Side

(lxviii) For smaller vessels, which type of sealing is required between the gap of fermenter and the stirrer?

a) Mechanical seal
b) Double-mechanical seal
c) Magnetic seal
d) Non-magnetic seal

(lxix) Which sparger consist of a single open or partially-closed pipe providing

a stream of air bubbles?

a) Perforated sparger
b) Orifice sparger
c) Nozzle sparger
d) Porous sparger

(lxx) All bioreactors deal with _____

a) Homogenous systems
b) Heterogeneous systems
c) Non-heterogeneous systems
d) Isolated systems