

Exam Date & Time: 27-Jul-2022 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

Pharmaceutical Biotechnology [PBT-BP605T-S1]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

- 1) Limitation to access of the bound enzyme to the substrate is negligible in (1)
- | | | | |
|---------------|---------------|------------------|-----------------|
| 1) Adsorption | 2) Entrapment | 3) Encapsulation | 4) Crosslinking |
|---------------|---------------|------------------|-----------------|
- 2) Putrefaction differs from fermentation in that putrefaction involves (1)
- | | | | |
|-----------------------------------|----------------------------------|------------------------------|--------------------------|
| 1) decomposition of mainly sugars | 2) products which are beneficial | 3) decomposition of proteins | 4) production of alcohol |
|-----------------------------------|----------------------------------|------------------------------|--------------------------|
- 3) Biosensor used for measurement of glucose has an electrode made of (1)
- | | | | |
|-------------|--------------|--------------|------------|
| 1) catalase | 2) hydrolase | 3) reductase | 4) oxidase |
|-------------|--------------|--------------|------------|
- 4) α -amylases differ from β - amylase in that α -amylases (1)
- | | | | |
|---|---------------------------------|--------------------------|---------------------------|
| 1) contain tyrosine in the enzyme protein | 2) need calcium as a stabilizer | 3) are from plant origin | 4) split starch molecules |
|---|---------------------------------|--------------------------|---------------------------|
- 5) Eukaryotes differ from Prokaryotes in having ribosomes of (1)
- | | | | |
|---------|---------|---------|---------|
| 1) 50 S | 2) 60 S | 3) 70 S | 4) 80 S |
|---------|---------|---------|---------|
- 6) Eduard Buchner produced alcohol using ground (1)
- | | | | |
|----------------|--------------------|---------------|--------------------|
| 1) yeast cells | 2) bacterial cells | 3) mold cells | 4) mammalian cells |
|----------------|--------------------|---------------|--------------------|
- 7) Amydases destroy the fermentation of (1)
- | | | | |
|----------------|-------------|---------------|------------|
| 1) citric acid | 2) vitamins | 3) penicillin | 4) alcohol |
|----------------|-------------|---------------|------------|
- 8) The enzyme used for making sugar is (1)
- | | | | |
|-----------|------------|------------|-----------|
| 1) rennin | 2) amylase | 3) trypsin | 4) lipase |
|-----------|------------|------------|-----------|
- 9) Mutation resulting from altered gene triplet producing a chain terminating codon in mRNA is (1)
- | | | | |
|----------------------|----------------------|--------------------|------------------------|
| 1) Missense mutation | 2) Nonsense mutation | 3) Lethal mutation | 4) frameshift mutation |
|----------------------|----------------------|--------------------|------------------------|
- 10) An ideal plasma substitute should not have (1)
- | | | | |
|----------------|------------------|-------------------------------|---------------------------|
| 1) isotonicity | 2) low excretion | 3) colloidal osmotic pressure | 4) High diffusion through |
|----------------|------------------|-------------------------------|---------------------------|

- | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|----------------|--|
| | | | | | | | | | capillary wall | |
|--|--|--|--|--|--|--|--|--|----------------|--|
- 11) PVDF is used for detection of (1)
- | | | | |
|--------|--------|------------|----------|
| 1) DNA | 2) RNA | 3) Protein | 4) Lipid |
|--------|--------|------------|----------|
- 12) Genotypic variations are (1)
- | | | | |
|------------------------------|-------------|--------------|--------------|
| 1) influenced by environment | 2) unstable | 3) temporary | 4) heritable |
|------------------------------|-------------|--------------|--------------|
- 13) Benzaldehyde reacts with acetaldehyde in presence of fermenting yeast to form (1)
- | | | | |
|------------|--------------|------------------|-------------|
| 1) Steroid | 2) Ephedrine | 3) Tartaric acid | 4) Xanthine |
|------------|--------------|------------------|-------------|
- 14) Protein purification is employed in protein engineering to: (1)
- | | | | |
|------------------|---------------------------------------|---------------------|------------------------|
| 1) fold proteins | 2) introduce biochemical modification | 3) activate viruses | 4) introduce endotoxin |
|------------------|---------------------------------------|---------------------|------------------------|
- 15) In the process of making the cells 'competent' using calcium chloride transformation, the temperature used to induce heat shock is (1)
- | | | | |
|---------|---------|---------|---------|
| 1) 83°C | 2) 63°C | 3) 53°C | 4) 43°C |
|---------|---------|---------|---------|
- 16) Inactivation/killing of microorganisms used for vaccine preparation are done by (1)
- | | | | |
|----------------|--------------------------|----------------------------|-----------------------|
| 1) autoclaving | 2) hot air sterilization | 3) radiation sterilization | 4) chemical treatment |
|----------------|--------------------------|----------------------------|-----------------------|
- 17) One of the following types of vaccine is a classic example for a recombinant vaccine (1)
- | | | | |
|------------------|------------------------|--------------------|--------------------|
| 1) Polio vaccine | 2) Hepatitis B vaccine | 3) Malaria vaccine | 4) Tetanus vaccine |
|------------------|------------------------|--------------------|--------------------|
- 18) Which of the following conveys the longest-lasting immunity to an infectious agent? (1)
- | | | | |
|--|---|---------------------------------------|-----------------------|
| 1) Naturally acquired passive immunity | 2) Artificially acquired passive immunity | 3) Naturally acquired active immunity | 4) Antisera treatment |
|--|---|---------------------------------------|-----------------------|
- 19) The most common class of immunoglobulins involved in type II hypersensitivity is (1)
- | | | | |
|--------|--------|--------|--------|
| 1) IgM | 2) IgA | 3) IgG | 4) IgE |
|--------|--------|--------|--------|
- 20) The specificity of an antibody is due to (1)
- | | | | |
|---------------------------------------|---------------------------------------|-------------------------------------|--|
| 1) its variable region of light chain | 2) the variable region of heavy chain | 3) the Fc portion of immunoglobulin | 4) the variable portion of heavy and light chain |
|---------------------------------------|---------------------------------------|-------------------------------------|--|

II Long Answers

Answer all the questions.

- 1) Taking a suitable example, discuss the production of a recombinant protein by rDNA technology. (10)
- 2) Explain the production and recovery of citric acid. (10)

III Short Answers

Answer all the questions.

- 1) Describe the steps that are involved in amplifying the fragment of DNA by Polymerase Chain Reaction (5)
- 2) Explain the cells/proteins involved and the mechanisms of our second line of immune defence against antigens. (5)
- 3) Explain the production of 'Oral Polio Vaccine'. (5)
- 4) Explain the aeration and agitation systems used in fermenters. (5)
- 5) Citing example, explain frame shift mutation. (5)
- 6) Explain the process of ELISA. (5)
- 7) How does protein Engineering help in design of novel proteins (5)

-----End-----

