



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Biological Techniques

Course Code: ZOOL-407 Part – I (Compulsory)

Time: 15 Min. Marks: 10

Roll No. in Fig.

Roll No. in Words.

Signature of Supdt.

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct option.

(0.5x20=10)

1. Gram staining is the example
 - a. Simple staining
 - b. Differential staining
 - c. Non differential staining
 - d. Capsular staining
2. The average size of RBC is
 - a. 6-8 μm
 - b. 11-12 μm
 - c. 50 μm
 - d. 100 μm
3. Find the mode (34, 33, 34, 34, 35, 36, 33, 34, 31).
 - a. 33
 - b. 34
 - c. 35
 - d. 31
4. _____ impurities can be separated by filtration.
 - a. Insoluble
 - b. Soluble and insoluble
 - c. Soluble
 - d. All type of impurities
5. The percentage of agarose for making of gel is chosen, based on which property of DNA
 - a. Shape
 - b. Charge
 - c. Size
 - d. All of these
6. _____ is the running buffer for agarose gel.
 - a. Tris-acetate-EDTA
 - b. EDTA
 - c. Ethidium bromide
 - d. All of these
7. RNA is _____ stable than DNA
 - a. Less
 - b. More
 - c. Not known
 - d. Both a and b
8. Isopycnic is a type of technique called as
 - a. Distillation
 - b. Ultracentrifugation
 - c. Filtration
 - d. None
9. The range of visible spectrum wavelength is
 - a. less than 400nm-700nm
 - b. more than 400nm-700nm
 - c. more than 1000nm
 - d. 400nm-700nm
10. _____ is used as mounting material for slides in histology.
 - a. Formalin
 - b. Ethyl alcohol
 - c. Albumin
 - d. Ether
11. How thick are paraffin embedded sections that has been cut ?
 - a. 5-8 μM
 - b. 5-8 nM
 - c. 3-4 mm
 - d. 3-4 cm
12. What is the temperature of the paraffin the tissue is placed in ?
 - a. 76 c
 - b. 35 c
 - c. 56 c
 - d. 70 c
13. SI unit of area is
 - a. square meters
 - b. square inches
 - c. square yards
 - d. square feet

P.T.O.

14. The thickness of a micron, is
- a. 10^{-6} m
 - b. 10^{-12} m
 - c. 10^{-3} m
 - d. 10^{-9} m
15. The site in the cell at which cellular respiration occurs is the _____.
- a. Endoplasmic reticulum
 - b. Golgi complex
 - c. Ribosome
 - d. Mitochondria
16. In gel electrophoresis, how do we make the DNA migrate through the gel?
- a. We place a negative electrode away from the wells
 - b. Gravity
 - c. Large fragments drift to the end of the gel
 - d. We place a positive electrode away from the wells
17. What do we use to cut the DNA before gel electrophoresis?
- a. Lipase
 - b. Restriction enzymes
 - c. Helicase
 - d. DNA polymerase
18. Which is NOT a reason for using gel electrophoresis?
- a. Organizing DNA by the shape of the backbone
 - b. Organizing DNA fragments from largest to smallest
 - c. Comparing two sets of DNA
 - d. Organizing DNA in an order that we can see
19. The fluorescent dye such Ethidium is used for visualizing DNA. How do ethidium binds to DNA?
- a. Stacked between histone molecules
 - b. Binds to the nucleotide base
 - c. Intercalated between the stacked bases
 - d. Binds to the phosphodiester backbone
20. Which of the following components on a light microscope should be focused first?
- a. The two eye pieces
 - b. Objective lenses
 - c. Condenser.
 - d. Revolving nose piece



ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Give short answers to following questions.

2x10=20

1. Calculate magnification of a microscope (ocular lens=20x, objective lens=40x).
2. Which embedding material is most commonly used in histological techniques?
3. Differentiate between mobile and stationary phase in chromatography.
4. Enlist some important active techniques for invertebrate sampling.
5. What is colorimetry. How it is useful in laboratories.
6. Does density gradient centrifugation play any role in cell fractionation?
7. Distinguish between visible light spectrum and ultra violet spectrum.
8. Define least count of for screw guage.
9. Why is staining used for tissues study?
10. Write working principle of thin layer chromatography.

Q.3. Give long answers to following questions.

3x10=30

- a. What is purpose and procedure of haematoxylin and eosin staining?
- b. Write a comprehensive note on agarose gel electrophoresis.
- c. How to write a research paper. For results section elaborate the following graphs.

