

B.Sc. Semester - 4 (CBCS) Examination**March/April- 2018****BIO-CHEMISTRY****(CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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| Que-1 | (A) | Write the correct answer for the questions | (4) |
| | (1) | Give relationship between the grooves and wavelength in spectrophotometer. | |
| | (2) | The visible portion of the electromagnetic spectrum occurs between which wavelength? | |
| | (3) | Which lamp is used as source of visible light? | |
| | (4) | In spectrophotometer, for UV region why is prism made from quartz is used? | |
| Que-1 | (B) | Write the Answer in Brief. (Any 1 out of 2) | (2) |
| | (1) | What do you mean by λ_{max} ? | |
| | (2) | Explain the term "molar extinction coefficient". | |
| Que-1 | (C) | Write the Answer in detail. (Any 1 out of 2) | (3) |
| | (1) | Explain photomultiplier tube in detail | |
| | (2) | Why double beam is better than single beam spectrophotometer? | |
| Que-1 | (D) | Write the Short note in detail. (Any 1 out of 2) | (5) |
| | (1) | Explain double beam spectrophotometer in detail | |
| | (2) | Write applications of spectrophotometer. | |
| Que-2 | (A) | Write the correct answer for the questions | (4) |
| | (1) | Which of the following centrifugation technique is used to separate serum from blood? | |
| | (2) | What is isotonic medium in differential centrifugation? | |
| | (3) | Which type of rotor is used in analytical centrifuge? | |
| | (4) | What is " r_{ave} " in centrifuge? | |
| Que-2 | (B) | Write the Answer in Brief. (Any 1 out of 2) | (2) |
| | (1) | Give the difference between RCF and rpm. | |
| | (2) | Write the use of table top centrifuge. | |
| Que-2 | (C) | Write the Answer in detail. (Any 1 out of 2) | (3) |
| | (1) | Give the use of density gradient and differential centrifugation. | |
| | (2) | Write short note on small batch centrifuge. | |
| Que-2 | (D) | Write the Short note in detail. (Any 1 out of 2) | (5) |
| | (1) | Write in brief: Principle of centrifugation. | |
| | (2) | Give detail about analytical centrifuge. | |
| Que-3 | (A) | Write the correct answer for the questions | (4) |
| | (1) | The radioactive isotope has a half life of 30 min, calculate after 2 hours the fraction of original amount remaining. | |
| | (2) | By what process does thorium-230 decay to radium-226? | |
| | (3) | Which type of radioactive decay results in no change in mass number and atomic number for the starting nucleus? | |
| | (4) | How can one increase the decay rate of a radioactive isotope? | |
| Que-3 | (B) | Write the Answer in Brief. (Any 1 out of 2) | (2) |
| | (1) | Define Radioactivity and Radioactive compound. | |
| | (2) | State the limitation of Geiger Muller counters and ways to Eliminate it. | |

- Que-3 (C) Write the Answer in detail. (Any 1 out of 2) (3)
- (1) The half-life of Zn-71 is 2.4 minutes. If one had 100.0 g at the beginning, how many grams would be left after 7.2 minutes has elapsed?
- (2) Explain liquid scintillation counting.
- Que-3 (D) Write the Short note in detail. (Any 1 out of 2) (5)
- (1) Give some biological applications of radioisotope.
- (2) Explain beta particle emission with example.
- Que-4 (A) Write the correct answer for the questions (4)
- (1) Name the most suitable gas used as a carrier gas in a gas liquid chromatography?
- (2) A soft drink contains sugar, salt, alcohol and vitamin C. A gas chromatogram could be used to determine which component?
- (3) The use of insulin hormone to purify its receptor is an example of which type of chromatography.
- (4) State characteristic feature of chromatography?
- Que-4 (B) Write the Answer in Brief. (Any 1 out of 2) (2)
- (1) Why stationary phase used in Gas Liquid chromatography must have high boiling point?
- (2) Describe K_d (partition coefficient) in Chromatography.
- Que-4 (C) Write the Answer in detail. (Any 1 out of 2) (3)
- (1) Write basic principle of ion-exchange chromatography
- (2) Why Affinity chromatography is the best chromatographic technique? In what ways it is different from other conventional chromatographic techniques?
- Que-4 (D) Write the Short note in detail. (Any 1 out of 2) (5)
- (1) Write the advantages of TLC in comparison to paper chromatography
- (2) Describe the principle and advantages of HPLC
- Que-5 (A) Write the correct answer for the questions (4)
- (1) In a native PAGE, proteins are separated on the basis of which factor?
- (2) Give function of SDS (sodium dodecyl sulfate) in the electrophoresis of proteins.
- (3) Name the cross linking agent used for PAGE .
- (4) In 2D PAGE second electrophoresis is done at which degree angle relative to the first one?
- Que-5 (B) Write the Answer in Brief. (Any 1 out of 2) (2)
- (1) Define the role of TEMED in PAGE.
- (2) Write the applications of starch gel electrophoresis.
- Que-5 (C) Write the Answer in detail. (Any 1 out of 2) (3)
- (1) Write a note on applications of electrophoresis.
- (2) State the factors affecting electrophoretic mobility of the compound and briefly explain any one of them.
- Que-5 (D) Write the Answer in detail. (Any 1 out of 2) (5)
- (1) Write a note on detection methods of electrophoresis.
- (2) Explain 2D gel eletrophoresis
