

QP Code : 50185

[3 hours]

[100 marks]

N.B. (1) Attempt all questions.

(2) Figures to the right indicate full marks.

(3) Draw neat labelled diagrams wherever necessary.

Section I

N.B. (1) All questions are compulsory.

(40)

(2) Select the **most appropriate answer** from the alternatives provided for each of the following and write only the correct option in your answer-book.

1. Which of the following is most radiodense in a chest radiograph:
 - a) Soft tissue
 - b) Bone
 - c) Air
 - d) Fat

2. Substance prohibited in sports like shooting and archery is:
 - a) Ibuprofen
 - b) Acetaminophen
 - c) Atenolol
 - d) Alprazolam

3. Which of the following is a type of linear spatter stain:
 - a) Pool
 - b) Wipe
 - c) Cast-off
 - d) Saturation

4. Which of the following techniques is based on scattering of light:
 - a) UV-Vis spectroscopy
 - b) Raman Spectroscopy
 - c) Interferometry
 - d) Polarometry

5. Which of the following is a ionization source for GC-MS:
 - a) Atmospheric Pressure Chemical Ionization-APCI
 - b) Electrospray Ionization-ESI
 - c) Fast atom bombardment -FAB
 - d) Electron impact-EI

PE-Con.508-16.

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6. Head space Gas Chromatography is based on the principle of:
- Lambert –Beer's law
 - Henry's law
 - Boyle's law
 - Charle's law
7. In which of the following elution methods in HPLC composition of the mobile phase is same throughout the separation:
- Isocratic
 - Isotropic
 - Gradient
 - Isochromic
8. Which of the following is not an anti-counterfeiting measure that may be incorporated into printed documents?
- A hologram patch
 - A dandy roll
 - An iridescent stripe
 - A watermark
9. The electrostatic detection apparatus (ESDA) is not used:
- To date inks
 - To visualize indented writing
 - To determine the sequence of writing impressions and ink strokes
 - To examine torn edges of paper for possible matching
10. The traditional printing method of relief printing is also known as :
- Lithography
 - Gravure
 - Letterpress
 - Intaglio
11. Arrange the following Courts of Law in the ascending order:
- District Court
 - High Court
 - Chief Judicial Magistrate
 - Supreme Court
- Code
- (i), (ii), (iii), (iv)
 - (iii), (iv), (i), (ii)
 - (iii), (i), (ii), (iv)
 - (iv), (ii), (iii), (i)

12. Which of the following sexual offences is also known as "Greek Love" ?
- Bestiality
 - Buggery
 - Cunnilingus
 - Lesbianism
13. _____ is used in Molotov Cocktail
- Arsenic
 - Gasoline
 - Phosphorous
 - Magnesium
14. Alcohol and Dhatura together can cause
- Allergy
 - Tolerance to both
 - Synergistic effect
 - Hyperactivity
15. Alcohol is eliminated out of the body through
- Urine
 - Breath
 - Perspiration
 - All of the above
16. Wagner test is applied for the screening of
- Cannabis
 - Amphetamine
 - Cocaine
 - Phencyclidine
17. In Takamaya crystal test the following crystals are formed
- Red needle crystal's
 - Red circular crystal's
 - Red rhombic crystal's
 - Red rectangular crystal's
18. Semen fluoresces at the following wavelength
- 200-350nm
 - 450-500nm
 - 550-650nm
 - None of the above

19. Alpha-amylase activity is used as an indicator in
- Phadebas test
 - ABA card test
 - RSID test
 - None of the above
20. Taq polymerase used in PCR is extracted from the following bacteria
- Thermus Bacillus
 - Thermus Polymerase
 - Thermus Aquaticus
 - Thermus Coccii
21. In Primary Classification of Henry's Classification only the following pattern is considered
- Radial Loop
 - Whorls
 - Arch Pattern
 - Ulnar Loop
22. Acid phosphatase is found abundantly in the following body fluid
- Saliva
 - Vaginal Fluid
 - Semen
 - Sweat
23. Amelogenin is the gene that codes for
- Tooth enamel
 - Eye color
 - RBC antigens
 - Skin color
24. Medullary index for human hair is less than
- $1/2$
 - $1/3$
 - $1/4$
 - None of the above
25. CODIS has the following number of DNA markers
- 13
 - 20
 - 10
 - 08

26. In Kastle-Meyer test Heme breaks down
- Hydrogen peroxide
 - Sodium Hydroxide
 - Phenolphthalein
 - All of the above
27. Mode of a data is:
- Always unique
 - Not unique
 - Periodic
 - Aperiodic
28. Which of the following is the study of projectiles in weapons:
- Internal Ballistics
 - External Ballistics
 - Intermediate Ballistics
 - Wound Ballistics
29. Diameter of bore in 12 bore gun is:
- .725"
 - .729"
 - .775"
 - .662"
30. Which of the following mark is not found on a fired cartridge case?
- Chamber mark
 - Breech face mark
 - Firing pin
 - Rifling marks
31. The distance between front and rear tyre is known as:
- Wheel base
 - Track distance
 - Medial distance
 - Stance
32. Dum-Dum bullets were first manufactured in:
- Calcutta
 - Indore
 - New Delhi
 - Mumbai

33. Sphygmomanograph is used to record?

- a) Respiration
- b) Blood pressure
- c) Galvanic skin resistance
- d) None of above

34. Which is a volatile memory in computational devices?

- a) Random Access Memory
- b) Pen Drive
- c) Compact Disc
- d) Hard Disk

35. The logical gate which produce high output if and only if all inputs are high is called as :

- a) AND gate
- b) OR gate
- c) NOT gate
- d) None of above

36. What type of operating system Linux is?

- a) Proprietary
- b) Open source
- c) Freeware
- d) Both a and b

37. To ensure the integrity of digital evidence we used :

- a) MD5
- b) SHA1
- c) Both
- d) None of above

38. MS-Office is :

- a) System Program
- b) Application Package
- c) Both a and b
- d) None of above

39. What can be done without the help of any tool?

- a) Image Processing
- b) Event Analysis
- c) Network Analysis
- d) Data Recovery

40. Which is recent file system for windows operating system.

- a) NTFS
- b) EXT6
- c) FAT32
- d) FAT2015

Section II

Attempt any three of the following:

(30)

1. Write a note on the various techniques used for species identification from blood.
2. How will you examine fired cartridge case and bullet in the laboratory? Discuss in detail.
3. Describe the various detectors used in High Performance Liquid Chromatography.
4. How will you identify a fake five hundred rupee note from the genuine one? Explain in detail.
5. Illustrate e-mail messaging system with the help of diagram.

Section III

Attempt any two of the following:

(30)

1. Describe in detail the principle and procedure for Super glue fuming and Vacuum metal Deposition.
 2. A putrefied body was found in the desert area. How will you proceed with investigation of the scene?
 3. Describe the Salvage and *de novo* pathways of purine and pyrimidine nucleotide biosynthesis.
 4. Explain in detail TCP/IP model.
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