

Test Booklet Code & Serial No.

प्रश्नपत्रिका कोड व क्रमांक

Paper-III

FORENSIC SCIENCE

C

Signature and Name of Invigilator

Seat No.

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1. (Signature)

(In figures as in Admit Card)

(Name)

Seat No.

2. (Signature)

(In words)

(Name)

OMR Sheet No.

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(To be filled by the Candidate)

JAN - 39318

Time Allowed : 2½ Hours]

[Maximum Marks : 150

Number of Pages in this Booklet : 20

Number of Questions in this Booklet : 75

Instructions for the Candidates

- Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.
- This paper consists of 75 objective type questions. Each question will carry two marks. All questions of Paper-III will be compulsory, covering entire syllabus (including all electives, without options).
- At the commencement of examination, the question booklet will be given to the student. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as follows :
 - To have access to the Question Booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal or open booklet.
 - Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to missing pages/questions or questions repeated or not in serial order or any other discrepancy should not be accepted and correct booklet should be obtained from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given. The same may please be noted.
 - After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
- Each question has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
Example : where (C) is the correct response.

(A)	(B)	(C)	(D)
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- Your responses to the items are to be indicated in the OMR Sheet given inside the Booklet only. If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated.
- Read instructions given inside carefully.
- Rough Work is to be done at the end of this booklet.
- If you write your Name, Seat Number, Phone Number or put any mark on any part of the OMR Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, you will render yourself liable to disqualification.
- You have to return original OMR Sheet to the invigilator at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are, however, allowed to carry the Test Booklet and duplicate copy of OMR Sheet on conclusion of examination.
- Use only Blue/Black Ball point pen.
- Use of any calculator or log table, etc., is prohibited.
- There is no negative marking for incorrect answers.

विद्यार्थ्यांसाठी महत्वाच्या सूचना

- परिक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात लिहावा. तसेच आपणास दिलेल्या उत्तरपत्रिकेचा क्रमांक त्याखाली लिहावा.
- सदर प्रश्नपत्रिकेत 75 बहुपर्यायी प्रश्न आहेत. प्रत्येक प्रश्नास दोन गुण आहेत. या प्रश्नपत्रिकेतील सर्व प्रश्न सोडविणे अनिवार्य आहे. सदरचे प्रश्न हे या विषयाच्या संपूर्ण अभ्यासक्रमावर आधारित आहेत.
- परीक्षा सुरु झाल्यावर विद्यार्थ्यांना प्रश्नपत्रिका दिली जाईल. सुरुवातीच्या 5 मिनीटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून घ्याव्यात.
 - प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्विकारू नये.
 - पहिल्या पृष्ठावर नमूद केल्याप्रमाणे प्रश्नपत्रिकेची एकूण पृष्ठे तसेच प्रश्नपत्रिकेतील एकूण प्रश्नांची संख्या पडताळून घ्यावी. पृष्ठे कमी असलेली/कमी प्रश्न असलेली/प्रश्नांचा चुकीचा क्रम असलेली किंवा इतर त्रुटी असलेली सदोष प्रश्नपत्रिका सुरुवातीच्या 5 मिनिटातच पर्यवेक्षकाला परत देऊन दुसरी प्रश्नपत्रिका मागवून घ्यावी. त्यानंतर प्रश्नपत्रिका बदलून मिळणार नाही तसेच वेळही वाढवून मिळणार नाही याची कृपया विद्यार्थ्यांनी नोंद घ्यावी.
 - वरीलप्रमाणे सर्व पडताळून पहिल्यानंतरच प्रश्नपत्रिकेवर ओ.एम.आर. उत्तरपत्रिकेचा नंबर लिहावा.
- प्रत्येक प्रश्नासाठी (A), (B), (C) आणि (D) अशी चार विकल्प उत्तरे दिली आहेत. त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळ्या/निळ्या करावा.
उदा. : जर (C) हे योग्य उत्तर असेल तर.

(A)	(B)	(C)	(D)
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- या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे ओ.एम.आर. उत्तरपत्रिकेतच दर्शवावीत. इतर ठिकाणी लिहीलेली उत्तरे तपासली जाणार नाहीत.
- आत दिलेल्या सूचना काळजीपूर्वक वाचाव्यात.
- प्रश्नपत्रिकेच्या शेवटी जोडलेल्या कोऱ्या पानावरच कच्चे काम करावे.
- जर आपण ओ.एम.आर. वर नमूद केलेल्या ठिकाणा व्यतिरिक्त इतर कोठेही नाव, आसन क्रमांक, फोन नंबर किंवा ओळख पटेल अशी कोणतीही खूण केलेली आढळून आल्यास अथवा असभ्य भाषेचा वापर किंवा इतर गैरमागीचा अवलंब केल्यास विद्यार्थ्यांना परीक्षेस अपात्र ठरविण्यात येईल.
- परीक्षा संपल्यानंतर विद्यार्थ्यांनी मूळ ओ.एम.आर. उत्तरपत्रिका पर्यवेक्षकांकडे परत करणे आवश्यक आहे. तथापी, प्रश्नपत्रिका व ओ.एम.आर. उत्तरपत्रिकेची द्वितीय प्रत आपल्याबरोबर नेण्यास विद्यार्थ्यांना परवानगी आहे.
- फक्त निळ्या किंवा काळ्या बॉल पेनचाच वापर करावा.
- कॅलक्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही.
- चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही.

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Forensic Science

Paper III

Time Allowed : 2½ Hours]**[Maximum Marks : 150**

Note : This paper contains **Seventy Five (75)** multiple choice questions. Each question carries **Two (2)** marks. Attempt *All* questions.

1. Corrosiveness of gasoline is caused due to the presence of :

(A) Sulfur

(B) Water

(C) Chloride

(D) Lead

2. Match an item in one list with an item in the other :

List I	List II
(a) Chocking	(i) Abrasion collar
(b) Dum-dum bullet	(ii) Dispersion of pellets
(c) Rifling	(iii) Keyhole wound
(d) Ricochet bullet	(iv) Greater wounding effect

Codes :

	(a)	(b)	(c)	(d)
(A)	(ii)	(iv)	(i)	(iii)
(B)	(i)	(iii)	(ii)	(iv)
(C)	(iii)	(ii)	(iv)	(i)
(D)	(iv)	(i)	(iii)	(ii)

3. The terminal ballistics is concerned with :

(A) the destructive effect on the target

(B) the damage suffered by the projectile

(C) the angle of incidence at which the projectile hits

(D) the determination of the terminal or remaining velocity of the projectile

4. "DRUGFIRE" system is associated with :

(A) Database of firing pin and primer impression on spent cartridges

(B) Recovery of cartridge and bullet

(C) Capture and rapidly compare bullet stria

(D) Searching of bullets or cartridges using the same computer system

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| <p>5. Double base smokeless powder contains :</p> <p>(A) Potassium chlorate and arsenic sulphide</p> <p>(B) Nitrocellulose and nitroglycerine</p> <p>(C) Nitrocellulose and potassium chlorate</p> <p>(D) Nitroglycerine and potassium chloride</p> <p>6. Which of the following are <i>not</i> useful for DNA analysis ?</p> <p>(A) Vaginal cells</p> <p>(B) Buccal mucosal cells</p> <p>(C) Spermatozoa</p> <p>(D) Erythrocytes</p> | <p>7. PAN test is related to :</p> <p>(A) Urine</p> <p>(B) Saliva</p> <p>(C) Semen</p> <p>(D) Bile</p> <p>8. Hyoscine is an ester of an organic acid known as “tropic acid” with a complex organic base called :</p> <p>(A) Atropine</p> <p>(B) Oxime</p> <p>(C) Tropine</p> <p>(D) Scopine</p> |
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9. With cyanogen bromide, nicotine gives.....colour.

- (A) Orange
- (B) Blue
- (C) Green
- (D) Black

10. The half life of chlorpyrifos is approximately :

- (A) 12 hrs
- (B) 24 hrs
- (C) 48 hrs
- (D) 72 hrs

11. Blood doping including the use of autologous, homologous or heterologous blood or red blood cell products of any origin falls under :

- (A) Enhancement of oxygen transfer
- (B) Chemical and physical manipulation
- (C) Gean doping
- (D) Anabolic doping

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12. Match the following :

Name of reagents	Main constituents			
(i) Gibbs	(a) Ammonium vanadate			
(ii) Van Urk	(b) Vanillin			
(iii) Duquenois	(c) <i>p</i> -dimethyl-aminobenzaldehyde			
(iv) Mandelins	(d) 2, 6-dichloro-quinone-4-chloroimide			
	(i)	(ii)	(iii)	(iv)
(A)	(c)	(a)	(b)	(d)
(B)	(d)	(c)	(b)	(a)
(C)	(d)	(c)	(a)	(b)
(D)	(b)	(a)	(c)	(d)

13. Match the following :

(i) UV spectro- photometer	(a) Hollow cathode			
(ii) Chromato- graphy	(b) Adsorption			
(iii) NMR	(c) Magnetic field			
(iv) AAS	(d) Absorption			
(i)	(ii)	(iii)	(iv)	
(A)	(b)	(d)	(c)	(a)
(B)	(d)	(b)	(c)	(a)
(C)	(d)	(b)	(a)	(c)
(D)	(b)	(d)	(a)	(c)

14. Dying declaration comes under :

- (A) Section 32 IPC
 (B) Section 32 IEA
 (C) Section 60 IEA
 (D) Section 293 CrPC

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15. Grievous injury is punishable under which of the following sections of IPC ?
- (A) Sec. 354
 - (B) Sec. 320
 - (C) Sec. 321
 - (D) Sec. 402
16. Frye standard or “General Acceptance” test comes into force in the year :
- (A) 1953
 - (B) 1973
 - (C) 1993
 - (D) 1923
17. Certain repetitive pattern of a criminal’s way of Committing crime is called as :
- (A) Signature crime
 - (B) Modus-operandi
 - (C) Probability crime
 - (D) Corpus-delicti
18. The power of amnesty for Capital Punishment is vested with :
- (A) Supreme Court
 - (B) High Court
 - (C) The Governor
 - (D) The President
19. What is a secondary crime scene ?
- (A) Place where actually crime has taken place
 - (B) Place of conspiracy
 - (C) Meeting place before crime
 - (D) Site where subsequent criminal activity take place

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20. Which of the undermentioned factors causes non-linearity of Beer-Lambert law at high concentration ?
- (A) Dissociation of analytes in solution
- (B) Analyte turning to be fluorescence in nature
- (C) Electrostatic interaction between species reducing absorption
- (D) Reaction between analyte and the solvent
21. In capillary electrophoresis we measure the.....of analyte.
- (A) Retention time
- (B) Migration time
- (C) Electrophoretic time
- (D) Anodic time
22. In a gas chromatograph :
- (i) FID uses an oxygen rich flame
- (ii) FPD uses a hydrogen rich flame
- (A) (i) is correct (ii) is wrong
- (B) (i) is wrong (ii) is correct
- (C) (i) and (ii) both are correct
- (D) (i) and (ii) both are wrong
23. Capillary electrophoresis is an example of HVE where the applied voltage is *not* more than :
- (A) 10 kV
- (B) 15 kV
- (C) 30 kV
- (D) 60 kV
24. Potassium ferricyanide reagents is used for the detection of which compound of urine ?
- (A) Creatinine
- (B) Ammonia
- (C) Urea
- (D) THG

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25. Match the following :

List-I	List-II
(a) Gloss	I. Complex mixture of diverse range of particles
(b) Soil	II. In the form of chip
(c) Paint	III. Two surfaces come in contact with force
(d) Tool-marks	IV. Quite brittle and easily broken

	(a)	(b)	(c)	(d)
(A)	I	II	III	IV
(B)	I	III	II	IV
(C)	III	II	I	IV
(D)	IV	I	II	III

26. Munsell chart is used to study :

- (A) Density of soil
- (B) Refractive index of soil
- (C) Particle size of soil
- (D) Colour of soil

27. Which of the following statements is *not* true ?

- (A) Better indirect physical match would be obtained more easily with larger piece of wood
- (B) In indirect physical match, even if one or both of the fracture surfaces had been damaged, surface markings and surface contours will be relied upon
- (C) In an indirect physical match, if an exact fit were obtained, it would be documented photographically.
- (D) Indirect physical match can be achieved even if external dimensions do not match.

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28. Direct physical fit or Jigsaw fit can't be attained unless article has been :

- (A) Broken into pieces
- (B) Torn into pieces
- (C) Cut into pieces
- (D) Not separated into pieces

29. In which of the following bones does the ossification centre appear first ?

- (A) Talus
- (B) Pisiform
- (C) Trapezoid
- (D) Cuboid

30. Which of the following statements is *not* correct in relation to estimation of stature from long bones using regression formulae ?

- (A) Most recently developed formulae should be used
- (B) The bone should be measured as prescribed by the author of a formula
- (C) The regression formulae are different for males and females
- (D) We should mix formulae developed by different authors

31. Which of the following sutures of skull closes the last ?

- (A) Metopic suture
- (B) Sagittal suture
- (C) Squamous suture
- (D) Coronal suture

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32. Internal epicanthic fold is most frequently found on the eyes among the :
- (A) Mongoloids
- (B) Negroids
- (C) Caucasoids
- (D) Negroids as well as caucasoids
33. Which of the following is *not* a part of Gustafson's technique of age estimation from individual teeth ?
- (A) Taurodontism
- (B) Attrition
- (C) Root transparency
- (D) Secondary dentine apposition
34. Ted Bundy, an American serial killer, was convicted on the basis of which type of forensic evidence ?
- (A) Latent fingerprints
- (B) DNA profile
- (C) Bite marks
- (D) Blood evidence
35. A properly certified photocopy is admissible in court only :
- (A) If the original is lost, stolen or destroyed and not available
- (B) The public prosecutor vouches safe its authenticity
- (C) The judge has seen the original before
- (D) If the person tenders the copy on oath

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36. Pica type is :
- (A) Twelve characters to the inch
 - (B) Rarely encountered in India
 - (C) The same height as elite
 - (D) Ten characters to the inch
37. Anonymous letter is :
- (A) An unsigned letter
 - (B) Contains no obvious clue to the identity of the writer
 - (C) City is unknown from where it has come from
 - (D) Written by illiterate person
38. Bank notes are printed at all places *except* :
- (A) Nashik, Maharashtra
 - (B) Guntur, AP
 - (C) Salboni, WB
 - (D) Dewas, MP
39. The commonest constituents of ink are :
- (A) Iron, magnesium and calcium
 - (B) Iron and phenol
 - (C) Tannic acid, gallic acid and ferrous salt with phenol
 - (D) Ferrous salts and usage of some dyes
40. Photocopied document can be connected specifically with a photocopier with the analysis of :
- (A) Toner analysis and defect marks on the drum
 - (B) Defect marks present on the drum of photocopier
 - (C) Only toner used in photocopier
 - (D) The font type used to prepare the document

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| <p>41. The handwriting of an individual may change with :</p> <p>(A) Neurological</p> <p>(B) Temperature</p> <p>(C) Humidity</p> <p>(D) Place</p> <p>42. Mummification refers to :</p> <p>(A) Hardening of muscle after death</p> <p>(B) Colliquative putrefaction</p> <p>(C) Saponification of sub-cutaneous fat</p> <p>(D) Desiccation of a dead body</p> <p>43. Hyoid fracture is common in :</p> <p>(A) Hanging</p> <p>(B) Strangulation</p> <p>(C) Throttling</p> <p>(D) Chocking</p> | <p>44. Post-mortem staining in a dead body appears on :</p> <p>(A) Sides of the body</p> <p>(B) Upper parts</p> <p>(C) Dependent parts</p> <p>(D) Middle parts</p> <p>45. The large, averted and irregular size of wound is suggestive of :</p> <p>(A) Lacerated wound by blunt object</p> <p>(B) Exit wound</p> <p>(C) Stab wound</p> <p>(D) Entry wound of gun</p> |
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| <p>46. The examination of diatoms from bone marrow/water is performed most commonly by :</p> <p>(A) Acid digestion</p> <p>(B) Sodium sulphate method</p> <p>(C) Soluene - 350 method</p> <p>(D) Both A and C</p> <p>47. Rule of Hasse is applied to determine :</p> <p>(A) Age of foetus</p> <p>(B) Height of adult</p> <p>(C) Race of person</p> <p>(D) Identification</p> | <p>48. Cherry red colour of blood is seen in poisoning with :</p> <p>(A) Nitrate</p> <p>(B) Cyanide</p> <p>(C) Lead</p> <p>(D) Sulphite</p> <p>49. Which of the following measurement of tire track can't yield information about the manufacturer ?</p> <p>(A) Wheel base</p> <p>(B) Front track width</p> <p>(C) Type of body built on the chassis</p> <p>(D) Rear track width</p> |
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50. Chemical name of common white pigment used in paint is :
- (A) TiO_2
- (B) Al_2O_3
- (C) SnO_2
- (D) CdS
51. Which of the following can be used as casting material ?
- I. Silicon rubber
- II. Moulage
- III. Wax
- IV. Plaster of Paris
- (A) I, II and III
- (B) I and II
- (C) I and III
- (D) I, II, III and IV
52. What is the major difference between ordinary and dental plaster ?
- (A) Expansion factor
- (B) Chemical reaction
- (C) Drying time
- (D) Cost
53. The greater sciatic notch in pelvis of a female human skeleton is :
- (A) Much wider than in males
- (B) Narrower than in males
- (C) Equal in width to males
- (D) Very variable in width
54. Alcohol is rapidly absorbed from stomach, duodenum and small intestine as it is :
- (A) Highly volatile
- (B) Highly lipid soluble
- (C) Highly addictive
- (D) Highly flammable

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| <p>55. Name the detector commonly employed to detect trace environmental pollutants like chlorinated pesticides, herbicides, etc. by gas chromatography :</p> <p>(A) Electro-chemical detector</p> <p>(B) Electron capture detector</p> <p>(C) Ultraviolet detector</p> <p>(D) Refractive index detector</p> <p>56. The time taken by the mobile phase to pass through the column <i>i.e.</i>, from injector to detector is <i>not</i> called its :</p> <p>(A) Dead time</p> <p>(B) Void time</p> <p>(C) Migration time</p> <p>(D) Hold up time</p> | <p>57. Species of origin of a blood stain can be detected with the help of :</p> <p>(A) Orthotoluidine Test</p> <p>(B) Precipitin Test</p> <p>(C) Inhibition Test</p> <p>(D) Elution Test</p> <p>58. Exfoliated epithelial cells are present in :</p> <p>(A) Vaginal secretions</p> <p>(B) Saliva</p> <p>(C) Blood</p> <p>(D) Tears</p> <p>59. Mitochondrial DNA is inherited from :</p> <p>(A) Father</p> <p>(B) Both Father and Mother</p> <p>(C) Mother</p> <p>(D) Father and Grandfather</p> |
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60. Thermal cycler is an instrument that is used in the :
- (A) Detection of blood
 - (B) Amplification of DNA
 - (C) Detection of semen stains
 - (D) Separation of plasma from blood
61. Proteins of plant origin which behave like antibodies for blood grouping are termed as :
- (A) Agglutinogens
 - (B) Phytoagglutinins
 - (C) Antibodies
 - (D) Antigens
62. What is the minimum pressure required to completely occlude jugular veins ?
- (A) 20 kg
 - (B) 2 kg
 - (C) 500 grams
 - (D) 5 kg
63. In shotgun ammunition which type of wads cover more range ?
- (A) cushion wad
 - (B) over shot wad
 - (C) under shot wad
 - (D) over powder charge
64. Which is *not* called the country made firearms among the following :
- (A) Home made firearm
 - (B) Pipe guns
 - (C) Rifled firearms
 - (D) Zip guns
65. **Assertion (A) :** Chocking reduces dispersion of pellets.
- Reason (R) :** Constriction of barrel at muzzle end occurs in chocking.
- (A) Both (A) and (R) are true
 - (B) Both (A) and (R) are false
 - (C) (A) is true but (R) is false
 - (D) (A) is false but (R) is true

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66. Among the following techniques which one is *not* suitable method for detecting the gunshot residue ?
- (A) NAA
- (B) AAS
- (C) SEM
- (D) Pyrolysis GC
67. A type of hair that are fine unmedulated and are generally shed after six months of gestation are known as :
- (A) Verlus hair
- (B) Terminal hair
- (C) Lanugo hair
- (D) Pili anulati hair
68. The pigment granules that give colour to the hair are :
- (A) Melanin pigments principally found in cortex
- (B) Carbon granules principally found in cortex
- (C) Dark air spaces found in medulla
- (D) Melanin pigment principally found in cuticle
69. A condition of human hair that causes the appearance of bonding along the hair shaft due to the presence of numerous small irregular air spaces situated at intervals in the cortex is :
- (A) Pili annulati
- (B) Monilethrix
- (C) Trichorrhexis invaginata
- (D) Trichonodosis

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70. Sex can be established by examining hair root cells for the presence of :
- (A) Barr body
 - (B) Davidson body
 - (C) Golgi body
 - (D) Medular Index
71. The following are red cell enzymes *except* for :
- (A) Phosphoglucomutase
 - (B) Adrylate kinase
 - (C) Haptoglobin
 - (D) Peroxidase
72. Nuclear DNA can usually be found in :
- (A) Shed hair
 - (B) Pulled hair
 - (C) Cut hair
 - (D) Singed hair
73. The first step in the forensic examination of fibers for comparison is :
- (A) Colour only
 - (B) Diameter only
 - (C) Chemical constitution
 - (D) Both colour and diameter
74. Spermine is detected in semen by which test ?
- (A) Fluorescence test
 - (B) ELISA test
 - (C) Barberio test
 - (D) Agglutination inhibition test
75. A petroleum product having a lower carbon limit of C_1 and an upper carbon limit of C_4 is known as :
- (A) Aviation fuel
 - (B) Gasoline
 - (C) Lubricating oil
 - (D) Refinery gas

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ROUGH WORK

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