

MIZORAM PUBLIC SERVICE COMMISSION

TECHNICAL COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF JUNIOR SCIENTIFIC OFFICER (FINGER PRINT) (CONTRACT) UNDER HOME (FORENSIC) DEPARTMENT. MAY, 2016.

PAPER – II

Time Allowed : 2 hours

Full Marks : 150

All questions carry equal marks of 2 each.

Attempt all questions.

1. Depression between the two ridges is called
 - (a) Ridge
 - (b) Furrows
 - (c) Delta
 - (d) Island
2. A gap caused in a ridge by some foreign matter is called
 - (a) Pores
 - (b) Creases
 - (c) Hiatus
 - (d) Papillia
3. The webbing of the fingers is called
 - (a) Ectrodactyly
 - (b) Oddity
 - (c) Polydactyly
 - (d) Syndactyly
4. The most commonly found pattern in all digits is
 - (a) Whorl
 - (b) Loop
 - (c) Composite
 - (d) Arch
5. Chance prints are impression of
 - (a) Footprints
 - (b) Fingerprints
 - (c) Palmprints
 - (d) All of these
6. _____ are not visible in forged prints even on magnification.
 - (a) Ridge Counts
 - (b) Sweat Pores
 - (c) Ridge characteristics
 - (d) Delta
7. Ridge characteristics are also known as
 - (a) Pattern
 - (b) Minutia
 - (c) Composite
 - (d) Primary
8. What colour of prints is produced by developing the Chance prints using Cyanoacrylate crystals?
 - (a) White
 - (b) Brown
 - (c) Yellow
 - (d) Black
9. Name of the two associates of Sir E.R. Henry, who are called two Forgotten pioneers of Finger Print Science
 - (a) Sir William Herschel & Rajyadhar Konai
 - (b) Khan Bahadur Azizul Haque & Raj Bahadur Hem Chandra Bose
 - (c) Dr. Henry Faulds & Joan Vucetich
 - (d) Dr. Nehemia Grew & Marcello Malpighi

10. The first horizontal ridge upon which the vertical trend is found in a tented Arch is
(a) Platform Ridge (b) Base Ridge
(c) Type line (d) Lineation
11. The first Finger Print Bureau of the world was established in _____ in the year _____
(a) Chicago, 1911 (b) Calcutta, 1897
(c) Canada, 1895 (d) Mexico, 1924
12. A specially made spoon taking fingerprint of a deceased is
(a) Cadaver Spoon (b) Concave Spoon
(c) Cylindrical Spoon (d) Shoe Horn spoon
13. Ninhydrin Solution reacts with the _____
(a) Oily residue (b) Amino Acids
(c) Salts (d) Urea
14. Shrunken tissue of mummified fingers should be treated with a solution of
(a) Potassium Hydroxide (b) Hydrochloric Acid
(c) Caustic Potash (d) Gelatin & Glycerine
15. _____ is called the father of finger print science.
(a) Purkinje (b) Dr. Henry Faulds
(c) Sir ER Henry (d) Sir Francis Galton
16. How many points of identity are necessary for giving opinion in India?
(a) 5 (b) 8
(c) 7 (d) 12
17. Finger Prints of twins are
(a) Identical (b) Unidentical
(c) Closely similar (d) Opposite
18. A prolonged or elongated enclosure is
(a) Enclosure (b) Interjunction
(c) Convergence (d) Spur
19. Plastic prints are normally found on
(a) Rigid surface (b) Pliable surface
(c) Porous surface (d) Oily surface
20. A numbers of finer and less developed fragmentary ridges which appears between fully developed ridges are called
(a) Nutant Ridges (b) Deviated Ridges
(c) Composite Ridges (d) Nascent Ridges
21. Who is the first criminal trail through Fingerprint in India?
(a) Rajyadhar Konai (b) Kangali Charan
(c) Rajendar Singh (d) Ashok Kumar
22. The more conspicuous lines cause due to the folding of finger and hand are called
(a) Type Lines (b) Short ridge
(c) Creases (d) Accidental Ridge

23. UV light should be used for chance prints developed with
(a) Aluminium Powder (b) Fluorescent Powder
(c) Lycopodium Powder (d) Magnetic Powder
24. Delta or outer terminus and core or inner terminus are called
(a) Ridge Count (b) Fixed Point
(c) Peculiarity (d) Oddity
25. What type of Pattern are called value patterns?
(a) Loop (b) Whorl
(c) Arch (d) Composite
26. Which country became the first country in the world to abolish anthropometry and file criminal records solely by fingerprint classification?
(a) India (b) Argentina
(c) Germany (d) Finland
27. Fingerprint Identification is mainly based on comparison of
(a) Pattern Characteristic (b) Ridge Characteristic
(c) Ridge Count (d) Core and delta formation
28. Latent prints on a multicolor surface can be developed using
(a) Black Powder (b) Fluorescent Powder
(c) Grey Powder (d) White Powder
29. Most of the chance finger impression at the scene results from
(a) Palm of the hand (b) Tip of the finger
(c) Toes of the feet (d) Hairy part of the body
30. Provision of Law for taking fingerprints of Convict and Arrest is
(a) Indian Evidence Act, 1872
(b) Identification of Prisoner's Act, 1920
(c) Section 293 of CrPC
(d) Section 75 of IPC
31. Full Form of NIST is
(a) National Institute of Standard and Technology
(b) National Indian Standard and Technology
(c) National Institute of Science and Technology
(d) National Information of Standard and Technology
32. The major contents of sweat is
(a) Water (b) Sodium chloride
(c) Amino Acids (d) Urea
33. Friction ridges on the plantar surface are called
(a) Palm print (b) Fingerprint
(c) Plain print (d) Footprint
34. Amido Black solution are used for development and enhancement of
(a) Blood stained print (b) Dust print
(c) Latent print (d) Plastic print

35. The system which is designed to protect society by detecting criminals who do not want their fingerprint recognized is called
- (a) AFIS (b) Biometric System
(c) Bertillon System (d) All of the above
36. Newton's First Law does not give
- (a) Concept of force (b) The property of inertia
(c) Law of conservation of linear momentum (d) All of these
37. A neutron strikes a stationary electron with velocity V . After collision the velocity of the neutron is
- (a) 0 (b) V
(c) $-V$ (d) $2V$
38. The potential energy of a body is associated with its
- (a) Motion (b) Internal structure
(c) Position and configuration (d) None of these
39. On an equipotential surface, the gravitational field is
- (a) Directed parallel to it (b) Directed perpendicular to it
(c) Directed at 45° to it (d) Directed at 60° to it
40. The distance of a planet from the sun is R and T is the time period for completing one revolution around the sun. Then which of the following will remain constant?
- (a) $\frac{R}{T}$ (b) $\frac{R^2}{T^2}$
(c) $\frac{R^3}{T^2}$ (d) $\frac{R^2}{T^3}$
41. Moment of inertia plays the same part in rotational motion as
- (a) The mass in linear motion (b) The force in linear motion
(c) The momentum in linear motion (d) The acceleration in linear motion
42. In simple harmonic motion, the acceleration of the particle is maximum at
- (a) The mean position
(b) The extreme position
(c) The mid-way between the mean position and the extreme position
(d) None of these
43. Two lenses of focal length f_1 and f_2 are kept in contact. The power of the equivalent lens is
- (a) $\frac{f_1 f_2}{f_1 + f_2}$ (b) $f_1 + f_2$
(c) $\frac{f_1 + f_2}{f_1 f_2}$ (d) $f_1 f_2$
44. The fringe width in a Young's double slit experiment can be increased if we decrease
- (a) Separation of the slits (b) Width of the slits
(c) Distance between slits and screen (d) Wavelength of the source light

45. A rocket is moving with a speed equal to $1/10^{\text{th}}$ of that of light. The percentage change in its length due to Lorentz contraction is:
- (a) 0.1% (b) 0.2%
(c) 0.5% (d) 1%
46. Which law of thermodynamics brings in the notion of change in internal energy?
- (a) Zeroth law (b) 1st law
(c) 2nd law (d) 3rd law
47. A reversible heat engine can have 100% efficiency if the temperature of sink is
- (a) Less than that of source (b) Equal to that of source
(c) 0°C (d) 0 K
48. Which of the following is not Maxwell's thermodynamics relation?
- (a) $\left(\frac{\partial S}{\partial V}\right)_T = \left(\frac{\partial P}{\partial T}\right)_V$ (b) $\left(\frac{\partial S}{\partial P}\right)_T = -\left(\frac{\partial V}{\partial T}\right)_P$
(c) $\left(\frac{\partial T}{\partial P}\right)_S = \left(\frac{\partial V}{\partial S}\right)_P$ (d) $\left(\frac{\partial P}{\partial V}\right)_T = \left(\frac{\partial S}{\partial T}\right)_V$
49. In the general gas equation $PV = RT$, Van der Waal introduced a correction factor $\frac{a}{V^2}$ in pressure. The term $\frac{a}{V^2}$ represents
- (a) Effective area of molecules (b) Mean velocity of gas molecules
(c) Volume occupied by molecules (d) Attraction force between molecules
50. The specific heat value for a solid at very low temperature () is accurately given by
- (a) Dulong and Petit's law (b) Einstein's equation
(c) Debye's equation (d) Both by Einstein's and Debye's equation
51. The magnitude of the force between two point charges is F , when their separation is r . If the separation is increased to $3r$, the force is
- (a) $\frac{F}{3}$ (b) $\frac{F}{9}$
(c) $\frac{F}{9r}$ (d) $\frac{F}{3r}$
52. When four identical capacitors are joined in parallel, the effective capacitance is C_1 . When they are joined in series, the effective capacitance is C_2 . Then $\frac{C_1}{C_2}$ is
- (a) 2 (b) 4
(c) 8 (d) 16
53. A parallel plate air capacitor is charged. If a dielectric slab is introduced between the plates, then the potential difference across the capacitor
- (a) Becomes infinity (b) Increases
(c) Decreases (d) Remains constant

54. The work done in rotating an electric dipole of moment p from the direction of a uniform electric field of intensity E through an angle θ in the plane of E is given by
- (a) $pE \sin \theta$ (b) $pE \cos \theta$
(c) $pE(1 - \cos \theta)$ (d) $pE(1 - \sin \theta)$
55. Lenz's law is a consequence of the principle of conservation of
- (a) Mass (b) Momentum
(c) Charge (d) Energy
56. If n denotes the principal quantum number, the radii of the stationary orbits around the hydrogen atom are proportional to
- (a) \sqrt{n} (b) n
(c) n^2 (d) $\frac{1}{n}$
57. When a photoelectric emission is taking place, increasing the intensity of light will
- (a) have no effect
(b) increase the number of electrons released
(c) increase the maximum energy per electron
(d) cause a time delay in the emission of electrons
58. De Broglie wavelength associated with a moving particle of mass m , velocity v is given by (c = being the speed of light)
- (a) $\lambda = hmv$ (b) $\lambda = \frac{h}{mv}$
(c) $\lambda = \frac{m}{hv}$ (d) $\lambda = \frac{h}{\sqrt{1 - v^2/c^2}}$
59. The uncertainty in the location of a particle is equal to de-Broglie wavelength then the uncertainty in its velocity is
- (a) v (b) $2v$
(c) $\frac{v}{2}$ (d) $\frac{3}{2}v$
60. In beta decay
- (a) the parent and the daughter nuclei have the same number of protons
(b) the daughter nucleus has one proton less than the parent nucleus
(c) the daughter nucleus has one proton more than the parent nucleus
(d) the daughter nucleus has one neutron more than the parent nucleus
61. The ratio of the collector to the emitter current called current gain for a junction transistor is always
- (a) greater than one (b) less than one
(c) equal to one (d) infinity

62. In Hall effect the charge carriers drift
- (a) in the direction of magnetic field
 - (b) in the direction of current
 - (c) perpendicular to both magnetic field and current
 - (d) none of these
63. The disadvantage of a half-wave rectifier is that the
- (a) components are expensive
 - (b) output is difficult to filter
 - (c) diodes must have a higher power rating
 - (d) all of these

64. The given Boolean expression is $Y = A\bar{B} + B\bar{A}$
If $A = 1$ and $B = 1$, then $Y =$
- (a) 1
 - (b) 0
 - (c) Either 1 or 0
 - (d) None of these

65. The inputs of a NAND gate are connected together. The resulting circuit is
- (a) OR gate
 - (b) AND gate
 - (c) NOT gate
 - (d) XOR gate

66. Which pair of numbers comes next in the series?
42 37 35 30 28 23 21
- (a) 19 17
 - (b) 16 11
 - (c) 16 14
 - (d) 18 13

67. What number should come next in the following series?
13, 26, 18, 36, 28, 56, ...
- (a) 50
 - (b) 48
 - (c) 84
 - (d) 112

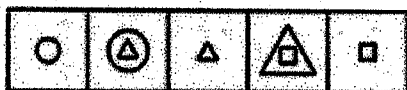
68. A conference is most likely to involve ...
- (a) speeches
 - (b) agenda
 - (c) resolutions
 - (d) delegates

69. Find out the odd word from the words given:
- (a) Book
 - (b) Novel
 - (c) Poem
 - (d) Drama

70. Select the lettered pair that is related in the same way as:
DUNCE : CLEVER :: ? : ?
- (a) courage : fearful
 - (b) help : weak
 - (c) worry : poor
 - (d) idiot : stupid

71. Select a figure from amongst the Answer Figures which will continue the same series as established by the five Problem Figures:

Problem Figures



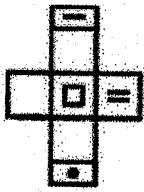
Answer Figures



(1) (2) (3) (4)

- (a) (1)
- (b) (2)
- (c) (3)
- (d) (4)

72. Choose the box that is similar to the box formed from the given sheet of paper (X).



(X)



(1)



(2)



(3)



(4)

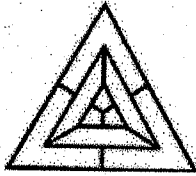
(a) 1 only

(b) 1 and 3 only

(c) 1, 3 and 4 only

(d) 1, 2, 3 and 4

73. What is the minimum number of colours required to fill the spaces in the given diagram without any two adjacent spaces having the same colour?



(a) 6

(b) 5

(c) 4

(d) 3

Instructions for Questions 74 & 75: A, B, C, D & E are sitting in a straight line; B does not sit near to D or E; and D and E have three persons sitting between them.

74. Who is sitting in the middle of the bench?

(a) A

(b) B

(c) C

(d) D

75. Who is sitting next to the right side of B?

(a) A or C

(b) A or E

(c) C or E

(d) C or D
