



## BSF Head Constable Previous Year Papers RO 22 September 2019 - English

1. Which among the following is a form of Energy  
(a) Light (b) Pressure  
(c) Momentum (d) Power
2. One fermi meter is equal to  
(a)  $10^{-15}$  m (b)  $10^{15}$  m  
(c)  $10^{-12}$  m (d)  $10^{12}$  m
3. Two masses of 1 kg and 4 kg have same Kinetic energy. What is the ratio of their momenta  
(a)  $\frac{1}{2}$  (b)  $\frac{1}{4}$   
(c) 2 (d) 4
4. If two forces of 5N each are acting along X and, Y – axis then the magnitude and direction of resultant is  
(a)  $5\sqrt{2}, \pi/3$  (b)  $5\sqrt{2}, \pi/4$   
(c)  $-5\sqrt{2}, \pi/3$  (d)  $-5\sqrt{2}, \pi/4$
5. The vector product of force (F) and distance (r) from the centre of action represents:  
(a) kinetic Energy (b) Work  
(c) Potential energy (d) Torque
6. A body executing uniform circular motion has at any instant its velocity vector and acceleration vector  
(a) along the same direction  
(b) opposite direction  
(c) normal to each other  
(d) not related to each other
7. The flying of bird is a consequence of Newton's  
(a) First law (b) Second law  
(c) Third law of motion (d) Both (B) and (C)
8. A pendulum clock be taken from the earth to a revolving artificial satellite, it will:  
(a) run slow (b) run fast  
(c) give the same time (d) stop altogether
9. A solid iron ball is heated. Which one of the following will have minimum percentage increase  
(a) radius (b) surface area  
(c) volume (d) density
10. An unpolarized beam is incident at an angle  $60^\circ$  on a glass surface and after reflection it is linearly polarized. The approximate refractive index of the glass is:  
(a) 1.4 (b) 1.5  
(c) 1.7 (d) 1.6
11. Just before striking the ground, a 0.5 kg body had a kinetic energy of 980 J. If friction is ignored, from what height it was dropped.  
(a) 980 m (b) 5.0 m  
(c) 20.0 m (d) 24.5 m
12. Decibel is  
(a) a musical instrument  
(b) The wavelength of noise  
(c) A measure of sound level  
(d) A musical note
13. Red colour appears during sunrise and sun set because of  
(a) Refraction (b) Dispersion  
(c) Scattering (d) Reflection
14. The scale of temperature in which the temperatures are only positive is:  
(a) Farenheit (b) Celcius  
(c) Kelvin (d) Reumer
15. A big drop of water is broken into smaller drops, the surface energy:  
(a) increases (b) decreases  
(c) remain same (d) can increase as well as decrease
16. In absence of the earth's atmosphere, the sky will appear  
(a) black (b) red  
(c) green (d) blue
17. The production of band spectra is caused by:  
(a) Atomic Nuclei (b) Hot metals  
(c) Molecules (d) Electrons
18. In order to rectify an alternating current one uses a:  
(a) Thermocouple (b) Diode  
(c) Triode (d) Transister
19. Sound waves are not transmitted to long distance because  
(a) They are absorbed by atmosphere  
(b) They have constant frequency  
(c) The height of antenna required should be very high  
(d) Velocity of sound waves is very less
20. Sparkling of diamond is due to:  
(a) Reflection (b) Dispersion  
(c) Total Internal Reflection (d) High refractive index
21. If the radius of the earth decreases by 1% and its mass remains same, then the acceleration due to gravity:  
(a) increase by 1% (b) decrease by 1%  
(c) increase by 2% (d) decrease by 2%
22. A beam of monochromatic light is passing from one medium into another. Which one of the following quantities does not change?  
(a) Wavelength (b) Frequency  
(c) Velocity (d) Amplitude



23. Lambert's law is related to  
(a) reflection (b) illumination  
(c) interference (d) refraction
24. When light travels from one medium to another, total internal reflection does not occur in which of the following cases.  
(a) from glass to water. (b) from glass to air.  
(c) from water to air. (d) from water to glass.
25. A person standing before a furnace receives most of the heat by  
(a) Convection  
(b) Conduction  
(c) Radiation  
(d) Conduction and convection
26. The resistance of a certain length of wire having a diameter of 6 mm is 5 ohm. The wire is drawn such that the diameter becomes 3 mm. The new resistance will be  
(a) 30 ohms. (b) 5 ohms.  
(c) 60 ohms. (d) 80 ohms.
27. Which one of the following pairs is not Correctly matched?  
(a) Capacitances—Coulomb/volt  
(b) Electric potential--Volt  
(c) Coulomb force--Coulomb-voltmeter  
(d) Electric field - Volt/meter
28. What is the device that steps up or steps down the voltage?  
(a) Dynamo (b) Conductor  
(c) Inductor (d) Transformer
29. An equilateral triangle has been constructed with a uniform wire whose resistance per unit length is  $4\Omega \text{ cm}^{-1}$ . If the length of each side of the triangle is 10 cm, the resistance across any side will be  
(a)  $80/3\Omega$  (b)  $80/\Omega$   
(c)  $40/\Omega$  (d)  $40/3 \Omega$
30. When all the molecules in a magnet arrange themselves in the direction of the magnetic field, the condition is called  
(a) Permeability (b) Satuation  
(c) Retentivity (d) Reluctance
31. At the center of a bar, magnetism is  
(a) maximum. (b) minimum.  
(c) zero. (d) unknown
32. The largest voltage one can safely apply across a 50 ohm 0.5 W resistor is:  
(a) 5 V (b) 25 V  
(c) 100 V (d) 0.01 V
33. Time taken by a 100 watt bulb to 33 consume 5000 J of energy is  
(a) 100 s (b) 500 s  
(c) 40 s (d) 50 s
34. The direction of electric current is always opposite to  
(a) direction of conventional current in metallic conductors  
(b) one ohm  
(c) the electric work done  
(d) None of these
35. The space between the walls of a thermous flask is a vaccum in order to avoid heat exchange due to  
(a) radiation  
(b) convection  
(c) conduction  
(d) conduction and convention
36. Number of electric lines of force passing through unit area is called  
(a) flux (b) density  
(c) electric field (d) None of these
37. To increase the range of an ammeter we need to connect a suitable  
(a) low resistance in parallel  
(b) low resistance in series  
(c) high resistance in parallel  
(d) high resistance in series
38. A tuning fork vibtraes with 2 vibrations in 0.4 second. Its frequency is  
(a) 5 (b) 6  
(c) 8 (d) 2.5
39. A particle is undergoing simple harmonic motion with a period of 2 seconds and amplitude of 2 meters. Its maximum speed in  $\text{ms}^{-1}$  is  
(a)  $4\pi$  (b)  $2\pi$   
(c)  $\pi/2$  (d)  $\pi$
40. An object executes simple harmonic motion with amplitude A. Its acceleration will be maximum when the displacement is  
(a)  $A/4$  (b) 0  
(c)  $A/2$  (d)  $A. 1$
41. The value of cosec  $(-750^\circ)$  is  
(a) -2 (b) 2  
(c) -3 (d) None of these
42.  $\sin(\pi/10) \sin(13\pi/10) = ?$   
(a)  $\frac{1}{2}$  (b)  $-\frac{1}{2}$   
(c)  $-\frac{1}{4}$  (d) 1



43. If  $n$  is a +ve integer  $4^n - 3n - 1$  is divisible by  
 (a) 3 (b) 9  
 (c) 8 (d) 27
44. The distance of the point  $(x, y)$  from  $y$ -axis is  
 (a)  $x$  (b)  $y$   
 (c)  $|x|$  (d)  $|y|$
45. The lines  $x \cos \alpha + y \sin \alpha = p_1$  and  $x \cos \beta + y \sin \beta = p_2$  will be perpendicular if  
 (a)  $\alpha = \beta$  (b)  $|\alpha - \beta| = \frac{\pi}{2}$   
 (c)  $\alpha = \frac{\pi}{2}$  (d)  $\alpha \pm \beta = \frac{\pi}{2}$
46. The circle  $x^2 + y^2 + 4x - 7y + 12 = 0$  cuts an intercept on  $y$ -axis of length  
 (a) 3 (b) 4  
 (c) 7 (d) 1
47. The length of the chord cut off by  $y = 2x + 1$  from the circle  $x^2 + y^2 = 2$  is  
 (a)  $\frac{5}{6}$  (b)  $\frac{6}{5}$   
 (c)  $\frac{6}{\sqrt{5}}$  (d)  $\frac{\sqrt{5}}{6}$
48. Equation of the circle with centre on the  $y$ -axis and passing through the origin and  $(2, 3)$  is  
 (a)  $x^2 + y^2 + 13y = 0$  (b)  $3x^2 + 3y^2 - 13y = 0$   
 (c)  $x^2 + y^2 + 13y + 3 = 0$  (d)  $6x^2 + 6y^2 - 13y = 0$
49. If the roots of the equation  $ax^2 + bx + c = 0$  are reciprocal to each other, then  
 (a)  $a + c = 0$  (b)  $b = 0$   
 (c)  $a - c = 0$  (d) None of these
50. If  $a, b, c, d$  are in HP, then  
 (a)  $a + b > c + d$  (b)  $a + c > b + d$   
 (c)  $a + d > b + c$  (d) None of these
51. The number of possible outcomes, when a coin is tossed 6 times, is  
 (a) 36 (b) 64  
 (c) 12 (d) None of these
52. In a  $\Delta ABC$ , if  $\frac{\tan A - \tan B}{\tan A + \tan B} = \frac{c-b}{c}$ , then  $A$  is equal to  
 (a)  $30^\circ$  (b)  $45^\circ$   
 (c)  $60^\circ$  (d)  $90^\circ$
53. The principal value of  $\sin^{-1}(-\sqrt{3}/2)$  is  
 (a)  $-2\pi/3$  (b)  $-\pi/3$   
 (c)  $4\pi/3$  (d)  $5\pi/3$
54.  $\cot\left[\tan^{-1}\frac{1}{2} + \tan^{-1}\frac{1}{5} + \tan^{-1}\frac{1}{8}\right] = ?$   
 (a) 1 (b) -1  
 (c)  $\sqrt{2}$  (d)  $-\sqrt{2}$
55. The mean of 18 observations is  $-7$  and if each observation is increased by 3, the mean of the new set is  
 (a) 3 (b)  $-3$   
 (c)  $-4$  (d) 2
56. The arithmetic mean of 9 observations is 100 and that of 6 is 80, the combined mean of all the 15 observations will be  
 (a) 100 (b) 80  
 (c) 90 (d) 92
57. The Minimum value of  $P = 6x + 16y$  subject to constraints  $x \leq 40, y \geq 20$  and  $x, y \geq 0$  is  
 (a) 240 (b) 320  
 (c) 0 (d) None of these
58. If  $A = \begin{bmatrix} 1 & -5 & 7 \\ 0 & 7 & 9 \\ 11 & 8 & 9 \end{bmatrix}$ , then trace of matrix  $A$  is  
 (a) 17 (b) 25  
 (c) 3 (d) 12
59. If  $f(x) = \log_{x^2}(\ln x)$ , then  $f'(x)$  at  $x = e$ , is  
 (a) 0 (b) 1  
 (c)  $1/e$  (d)  $1/(2e)$
60. The normal to a given curve is parallel to  $x$ -axis if  
 (a)  $\frac{dy}{dx} = 0$  (b)  $\frac{dy}{dx} = 1$   
 (c)  $\frac{dx}{dy} = 0$  (d)  $\frac{dx}{dy} = 1$
61. Which of the following metals does not form amalgams?  
 (a) Zinc (b) Copper  
 (c) Magnesium (d) Iron
62. Which of the following notation represents an isotope?  
 (a)  $^{39}\text{K}_{19}$  (b)  $^{23}\text{Na}_{11}$   
 (c)  $^{14}\text{N}_7$  (d)  $^{14}\text{C}_6$
63. The ratio in the weight by which carbon and oxygen combine in a molecule of carbon monoxide is  
 (a) 3 : 4 (b) 3 : 3  
 (c) 3 : 2 (d) 3 : 1
64. If a  $U-238$  nucleus splits into two identical parts, the two nuclei so produced will be  
 (a) radioactive (b) stable  
 (c) Isotope (d) Isobar
65. Hydrogen will not reduce heated  
 (a)  $\text{CuO}$  (b)  $\text{Fe}_2\text{O}_3$   
 (c)  $\text{Al}_2\text{O}_3$  (d)  $\text{SnO}_2$
66. Aluminium surface are often 'anodized'. This means the deposition of a layer of  
 (a) chromium oxide (b) aluminium oxide  
 (c) nickel oxide (d) zinc oxide



67. The most likely pH of an aqueous solution of sodium salt and ethyl alcohol is  
(a) 3 (b) 5  
(c) 7 (d) 9
68. An element M has a atomic mass 19 and atomic number 9. Its ion is represented as  
(a)  $M^+$  (b)  $M^{2+}$   
(c)  $M^-$  (d)  $M^{2-}$
69. Which one of the following is the oxidation state of oxygen in  $OF_2$  ?  
(a) +2 (b) -2  
(c) +1 (d) -1
70. Which of the following substances can be used for identifying an acid solution?  
(a) NaCl (b)  $KNO_3$   
(c)  $Na_2CO_3$  (d)  $K_2SO_4$
71. By which process Ethane can be obtained from Hexane?  
(a) Addition (b) Cracking  
(c) Substitution (d) Polymerisation
72. Benzene reacts with chlorine in the presence of an iron catalyst to produce  
(a) benzene hexachloride (b) benzyl chloride  
(c) chlorobenzene (d) benzoyl chloride
73. Which one of the following sets of chemical elements belongs to the same period?  
(a) He, Ne, Ar (b) Ni, Cu, Zn  
(c) Cl, Br, I (d) Na, Cu, Mg
74. Equal volumes of all gases under the same temperature and pressure contain equal number of molecules, according to  
(a) Avogadro's law (b) Charle's law  
(c) Boyle's law (d) Graham's law
75. The major portion of combustible part of gobar gas is  
(a) Methane (b) Ethane  
(c) Ethylene (d) Acetylene
76. Regarding the atom of a chemical element, the magnetic quantum number refers to  
(a) orientation (b) shape  
(c) size (d) spin
77. The presence of which one of the following in the atmosphere causes acid rain?  
(a) Oxides of lead (b) Oxides of carbon  
(c) Oxides of sulphur (d) Hydrocarbon
78. The stones formed in human kidney consist mostly of  
(a) calcium oxalate (b) sodium acetate  
(c) magnesium sulphate (d) calcium
79. Most of the explosions in mines occur due to the mixing of  
(a) Hydrogen with oxygen  
(b) Oxygen with acetylene  
(c) Methane with air  
(d) Carbon dioxide with ethane
80. Which one of the following materials is very hard and very ductile?  
(a) Carborundum (b) Tungsten  
(c) Cast iron (d) Nichrome
- Directions (81-85):** Read sentences carefully and choose suitable prepositions for the purpose.
81. She is proud ..... her beauty.  
(a) at (b) on  
(c) of (d) about
82. They have invited us ..... Attend the function.  
(a) for (b) to  
(c) upto (d) at
83. We offer hearties congratulation ..... your success.  
(a) at (b) on  
(c) upon (d) for
84. He entered ..... the gate without any difficulty  
(a) by (b) from  
(c) in (d) into
85. This usually tends ..... crumble in the face of the smallest challenge.  
(a) for (b) to  
(c) upto (d) at
- Directions (86-90):** Write Synonyms of words given in CAPITAL letters.
86. BELITTLE  
(a) disparage (b) mock  
(c) diminish (d) shrink
87. WEIRD  
(a) unnatural (b) supernatural  
(c) beastly (d) ghost
88. REMEDY  
(a) treatment (b) cure  
(c) redress (d) restorative
89. DAMSEL  
(a) spinster (b) maiden  
(c) bitch (d) witch
90. VAGABOND  
(a) wanderer (b) begger  
(c) tramper (d) traveller



91. Among the following, which was the capital of Raja Ranjit Singh's kingdom?  
(a) Amritsar (b) Peshawar  
(c) Lahore (d) Multan
92. The Pallavas built Temples at which of the following places?  
(a) Seringapatnam (b) Madurai  
(c) Mahabalipuram (d) Halebid
93. The brightest planet seen from the Earth  
(a) Pluto (b) Saturn  
(c) Neptune (d) Venus
94. The longest river in the world is the  
(a) Nile (b) Amazon  
(c) Brahmaputra (d) Congo
95. A solar eclipse occurs when  
(a) the moon comes between the sun and the earth  
(b) the earth comes between the sun and the moon  
(c) the sun comes between the earth and the moon  
(d) the sun, the moon and the earth are not in the same line
96. After a shower of rain, a rainbow is seen  
(a) towards the sun  
(b) opposite the sun  
(c) anywhere, irrespective on the position of the sun  
(d) even in the absence of the sun
97. Who is the Vice Chairman of Niti Ayog?  
(a) Dr. Rajiv Kumar (b) Dr. Arvind Pangaria  
(c) N. K Singh (d) None of these
98. In which of the following states river Ganga does not flow?  
(a) Bihar (b) Chattisgarh  
(c) West Bengal (d) Jharkhand
99. Who won the Women World Badminton Championship-2019?  
(a) Saina Nehwal (b) Nozomi Okuhara  
(c) P V Sindhu (d) None of these
100. On 150<sup>th</sup> anniversary of Mahatma Gandhi, which movement is to start?  
(a) No tree felling (b) No smoking  
(c) No plastic use (d) No diesel car