

**JHARKHAND STATE NTSE STAGE 1 2019-20**  
**SAT ANSWER KEY**

Que	Ans	Que	Ans	Que	Ans	Que	Ans	Que	Ans	Que	Ans	Que	Ans
1	(B)	16	(B)	31	(D)	46	(B)	61	(A)	76	(C)	91	(B)
2	(C)	17	(A)	32	(D)	47	(A)	62	(D)	77	(A)	92	(D)
3	(C)	18	(D)	33	(C)	48	(C)	63	(B)	78	(D)	93	(B)
4	(C)	19	(C)	34	(D)	49	(B)	64	(A)	79	(B)	94	(D)
5	(A)	20	(B)	35	(D)	50	(D)	65	(C)	80	(C)	95	(B)
6	(C)	21	(B)	36	(D)	51	(A)	66	(A)	81	(D)	96	(A)
7	(B)	22	(D)	37	(C)	52	(D)	67	(C)	82	(A)	97	(C)
8	(A)	23	(A)	38	(A)	53	(B)	68	(B)	83	(B)	98	(D)
9	(A)	24	(C)	39	(C)	54	(A)	69	(B)	84	(D)	99	(A)
10	(C)	25	(A)	40	(D)	55	(D)	70	(D)	85	(B)	100	(C)
11	(C)	26	(A)	41	(A)	56	(C)	71	(A)	86	(D)		
12	(A)	27	(A)	42	(C)	57	(B)	72	(C)	87	(D)		
13	(A)	28	(C)	43	(A)	58	(B)	73	(D)	88	(B)		
14	(D)	29	(C)	44	(C)	59	(C)	74	(A)	89	(A)		
15	(C)	30	(A)	45	(B)	60	(C)	75	(A)	90	(B)		

## Hints & Solution

### PHYSICS

1. (B)

$$\text{Power} = VI = V\left(\frac{V}{R}\right) = (IR)R$$

2. (C)

$$H = i^2Rt$$

3. (C)

4. (C)

$$\text{Power} = \frac{1}{f} \text{ (focal length in meter)}$$

$$f = -40\text{cm}$$

5. (A)

6. (C)

$$\vec{f} = q(\vec{V} \times \vec{B})$$

7. (B)

8. (A)

9. (A)

10. (C)

11. (C)

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$$

12. (A)

$$i = \frac{q}{t}$$

13. (A)

$$f = \frac{R}{2}$$

## CHEMISTRY

14. (D)  
 $\text{Fe}_2\text{O}_3 + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$   
Single displacement reaction
15. (C)  
Mineral acid = HCl
16. (B)  
Not an acid base indicator = Vanilla.
17. (A)  
Electrolysis is used to find  $\text{H}_2$  &  $\text{Cl}_2$  by electrolysis of aq NaCl
18. (D)  
Ag is less reactive than  $\text{H}_2$
19. (C)  $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$
20. (B)  $3\text{HCl} + 1. \text{HNO}_3 \rightarrow \text{Aqua Regia}$
21. (B)  $\text{C}_2\text{H}_6$   
= 7 covalent bond
22. (D)  
100% pure ethanoic acid is glacial acetic acid
23. (A)  
 $\text{I}_2$  is solid non- metal
24. (C)  
 $\text{C}_3\text{H}_8 = 10$  covalent bond
25. (A) & (B)  
→ 2, 8, 8, 1  
Present in group (3) & valency is (-1) is wrong
26. (A)  
Catenation = self linking property

## **BIOLOGY**

27. (A)  
Salivary gland produces salivary amylase or ptyalin.
28. (C)  
Part of brain “ Medula oblongata” regulates respiration.
29. (C)  
Self-explanatory
30. (A)  
Self-explanatory
31. (D)  
Self-explanatory
32. (D)  
Self-explanatory
33. (C)  
It is a type of E.coli
34. (D)  
Self-explanatory
35. (D)  
Cytokinin is a plant hormone, other options are hormones, found in human.
36. (D)  
Pollen grains are produced by anther, which is the male reproductive part of plant.
37. (C)  
DNA + Proteins (Histone)
38. (A)  
Coal is nonrenewable energy resource
39. (C)  
By Fusion of male & Female gametes zygote is formed
40. (D)  
Self-explanatory

## MATHEMATICS

41. (A)  
 $\pi$  is irrational number.

42. (C)  
 $p(-1) = 1 + 3 - 4 = 0$

43. (C)  
 $\frac{x}{a} + \frac{y}{b} = 2 \dots\dots\dots(i)$   
 $ax - by = a^2 - b^2 \dots\dots\dots(ii)$

Solving (i) & (ii), we get

$$ax - b^2 \left( 2 - \frac{x}{a} \right) = a^2 - b^2$$

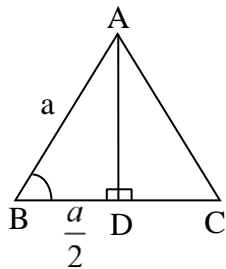
$$ax - 2b^2 + \frac{b^2}{a}x = a^2 - b^2$$

$$(a^2 + b^2)x = a(a^2 + b^2)$$

$$x = a$$

$$\therefore y = b$$

44. (C)  
 $AD = \sqrt{a^2 - \frac{a^2}{4}} = \frac{\sqrt{3}}{2}a$



45. (B)  
 $\sec \theta + \tan \theta = m$   
 $\sec \theta - \tan \theta = n$   
 $\therefore \sec^2 \theta - \tan^2 \theta = mn$   
 $\therefore mn = 1$

46. (B)  
 $\text{Mean} = \frac{1+3+5+7+9+11+13+15+17+19}{10} = \frac{100}{10} = 10$

47. (A)  
 $x + y = 14$   
 $x - y = 4$ 

---

 $2x = 18$   
 $x = 9$   
 $\therefore y = 5$

48. (C)

Put  $\sqrt{2} = x$

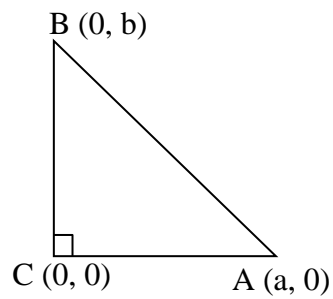
$x + 2x + 3x + \dots n \text{ terms}$

$= x(1 + 2 + 3 + \dots n \text{ terms})$

$$= x \frac{n(n+1)}{2} = \frac{n(n+1)}{\sqrt{2}}$$

49. (B)

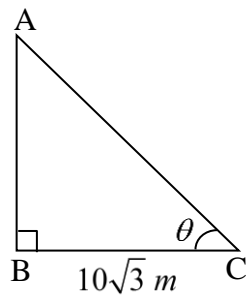
$$\Delta ABC = \frac{1}{2} ab$$



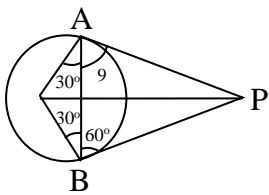
50. (D)

$$\tan \theta = \frac{10}{10\sqrt{3}} = \frac{1}{\sqrt{3}}$$

$$\therefore \theta = 30^\circ$$

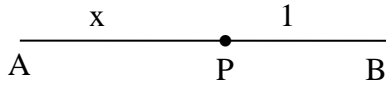


51. (A)



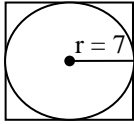
$$\angle PBA = 60^\circ$$

52. (D)



$$\frac{PB}{AB} = \frac{3}{7} = \frac{1}{x+1} \Rightarrow 3x+3=7$$
$$x = 4/3$$

53. (B)



← 14 cm →

Req area

$$= (14)^2 - \pi \times (7)^2$$
$$= 14 \times 14 - \frac{22}{7} \times 7 \times 7$$
$$= 14(14 - 11) = 42 \text{ cm}^2$$

54. (A)

$$\frac{4}{3} \pi (5)^3 = \frac{1}{3} \pi (5)^2 h$$
$$\Rightarrow h = 20 \text{ cm}$$

55. (D)

56. (C)

$$3x + y = 10 \text{ and } y = 4$$
$$x = 2$$

57. (B)

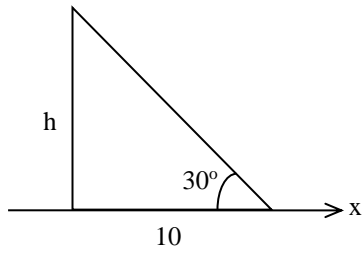
$$\frac{\sin \theta}{1 + \cos \theta} = \frac{\sin \theta (1 - \cos \theta)}{\sin^2 \theta} = \frac{1 - \cos \theta}{\sin \theta}$$

58. (B)

$$r = 8$$

$$\text{Area of grass field} = \pi (8)^2 \text{ sq. m}$$
$$= 64 \pi \text{ sq. m}$$

59. (C)



$$\tan 30^\circ = \frac{h}{10}$$

$$\Rightarrow h = \frac{10}{\sqrt{3}} m$$

60.  $\pi r^2 = 2\pi r$

$$\Rightarrow r = 2$$

diameter  $2r = 4$