

Most Authentic
**ANSWER
KEY**
of **IIT-JEE**
(Main)
2017



CatalyseR
Changing the world for betteR...

INDORE | AHMEDABAD | SURAT | VADODARA | NAGPUR | NASHIK | BHOPAL | GWALIOR

‘Winners always do it first.’

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(irrespective of question paper set)



(PAPER WITH SOLUTION) SET – D
JEE (MAIN) 2017
MATHEMATICS

1. If S is the set of solution, then S is:

Ans. (4) A singleton

2. The following statement is :

Ans. (1) A tautology

3. If $5(\tan^2 x - \cos x^2) = 2\cos 2x + 9$, of $\cos 4x$ is :

Ans. (4) $-\frac{7}{9}$

4. For three events events occurs, is :

Ans. (2) $\frac{7}{16}$

5. Let ω be a complex then k is equal to :

Ans. (1) $-z$

6. Let k be an integer is at the point:

Ans. (4) $\left(2, \frac{1}{2}\right)$

7. Twenty meters of flower-bed, is :

Ans. (3) 25

8. The area (in sq.units) $y \leq 1 + \sqrt{x} \}$ is :

Ans. (4) $\frac{5}{2}$

9. If the image of is equal to:

Ans. (2) $2\sqrt{42}$

10. If for $x \in \left(0, \frac{1}{4}\right)$, then $g(x)$ equals:

Ans. (1) $\frac{9}{1+9x^3}$

11. If $(2x + \sin x) \frac{dy}{dx} + (y+1)\cos x = 0$ is equal to:

Ans. (1) $\frac{1}{3}$

12. Let a vertical tower $\tan \beta$ is equal to:

Ans. (3) $\frac{2}{9}$

13. If $A = \begin{bmatrix} 2 & -3 \\ -4 & 1 \end{bmatrix}$, then $\text{adj}(3A^2 + 12A)$ is equal to :

Ans. (2) $\begin{bmatrix} 51 & 63 \\ 84 & 72 \end{bmatrix}$

14. For any three positive Then :

Ans. (2) b, c and a are in A.P.

15. The distance of the point $\frac{x-2}{2} = \frac{y+1}{-1} = \frac{z+7}{-1}$, is:

Ans. (2) $\frac{10}{\sqrt{83}}$

16. Let $I_n = \int \tan^n x dx, (n > 1)$ is equal to :

Ans. (2) $\left(\frac{1}{5}, 0\right)$

17. The eccentricity of an at $\left(1, \frac{3}{2}\right)$ is:

Ans. (2) $4x - 2y = 1$

18. A hyperbola passes through the the point.

Ans. (2) $(2\sqrt{2}, 3\sqrt{3})$

19. The function $f : R \rightarrow \left[-\frac{1}{2}, \frac{1}{2}\right]$ $f(x) = \frac{x}{1+x^2}$, is:

Ans. (3) surjective but not injective

20. $\lim_{x \rightarrow \frac{\pi}{2}} \frac{\cot x - \cos x}{(\pi - 2x)^2}$ equals:

Ans. (2) $\frac{1}{16}$

21. Let $\vec{a} = 2\hat{i} + \hat{j} - 2\hat{k}$ is equal to :

Ans. (2) 2

22. The normal to through the point:

Ans. (2) $\left(\frac{1}{2}, \frac{1}{2}\right)$

23. If two different numbers multiple of 4, is:

Ans. (1) $\frac{6}{55}$

24. A man X has 7 friends, in this party, is :

Ans. (1) 485

25. The value of $\left(^{21}C_{10} - ^{10}C_{10}\right)$ is:

Ans. (4) $2^{20} - 2^{10}$

26. A box contains 15 green and green balls drawn is:

Ans. (1) $\frac{12}{5}$

27. Let $a, b, c \in R$ $\sum_{n=1}^{10} f(n)$ is equal to:

Ans. (1) 330

28. The radius of a circle, lines, $y = |x|$ is:

Ans. (3) $4(\sqrt{2} - 1)$

29. If, for a positive n is equal to:

Ans. (4) 11

30. The integral $\int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} \frac{dx}{1 + \cos x}$ is equal to:

Ans. (2) 2



National Record

in IIT-JEE (Adv.)
with **4 Zone Toppers**
in 3 years.



**JEE (Adv.) Workshop starting from
5th April'17**

PHYSICS

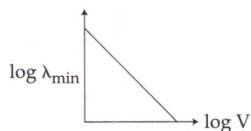
31. A radioactive nucleus t is given by :

Ans. (3) $t = T \frac{\log 1.3}{\log 2}$

32. The following observations were is closest to:

Ans. (3) 1.5%

33. An electron beam is accelerated represented in :



Ans. (2)

34. The moment of inertia of of inertia is minimum?

Ans. (2) $\sqrt{\frac{3}{2}}$

35. A slender uniform rod with the vertical is:

Ans. (2) $\frac{3g}{2l} \sin \theta$

36. C_p and C_v are specific heats a and b is:

Ans. (4) a = 14 b

37. A copper ball of mass 100 gm heat of copper = 0.1 cal/gm °C

Ans. (3) 885 °C

38. In amplitude modulation, sinusoidal in the modulated wave?

Ans. (2) ω_m

39. The temperature of an open room $n_f - n_i$ will be :

Ans. (1) -2.5×10^{25}

40. In a Young's double slit wavelengths coincide is:

Ans. (3) 7.8 mm

41. A particle A of mass m and initial after the collision is:

Ans. (3) $\frac{\lambda_A}{\lambda_B} = 2$

42. A magnetic needle of magnetic moment 10 complete oscillations is:

Ans. (2) 6.65 s

43. An electric dipole has a fixed dipole The angle θ is :

Ans. (4) 60°

44. In a coil of resistance 100Ω , through the coil is :

Ans. (4) **250 Wb**

45. A time dependent force $F = 6t$ first 1 sec. will be:

Ans. (2) **4.5 J**

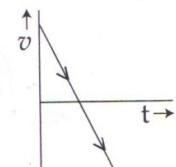
46. Some energy levels is given by:

Ans. (1) $r = \frac{1}{3}$

47. In the above resistance is:

Ans. (1) **0 A**

48. A body is thrown vertically velocity vs time?



Ans. (4)

49. A capacitance of $2\mu F$ is achieve this is :

Ans. (1) **32**

50. In the given circuit capacitance C will be :

Ans. (4) $CE \times \frac{r_2}{(r + r_2)}$

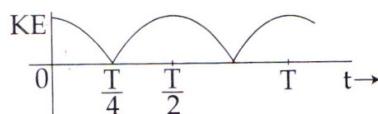
51. In a common emitter amplifier voltages will be :

Ans. (1) 180°

52. Which of the following statements is false?

Ans. (3) **In a balanced wheatstone bridge if the cell and the galvanometer are exchanged, the null point is disturbed.**

53. A particle is executing particle will look like:



Ans. (1)

54. An observer is moving (speed of light = $3 \times 10^8 ms^{-1}$)

Ans. (4) **17.3 GHz**

55. A man grows into a giant such that change by a factor of:

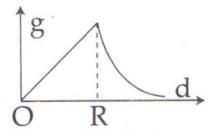


Ans. (2) 9

56. When a current of 5mA is passed range $0-10V$ is:

Ans. (2) $1.985 \times 10^3 \Omega$

57. The variation of acceleration due to ($R = \text{Earth's radius}$):



Ans. (1)

58. An external pressure P is should be raised by :

Ans. (2) $\frac{P}{3\alpha K}$

59. A diverging lens with magnitude of focal Image formed is:

Ans. (2) real and at a distance of 40 cm from convergent lens.

60. A body of mass $m = 10^{-2} \text{kg}$ is moving the value of k will be :

Ans. (4) 10^{-4}kg m^{-1}



IIT - JEE (Mains)

5 Years TOPPER

(Gen.)



Govind Iahoti | 2014
ZONE TOPPER



Aditya Jain | 2011
CITY TOPPER



CHEMISTRY

61. 1 gram of a carbonate (M_2CO_3) M_2CO_3 in $g mol^{-1}$ is:

Ans. (1) **84.3**

62. Given $C_{(graphite)} + O_2(g) \rightarrow CO_2(g)$ will be:

Ans. (2) $-74.8 \text{ kJ mol}^{-1}$

63. The freezing point of benzene benzene will be:

Ans. (3) **94.6%**

64. The most abundant elements by by 2H atoms is:

Ans. (2) **7.5 Kg**

65. ΔU is equal to :

Ans. (2) **Adiabatic work**

66. The formation of which of the following polymers involves hydrolysis reaction?

Ans. (4) **Nylon 6**

67. Given , the strongest reducing agent is:

Ans. (4) **Cr**

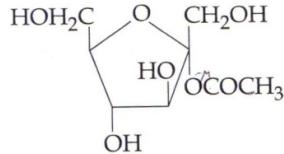
68. The Tyndall effect is observed only when following conditions are satisfied:

Ans. (1) **(b) and (d)**

69. In the following reactions, ZnO respectively acting at a/an:

Ans. (3) **acid and base**

70. Which of the following compounds will behave as a reducing sugar in an aqueous KOH solution?



Ans. (4)

71. The major product obtained in the following reaction is:

Ans. (1) $C_6H_5CH = CHC_6H_5$

72. Which of the following species is not paramagnetic?

Ans. (1) **CO**

73. On treatment of 100 mL of The complex is:

Ans. (3) $[Co(H_2O)_5Cl]Cl_2 \cdot H_2O$

74. pK_a of a weak acid salt (AB) solution is:

Ans. (1) **6.9**

75. The increasing order of the reactivity of the following halides for the S_N1 reaction is:

Ans. (1) **(II) < (I) < (III)**

76. Both Jithuim and magnesium is incorrect is:

Ans. (1) **both from soluble bicarbonates.**

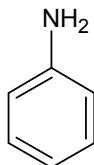
77. The correct sequence of reagents for the following conversion will be:

Ans. (4) $[Ag(NH_3)_2]^+ OH^-, H^+ / CH_3OH, CH_3MgBr$

78. The products obtained when chlorine gas reacts with cold and dilute aqueous NaOH are:

Ans. (2) **Cl^- and ClO^-**

79. Which of the following compounds mono-nitration reaction?



Ans. (2)

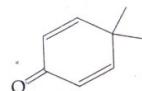
80. 3-Methyl=pent-2-ene on reaction for the product is:

Ans. (3) **Four**

81. Two reactions R_1 and R_2 have ($R = 8.314 \text{ Jmol}^{-1}\text{K}^{-1}$)

Ans. (3) **4**

82. Which of the following molecules is least resonance stabilized?



Ans. (3)

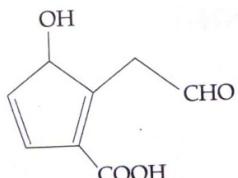
83. The group having isoelectronic species is:

Ans. (4) $O^{2-}, F^-, Na^+, Mg^{2+}$

84. The radius of the second Bohr $\epsilon_0 = 8.854185 \times 10^{-12} \text{ kg}^{-1}\text{m}^{-3}\text{A}^2$

Ans. (3) 2.12 \AA

85. The major product obtained in the following reaction is:



Ans. (4)

86. Which of the following reactions is an example of a redox reaction?

Ans. (4) $XeF_4 + O_2F_2 \rightarrow XeF_6 + O_2$

87. A metal crystallises in a facemetallic crystal will be:

Ans. (3) $\frac{a}{\sqrt{2}}$

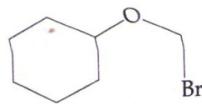
88. Sodium salt of an organic acidof $KMnO_4$. 'X' is:

Ans. (3) $Na_2C_2O_4$

89. A water sample has ppmdrinking is/are :

Ans. (2) only F^-

90. Which of the following uponcolour of bromine?



Ans. (4)

END OF TEST PAPER



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**JEE (Adv.) Workshop
starting from**

5th April'17





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“

Though JEE team at
CatalyseR has taken utmost
care in drafting the
answers.

But due to early
documentation & printing,
an error of $\pm 5\%$ may occur.

Answer should be taken in
that respect.

”

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