FIITJEE **Talent Reward Exam-2014**
for **student presently in**
Class 11

PAPER–1

Time: 3 Hours

Maximum Marks: 270

Registration Number : _____

Name of the Candidate : _____

Answer Sheet No. : _____

Test Centre : _____

Section-I   **IQ**

Straight Objective Type

*This section contains 30 multiple choice questions numbered 1 to 30. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

Directions (Q.1 to 3): Supply the missing number:

1.   45, 41, _, 50, 25, 29
        (A) 17   (B) 20
        (C) 43   (D) 39

2.   3, 20, 63, 144, 275, _
        (A) 320   (B) 375
        (C) 468   (D) 529

3.   2, 3, 2, 5, 10, 13, _, 43, 172
        (A) 25   (B) 39
        (C) 41   (D) 58

4.   Pointing to a girl, Mihir said, "she is the only daughter of my grand-father's only child." How is the girl related to Mihir?
        (A) Daughter   (B) Niece
        (C) Sister   (D) Wife

5.   The position of the first and the sixth digits in the number 5120397468 are interchanged, similarly the positions of the second and the seventh digits are interchanged and so on. Which of the following will be the fourth digit from the right end after the rearrangement?
        (A) 1   (B) 5
        (C) 7   (D) 9

6.   Among P, Q, R, S and T, each having different marks. R scored more marks then P and T. Q scored less marks than T. S did not score the highest marks. Who among them scored the highest?
        (A) P   (B) T
        (C) R   (D) Q

Space for rough work

Directions (Q. 7 to 8): Three of the following four are alike in a certain way and so form a group. Which is the one that does not belong to that group.

7.   (A) Succeed   (B) Victor
      (C) Compete   (D) Triumph

8.   (A) Fair   (B) Impartial
      (C) Indifferent   (D) Unbiased

9.   What should come next in the following letter series?
      Z X V T R P N L J Y W U S Q O __
      (A) M   (B) K
      (C) H   (D) J

10.   'DEAN' is related to 'NDAE' and 'ROAD' is related to 'DRAO'. In the same way 'SOME' is related to?
      (A) EOMS   (B) EMOS
      (C) ESMO   (D) MSEO

11.   Mohan correctly remembers that his father's birthday is before twentieth January but after sixteenth January, whereas his sister correctly remembers that their father's birthday is after eighteenth January but before twenty third January. On which date in January is definitely their father's birthday?
      (A) Eighteenth   (B) Nineteenth
      (C) Twentieth   (D) Twenty one

Directions (Q. 12 to 15): In each question below is given a group of letters followed by digit/symbol code. You have to find out correct code for the word given below.

Letter	P	M	A	D	E	J	I	T	Q	U	O	F	H	W	B
Digit/Symbol Code	6	$	7	1	%	2	δ	8	3	©	4	@	9	5	*

Conditions:
(i) If the first letter is a consonant and the last letter is a vowel, their codes are to be interchanged.
(ii) If the first letter is a vowel and the last letter is a consonant both are to be coded as the code for the last letter.
(iii) If both the first and the last letters are consonants, both are to be coded as '#'.

12.   OHBWDFT
      (A) 89*51@4   (B) 49*51@8
      (C) 89*51@8   (D) 49*51@4

Space for rough work

13. HOPDAMI
    (A) 94617$9   (B) δ4617$\δ
    (C) 94617$\$\delta$ (D) δ4617$9

14. UAQFJPE
    (A) 73@26%   (B) %73@26©
    (C) %73@26%   (D) 73@26©

15. FEPWBUH
    (A) %65∗©9   (B) #%65∗©#
    (C) 9%65∗©@   (D) 9%65∗©9

16. Which of the following pairs of words have the same relationship as COOLER : HEAT?
    (A) WATER : DRINK   (B) LIGHT : NIGHT
    (C) FOOD : HUNGER   (D) AIR : BREATHE

17. If 'A × D' means 'A is the sister of D', 'A + D' means 'D is the daughter of A' and 'A ÷ D' means 'A is the mother of D', how will 'N is the aunt of M' be denoted?
    (A) M + L × N   (B) N × L ÷ M
    (C) M ÷ L + N   (D) L × N ÷ M

18. A clock is showing 3:20, what will be its mirror image?
    (A) 7:40   (B) 8:30
    (C) 8:40   (D) 9:20

Directions (Q. 19 to 23): Study the following information carefully and answer the given questions:
Ashwini, Priya, Sudha, Rani, Meeta, Geeta and Mukta are sitting around a circle facing the centre. Ashwini is third to the left of Mukta and to the immediate right of Rani. Priya is second to the left of Geeta, who is not an immediate neighbour of Meeta.

19. Who is to the immediate right of Priya?
    (A) Meeta   (B) Sudha
    (C) Mukta   (D) Ashwini

20. Who is second to the left of Rani?
    (A) Ashwini   (B) Geeta
    (C) Priya   (D) Sudha

Space for rough work

21. Which of the following pairs of persons has the first person sitting to the immediate left of the second person?
    (A) Rani-Meeta
    (B) Ashwini-Geeta
    (C) Sudha-Priya
    (D) Geeta-Sudha

22. Which of the following groups has the first person sitting between the other two?
    (A) Meeta-Ashwini-Geeta
    (B) Sudha-Rani-Geeta
    (C) Mukta-Priya-Rani
    (D) Mukta-Priya-Sudha

23. Which of the following is the correct position of Rani with respect to Mukta?
    I. Third to the right
    II. Third to the left
    III. Fourth to the left
    IV. Fourth to the right
    (A) Only I
    (B) Only II
    (C) Both II and IV
    (D) Both I and III

Directions (Q. 24 to 27): Study the following information to answer the given questions.
In a certain code, 'her idea has merit' is written as 'fo la bu na' 'merit list has been displayed' is written as 'jo ke la si na, 'her name displayed there' is written as 'ya si bu zo' and 'name is merit list' is written as 'na ya go ke'.

24. What does 'ke' stands for?
    (A) been
    (B) has
    (C) merit
    (D) list

25. What is code for 'idea'?
    (A) fo
    (B) la
    (C) bu
    (D) na

Space for rough work

26. What does 'zo' stands for?
     (A) there   (B) displayed
     (C) name   (D) her

27. What is code for 'in'?
     (A) na   (B) ya
     (C) go   (D) ke

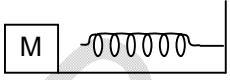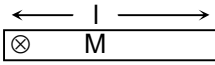**Directions (Q. 28 to 30):** Study the following information to answer the given questions.
Five plays A, B, C, D and E were organized in a week from Monday to Saturday with one play each day and no play was organized on one of these days. Play D was organized before Thursday but after Monday. Plays E was organized on Saturday. Play C was not organized on the first day. Play B was organized on the next day on which play C was organized. Play A was organized on Tuesday.

28. On which day was play B organized?
     (A) Thursday   (B) Friday
     (C) Wednesday   (D) Saturday

29. On which day was no play organized?
     (A) Monday   (B) Saturday
     (C) Thursday   (D) Tuesday

30. Which play was organized on Wednesday?
   (A) A   (B) B
     (C) C   (D) D

Space for rough work

Section-II   **PCM**

Physics

Straight Objective Type

*Physics contains 20 multiple choice questions numbered 31 to 50. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

31. The block of mass M moving on the frictionless horizontal surface collides with the spring of spring constant k and compresses it by length L. The maximum momentum of the block after collision is :

(A) $\dfrac{ML^2}{k}$ (B) zero

(C) $\dfrac{kL^2}{2M}$ (D) $\sqrt{Mk}\, L$

32. If linear density of a rod AB of length 3m varies as $\lambda = 2 + x$ (x is measured from A), then the position of the centre of gravity of the rod from A is

(A) $\dfrac{7}{3}$ m   (B) $\dfrac{12}{7}$ m

(C) $\dfrac{10}{7}$ m   (D) $\dfrac{9}{7}$ m

33. A rod of mass m and length hinged at one of the end and released from horizontal position as shown in fig. Then the ratio of length of part of rod (l_1) having magnitude of acceleration greater then 'g' to length of part of rod (l_2) having magnitude of acceleration less than 'g' – (No friction between hinge and rod)

(A) $\dfrac{l_1}{l_2} = \dfrac{2}{3}$ (B) $\dfrac{l_1}{l_2} = \dfrac{1}{3}$

(C) $\dfrac{l_1}{l_2} = \dfrac{1}{2}$ (D) $\dfrac{l_1}{l_2} = 1$

34. A particle is moving with constant velocity $\vec{v} = 4\hat{i} + 3\hat{j}$. Then dot product of angular momentum of particle about origin with vector $\vec{p}$ (where $\vec{p} = \hat{i} + \hat{j}$) will be

(A) 7   (B) $5\sqrt{2}$
(C) 0   (D) None of these

Space for rough work

35. The acceleration time graph of a particle moving in straight line is given. Magnitude of displacement of particle starting from rest from the initial position will be maximum at
    (A) 20 s   (B) 10 s
    (C) 30   (D) None of these
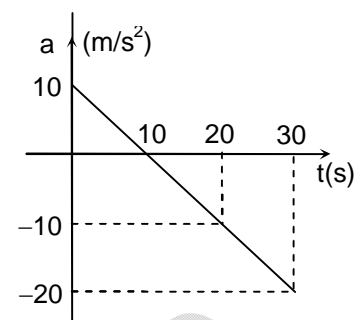
36. A block of mass m is placed on triangle wedge of same mass. There is no friction between block and wedge but wedge can not have acceleration in horizontal direction. Then normal force from ground on wedge –
    (A) 2mg   (B) $mg\cos\theta + mg$
    (C) $mg\cos^2\theta + mg$ (D) None of these
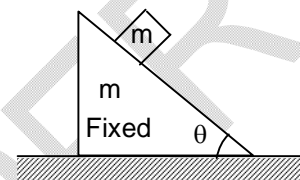
37. A block of m is kept stationary on rough horizontal surface of friction coefficient $'\mu'$. An observer moving with acceleration 'a' on the horizontal surface calculate the value of friction force on the block –
    (A) if $ma > \mu mg$, $f = \mu mg$ (B) if $ma < \mu mg$, $f = ma$
   (C) if $ma = \mu mg$, $f = ma$ (D) $f = 0$ in any case
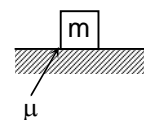
38. Which of the following get affected by horizontal air flow if a particle is projected with speed at an angle θ with the horizontal?
    (A) Time of flight   (B) Maximum height
    (C) Velocity at the highest point (D) None of these

39. A cylindrical drum, open at the top, contains 15 litres of water. It drains out through a small opening at the bottom. 5 litres of water comes out in time t_1, the next 5 litres in further time t_2 and the last 5 litres in further time t_3. Then
    (A) $t_1 < t_2 < t_3$ (B) $t_1 > t_2 > t_3$
   (C) $t_1 = t_2 = t_3$ (D) $t_1 > t_2 = t_3$

Space for rough work

40. A man moves with a velocity $\vec{v}_1$ during a time interval t_1. Then he moves with a velocity $\vec{v}_2 (\perp \vec{v}_1)$ during a time interval t_2. Then choose incorrect statement.

    (A) $|\Delta \vec{v}| = \sqrt{v_1^2 + v_2^2}$

    (B) Displacement $|s| = |\vec{v}_1 t_1 + \vec{v}_2 t_2|$

    (C) Distance $D = |\vec{v}_1| t_1 + |\vec{v}_2| t_2$

    (D) $\vec{v}_{av} = \dfrac{\vec{v}_1 + \vec{v}_2}{2}$

41. Consider a compound slab consisting of two different materials having equal thicknesses and thermal conductivities K and 2 K respectively. The equivalent thermal conductivity of the slab is

    (A) $\dfrac{2}{3} K$

    (B) $\sqrt{2} K$

    (C) $3 K$

    (D) $\dfrac{4}{3} K$

42. According to Newton's Law of cooling, the rate of cooling of a body is proportional to $(\Delta \theta)^n$, where $\Delta \theta$ is difference of the temperature of the body and the surroundings, and n is equal to
    (A) 1
    (B) 2
    (C) 3
    (D) 4

43. The period of a simple pendulum inside a stationary lift is T. The lift accelerates upwards with an acceleration of g/3. The time period of pendulum will be

    (A) $\sqrt{2} \, T$

    (B) $\dfrac{T}{\sqrt{2}}$

    (C) $\dfrac{\sqrt{3}}{2} T$

    (D) $\dfrac{T}{3}$

44. A column of air of length 50 cm resonates with a stretched string of length 40 cm. The length of the same air column which will resonate with 60 cm of the same string at the same tension is
    (A) 100 cm
    (B) 75 cm
    (C) 50 cm
    (D) 25 cm

Space for rough work

45. Two identical weights of mass M are linked by a thread wrapped around a frictionless pulley with a fixed axis. A small weight of mass 'm' is placed on one of the weights. What is reaction force between m and M?
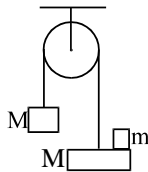

(A) $\dfrac{2mMg}{2M+m}$

(B) $\dfrac{Mg(M+m)}{2M+m}$

(C) mg

(D) $(M+m)g$

46. A little girl is holding a helium-filled balloon on a string while riding in a closed elevator going down a very tall building at constant speed. There is vacuum in elevator. Suddenly the elevator cable snaps, sending the elevator into free fall. Being shocked, the girl lets go of the string. She is even more surprised to see
   (A) the balloon rising
   (B) the balloon floating downward
   (C) the balloon remaining stationary
   (D) the balloon bouncing slowly between the floor and the ceiling

47. At the same instant two boys throw balls A and B from the positions shown in the figure with a speed v_0 and kv_0 respectively, where k is a constant. For what value of k, balls may collide? Relevant data are available in figure.
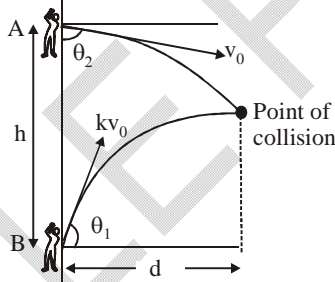
(A) $\dfrac{\cos\theta_2}{\cos\theta_1}$

(B) $\dfrac{\sin\theta_2}{\cos\theta_1}$

(C) $\dfrac{\tan\theta_2}{\tan\theta_1}$

(D) $\dfrac{\cot\theta_2}{\cot\theta_1}$

Space for rough work

48. For a particle in uniform circular motion, the acceleration $\vec{a}$ at a point P (R, θ) on the circle of radius R is:

(A) $\dfrac{v^2}{R}\hat{i} + \dfrac{v^2}{R}\hat{j}$

(B) $-\dfrac{v^2}{R}\cos\theta\, i + \dfrac{v^2}{R}\sin\theta\, \hat{j}$

(C) $-\dfrac{v^2}{R}\sin\theta\, \hat{i} + \dfrac{v^2}{R}\cos\theta\, \hat{j}$

(D) $-\dfrac{v^2}{R}\cos\theta\, \hat{i} - \dfrac{v^2}{R}\sin\theta\, \hat{j}$

(Here θ is measured from the X-axis)

49. A ball of mass 0.2 kg rests on a vertical post of height 5m. A bullet of mass 0.01 kg traveling with a velocity v m/s in a horizontal direction, hits the centre of the ball. After the collision, the ball and the bullet travel independently. The ball hits the ground at a distance of 20 m and the bullet at a distance of 100 m from the foot of the post, [Fig.]. The initial velocity v of the bullet is:

(A) 250 m/s
(B) $250\sqrt{2}$ m/s
(C) 400 m/s
(D) 500 m/s

50. The engine of a moving train blows a whistle of frequency n. If n' is apparent frequency of sound heard by a passenger, then
(A) $n' < n$
(B) $n' > n$
(C) $n' = n$
(D) $n' \neq n$
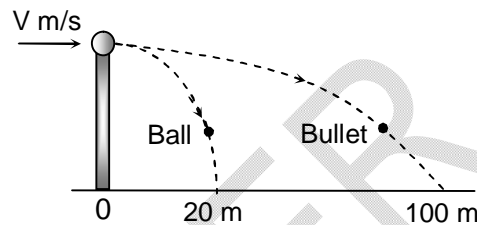

Space for rough work

Chemistry

Straight Objective Type

*Chemistry contains 20 multiple choice questions numbered 51 to 70. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

51. Temperature of one mole of gas is desired to be increased by 1^oC. This can be done by different paths. In which path we need to provide least amount of energy?
    (A) Isothermal   (B) Isobaric
    (C) Isochoric   (D) can't say

52. How many of these are intensive properties :
    Volume, Heat capacity, Temperature, Molar heat capacity, Enthalpy, Density
    (A) 3   (B) 6
    (C) 5   (D) 4

53. Predict which of the following reaction (s) have positive entropy change?
    I. $Ag^+ (aq) + Cl^- (aq) \longrightarrow AgCl(s)$
    II. $NH_4Cl(s) \longrightarrow NH_3(g) + HCl(g)$
    III. $2NH_3(g) \longrightarrow N_2(g) + 3H_2(g)$
    (A) (I) and (III)   (B) (III)
    (C) (II) & (III)   (D) II

54. $Au_{(s)} \rightleftharpoons Au_{(l)}$ Above equilibrium is favoured by
    (A) High pressure & low temperature   (B) High pressure & high temperature
    (C) Low pressure & high temperature   (D) Low pressure & low temperature

Space for rough work

55. Which contains maximum percentage of nitrogen?

    (A) H_2N—⬡—NH_2 (B) ⬡—NH_2

    (C) ⬡—NH_3Cl (D) CH_3NH_2
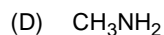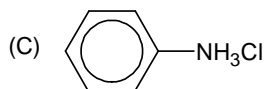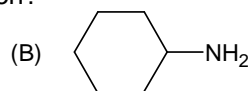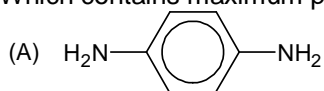
56. In the following reaction $O_3 + 6I^- + 6H^+ \longrightarrow 3I_2 + 3H_2O$
    Equivalent weight of O_3 (with molecular weight M) is:

    (A) $\dfrac{M}{2}$ (B) $\dfrac{M}{4}$

    (C) $\dfrac{M}{24}$ (D) $\dfrac{M}{6}$

57. Select incorrect statement:
    (A) ClO_2 and Cl_2O are used as bleaching agents for paper pulp and textiles
    (B) OCl^- (hypohalites) salts are used as detergent
    (C) OCl^- disproportionates in alkaline medium
    (D) BrO_3^- is oxidized to Br_2 by Br^- in acidic medium

58. Glass is best described as a :
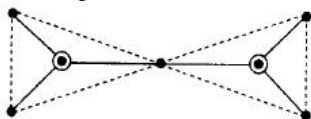   (A) solid   (B) liquid
    (C) super cooled liquid   (D) colloidal sol

59. Covalent radius of nitrogen is 70 pm. Hence, covalent radius of boron is about :
    (A) 60 pm   (B) 110 pm
    (C) 50 pm   (D) 40 pm

Space for rough work

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60. Formula of the following silicate anion is:

(A) SiO_4^{4-}

(B) $Si_2O_7^{6-}$

(C) $Si_2O_8^{6-}$

(D) $Si_3O_9^{6-}$

61. Match Column I with Column II:

Column I (species)		**Column II (O–N–O angle)**
(A) NO_2^+		(p) 180°
(B) NO_2		(q) 132°
(C) NO_2^-		(r) 120°
(D) NO_3^-		(s) 115°
		(t) 109°

	A	B	C	D		A	B	C	D
(A)	t	s	r	q	(B)	t	q	s	r
(C)	p	q	s	r	(D)	p	s	r	q

62. Which concept best explains that the o-nitrophenol is more volatile than p-nitrophenol?
(A) Steric hindrance
(B) Hyper conjugation
(C) H-bonding
(D) Resonance

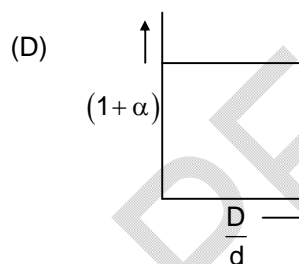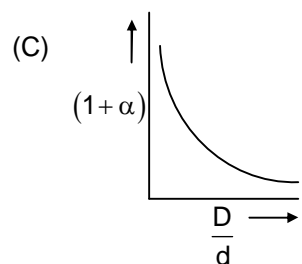63. Solubility of NaCl, Na_2SO_4 and Na_3PO_4 in water in increasing order is:
(A) $NaCl < Na_2SO_4 < Na_3PO_4$
(B) $Na_3PO_4 < Na_2SO_4 < NaCl$
(C) $NaCl < Na_3PO_4 < Na_2SO_4$
(D) $Na_2SO_4 < NaCl < Na_3PO_4$

Space for rough work

64.   In the dissociation of N_2O_4 into NO_2, $(1+\alpha)$ varies with the vapour densities ratio $\left(\dfrac{D}{d}\right)$ as given by:

(A)

(1+α)

$\dfrac{D}{d}$ →

(B)

(1+α)

$\dfrac{D}{d}$ →

(C)

(1+α)

$\dfrac{D}{d}$ →

(D)

(1+α)

$\dfrac{D}{d}$ →
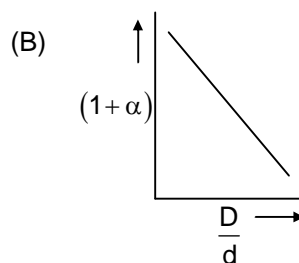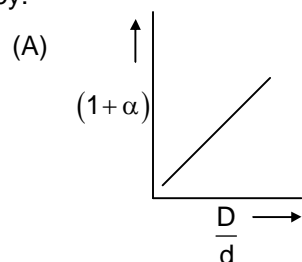
65.   If β_1, β_2 and β_3 are stepwise formation constants of MCl, MCl_2, MCl_3 and K is the overall formation constant of MCl_3, then (charges omitted) :

(A) $K = \beta_1 + \beta_2 + \beta_3$

(B) $\dfrac{1}{K} = \dfrac{1}{\beta_1} + \dfrac{1}{\beta_2} + \dfrac{1}{\beta_3}$

(C) $\log K = \log\beta_1 + \log\beta_2 + \log\beta_3$

(D) $p_K = \log\beta_1 + \log\beta_2 + \log\beta_3 \ (p_K = -\log K)$

Space for rough work

66. At a temperature under high pressure
    $$K_w(H_2O) = 1 \times 10^{-10}$$
    A solution of pH 5.4 under these conditions is said to be:
    (A) acidic   (B) basic
    (C) neutral   (D) amphoteric

67. CH_3COOH is 2.0% ionized $\left(K_a = 1.8 \times 10^{-5}\right)$, hence its molar concentration is:
    (A) 0.045 M   (B) 0.02 M
    (C) 3.6×10^{-5} M   (D) 0.090 M

68. Out of BeO, ZnO, CaO and MgO, amphoteric oxides are:
    (A) BeO, CaO   (B) BeO, ZnO
    (C) MgO, CaO   (D) all of these

69. Elements of group 14 used in semiconductors are:
    (A) C, Si, Ge   (B) Si, Ge, Sn
    (C) Si, Ge   (D) B, Si, Ge

70. In which case geometry of the molecule is pyramidal?
    (A) $N(CH_3)_3$ (B) $N(SiH_3)_3$
    (C) both (A) and (B)   (D) None of these

Space for rough work

Mathematics

Straight Objective Type

*Mathematics contains 20 multiple choice questions numbered 71 to 90. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.*

71. If $f(x) = \log_e |x|$, $x \neq 0$, then $f'(x)$ equals

    (A) $\dfrac{1}{|x|}$ (B) $\dfrac{1}{x}$

    (C) $-\dfrac{1}{x}$ (D) None of these

72. If $\log(a+b) = \log a + \log b$ for all a, b $\in R^+$ then least value of product "ab" is

    (A) 1   (B) 2

    (C) 4   (D) 8

73. If $A = 110^o$ then $\dfrac{1 + \sqrt{1 + \tan^2 2A}}{\tan 2A}$ is

    (A) $\tan A$ (B) $\cot A$

    (C) $-\tan A$ (D) $-\cot A$

74. If in a triangle ABC, $\cos\dfrac{A}{2} = \sqrt{\dfrac{b+c}{2c}}$, then which of the following is correct?

    (A) $b^2 + c^2 = a^2$ (B) $\angle a = \dfrac{\pi}{2}$

    (C) $a^2 + c^2 = b^2$ (D) $\angle c = \dfrac{\pi}{2}$

75. The solutions to the equation $\sin^4 x + \cos^4 x = \sin x \cos x$ lie in

    (A) I and II Quadrant   (B) II and III Quadrant

    (C) II and IV Quadrant   (D) I and III Quadrant

Space for rough work

76. The ratio in which the y-axis divides (1, 3) and (2, 7) is
    (A) 1 : 2 internally   (B) 1 : 2 externally
    (C) 2 : 1 internally   (D) 2 : 1 externally

77. If lines $x + y + 1 = 0,\ 4x + 3y + 4 = 0$ & $x + \alpha y + \beta = 0$ are concurrent then locus of $(\alpha,\ \beta)$ is
    (A) straight line passes through origin   (B) straight line parallel to x-axis
    (C) straight line parallel to y-axis   (D) straight line parallel to y = x line

78. If (2, 0) is the vertex of parabola, y axis is the directrix of parabola, then its focus is
    (A) (2, 0)   (B) $(-2,\ 0)$
    (C) (4, 0)   (D) $(-4,\ 0)$

79. The shortest distance between the line $3x + 4y = 25$ and the circle $x^2 + y^2 = 6x - 8y$ is equal to

    (A) $\dfrac{7}{5}$ (B) $\dfrac{9}{5}$

    (C) $\dfrac{11}{5}$ (D) $\dfrac{32}{5}$

80. The radius of the circle passing through both the foci of ellipse $\dfrac{x^2}{16} + \dfrac{y^2}{9} = 1$ and having centre at

    (0, 3) is
    (A) 2   (B) 4

    (C) $\dfrac{2\sqrt{2}}{3}$ (D) 6

Space for rough work

81. If the eccentricity of the hyperbola $x^2 - y^2 \sec^2 \alpha = 5$ is $\sqrt{3}$ times the eccentricity of the ellipse $x^2 \sec^2 \alpha + y^2 = 25$, then a value of α is

    (A) $\dfrac{\pi}{6}$
    (B) $\dfrac{\pi}{4}$

    (C) $\dfrac{\pi}{3}$
    (D) $\dfrac{\pi}{2}$

82. If 15 arithmetic means are inserted between 3 and 45 then the sum of these means is not divisible by
    (A) 8
    (B) 5
    (C) 6
    (D) 7

83. The number of integer solutions to the equation $\sqrt{1 - 3x} + 1 = \sqrt{x}$ is/are
    (A) 0
    (B) 1
    (C) 2
    (D) 3

84. The number of value(s) of 'a' for which $x^2 - 11x + a$ and $x^2 - 14x + 2a$ have common factor is/are
    (A) 0
    (B) 1
    (C) 2
    (D) 3

85. The equation of the circle, which touches the line $x - y = 0$ at the origin and bisects the circumference of the circle $x^2 + y^2 + 2y - 3 = 0$, is
    (A) $x^2 + y^2 - 5x - 5y = 0$
    (B) $2x^2 + 2y^2 - 5x + 5y = 0$
    (C) $2x^2 + 2y^2 - 5x - 5y = 0$
    (D) $x^2 + y^2 - 5x + 5y = 0$

Space for rough work

86. Let a_n be the nth term of an A.P. of $\sum\limits_{r=1}^{100} a_{2r} = A$ and $\sum\limits_{r=1}^{100} a_{2r-1} = B$. Then, common difference of A.P. is

   (A) $\dfrac{A-B}{200}$

   (B) $A - B$

   (C) $\dfrac{A-B}{100}$

   (D) $B - A$

87. If A (2, –3) and B (–2, 1) are two vertices of a triangle and third vertex moves on line $2x + 3y = 9$, the locus of centroid of the triangle is

   (A) $2x - 3y = 1$

   (B) $x - y = 1$

   (C) $2x + 3y = 1$

   (D) $2x + 3y = 3$

88. Let the sum of first n terms of an A.P. be $n + 4n^2$. Another A.P. is formed with same first term and double the common difference. The sum of n terms of new A.P. is

   (A) $6n^2 - n$

   (B) $6n^2 + n$

   (C) $8n^2 - 3n$

   (D) $8n^2 + 3n$

89. Let the equations of two ellipses be $E_1 : \dfrac{x^2}{3} + \dfrac{y^2}{2} = 1$ and $E_2 : \dfrac{x^2}{16} + \dfrac{y^2}{b^2} = 1$. If the product of their eccentricities is $\dfrac{1}{2}$, then the value of 2b is

   (A) 8

   (B) 9

   (C) 4

   (D) 2

90. If AD, BE and CF are the medians of a $\triangle$ ABC, then $\left(AD^2 + BE^2 + CF^2\right) : \left(BC^2 + AC^2 + AB^2\right)$ is

   (A) 4 : 3

   (B) 3 : 2

   (C) 3 : 4

   (D) 2 : 3

Space for rough work

FIITJEE Talent Reward Exam-2014
for student presently in
Class 11

PAPER–1

ANSWER KEYS

SECTION – I (IQ)		SECTION – II (SCIENCE & MATHEMATICS)			
Q. No	Answer	Q. No	Answer	Q. No	Answer
1.	A	31.	D	61.	C
2.	C	32.	B	62.	C
3.	B	33.	C	63.	B
4.	C	34.	C	64.	A
5.	A	35.	A	65.	C
6.	C	36.	C	66.	B
7.	C	37.	D	67.	A
8.	C	38.	C	68.	B
9.	A	39.	A	69.	C
10.	C	40.	D	70.	A
11.	B	41.	D	71.	B
12.	A	42.	A	72.	C
13.	D	43.	C	73.	C
14.	A	44.	B	74.	D
15.	B	45.	A	75.	D
16.	C	46.	C	76.	B
17.	B	47.	B	77.	B
18.	C	48.	D	78.	C
19.	C	49.	D	79.	A
20.	B	50.	C	80.	B
21.	D	51.	C	81.	B
22.	B	52.	A	82.	D
23.	D	53.	C	83.	A
24.	D	54.	C	84.	C
25.	A	55.	D	85.	D
26.	A	56.	D	86.	C
27.	C	57.	B	87.	C
28.	B	58.	C	88.	C
29.	A	59.	B	89.	C
30.	D	60.	B	90.	C