RBS

This booklet contains **24** printed pages.

PAPER - 1 : MATHEMATICS, PHYSICS & CHEMISTRY

Test Booklet Code

D

Do not open this Test Booklet until you are asked to do so.

Read carefully the Instructions on the Back Cover of this Test Booklet.

Important Instructions :

1. Immediately fill in the particulars on this page of the Test Booklet with *only Black Ball Point Pen* provided in the examination hall.
2. The Answer Sheet is kept inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully.
3. The test is of **3 hours** duration.
4. The Test Booklet consists of **90** questions. The maximum marks are **360**.
5. There are *three* parts in the question paper A, B, C consisting of **Mathematics, Physics** and **Chemistry** having 30 questions in each part of equal weightage. Each question is allotted **4 (four)** marks for correct response.
6. *Candidates will be awarded marks as stated above in instruction No. 5 for correct response of each question. ¼ (one-fourth) marks of the total marks allotted to the question (i.e. 1 mark) will be deducted for indicating incorrect response of each question. No deduction from the total score will be made if no response is indicated for an item in the answer sheet.*
7. There is only one correct response for each question. Filling up more than one response in any question will be treated as wrong response and marks for wrong response will be deducted accordingly as per instruction 6 above.
8. For writing particulars/marking responses on *Side-1* and *Side-2* of the Answer Sheet use *only Black Ball Point Pen* provided in the examination hall.
9. No candidate is allowed to carry any textual material, printed or written, bits of papers, pager, mobile phone, any electronic device, etc. except the Admit Card inside the examination room/ hall.
10. Rough work is to be done on the space provided for this purpose in the Test Booklet only. This space is given at the bottom of each page and in **four** pages (Page **20-23**) at the end of the booklet.
11. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/Hall. *However, the candidates are allowed to take away this Test Booklet with them.*
12. The CODE for this Booklet is **D**. Make sure that the CODE printed on **Side-2** of the Answer Sheet and also tally the serial number of the Test Booklet and Answer Sheet are the same as that on this booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
13. **Do not fold or make any stray mark on the Answer Sheet.**

SEAL

Correct answers are shown by .

Answer Keys of all Code will be uploaded on April 03, 2017.

All students of RJ Vision Pvt. Ltd. are requested to check their paper with answer key and mail us your score rjbbaroda@gmail.com along with your NAME, JEE Roll Number & Date of Birth.

PART A – MATHEMATICS

1. If S is the set of distinct values of 'b' for which the following system of linear equations

$$x + y + z = 1$$
$$x + ay + z = 1$$
$$ax + by + z = 0$$

has no solution, then S is :

(1) an empty set

(2) an infinite set

(3) a finite set containing two or more elements

(4) a singleton

2. The following statement $(p \rightarrow q) \rightarrow [(\sim p \rightarrow q) \rightarrow q]$ is :

(1) a tautology

(2) equivalent to $\sim p \rightarrow q$

(3) equivalent to $p \rightarrow \sim q$

(4) a fallacy

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

(1) $-\frac{3}{5}$

(2) $\frac{1}{3}$

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

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

4. For three events A, B and C,

P(Exactly one of A or B occurs)

= P(Exactly one of B or C occurs)

= P(Exactly one of C or A occurs) = $\frac{1}{4}$ and

P(All the three events occur simultaneously) = $\frac{1}{16}$.

Then the probability that at least one of the events occurs, is :

(1) $\frac{7}{32}$

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

(3) $\frac{7}{64}$

(4) $\frac{3}{16}$

5. Let ω be a complex number such that $2\omega + 1 = z$ where $z = \sqrt{-3}$. If

$$\begin{vmatrix} 1 & 1 & 1 \\ 1 & -\omega^2 - 1 & \omega^2 \\ 1 & \omega^2 & \omega^7 \end{vmatrix} = 3k,$$

then k is equal to :

(1) $-z$

(2) z

(3) -1

(4) 1

SPACE FOR ROUGH WORK