केन्द्रीय माध्यमिक शिक्षा बोर्ड

(मानव संसाधन विकास मंत्रालय, भारत सरकार, के अधीन एक स्वायत्त संगठन)

शिक्षा सदन, 17, इन्सटिट्यूशनल क्षेत्र, राउज एवेन्यु, दिल्ली-110002.

CENTRAL BOARD OF SECONDARY EDUCATION

(An Autonomous Organization under the Union Ministry of Human Resource Development, Govt. of India)
"Shiksha Sadan", 17, Institutional Area, Rouse Avenue, Delhi-110002

CBSE/DIR(TRG)/PSA/2012/

Dated: 01.08.2012
Circular No. Acad-41/2012

All the Heads of Institutions
Affiliated to CBSE

Subject : Initiation of Problem Solving Assessment (PSA) for Class XI in January 2013 w.e.f. 2012-2013.

Dear Principal,

It is a widely acknowledged fact that research and analytical skills, ability to apply basic concepts of different subjects, solve application based problems in Mathematics and Science, comprehend and analyse written texts and effective communication are the skills which ensure success in higher studies and professional areas. These dimensions of 21st Century life skills will greatly assist learners in acquiring higher order thinking skills such as Problem Solving and Decision Making.

It is in this connection that the Board is planning to initiate a `**Problem Solving Assessment'** **(CBSE-PSA)** for students of Class XI from the second term of this session 2012-13.
The features of the `Problem Solving Assessment' (CBSE-PSA) are as follows: -

1. It will be compulsory for all students of Class XI and carry 90 marks. There will be 60 items of MCQ type.

2. There is no specific syllabus for PSA. It will assess the following areas:-

   - **Quantitative Reasoning**
   - **Qualitative Reasoning**
   - **Language Conventions**

3. The items will incorporate aspects of 21st Century Skills (***Creative Thinking, Decision Making, Critical Thinking, Problem Solving, and Communication***) that lead to success in University studies. They would be assessing student's ability to process, interpret and use information rather than assessing student's prior subject matter knowledge.

4. The Assessment in language will contain items that will assess grammar, usage, vocabulary in context and passage-completion.

5. The items in **Problem Solving Assessment'** (CBSE-PSA) will be designed in such a way so as to improve generic and the higher order thinking skills. This will also result in improving scores within the core school subjects.

6. All items will be prepared in Hindi and English.

7. The `**Problem Solving Assessment'** (CBSE-PSA) will be done during the month of January – February 2013 for students of Class XI.

8. The Class XI students will get a certificate on the `Problem Solving Assessment' (CBSE-PSA).

9. There will be no separate time tables or periods for teaching or practice of PSA in schools.

10. The quantitative domain of the CBSE – PSA would make comparatively modest demand on mathematical knowledge but would emphasize logical and numerical reasoning and use of basic mathematical knowledge.

Examples of test items and the Format of the Assessment that might be used in the Problem Solving Assessment (CBSE-PSA) are attached in the Annexure `A' & 'B' respectively to this Circular.

Registration for this Assessment will be done separately by the Board and detailed circular will be issued before the start of the second term i.e. September 2012.

You are requested to disseminate this information to all concerned.

With Regards,

(VINEET JOSHI)
CHAIRMAN

Encl : 1. Annexure-A
　　　　2. Annexure-B

Copy to the respective Heads of Directorates, Organizations, and Institutions as indicated below with a request to disseminate the information to all the schools under their jurisdiction:

1. The Commissioner, Kendriya Vidyalaya Sangathan, 18-Institutional Area, Shaheed Jeet Singh Marg, New Delhi- 110016.
2. The Commissioner, Navodaya Vidayalaya Samiti, A-28, Kailash Colony, New Delhi.
3. The Director of Education, Directorate of Education, Govt. of NCT of Delhi, Old Secretariat, Delhi- 54.
4. The Director of Public Instructions (Schools), Union Territory Secretariat, Sector-9, Chandigarh- 160017.
5. The Director of Education, Govt. of Sikkim, Gangtok, Sikkim- 737101.
6. The Director of School Education, Govt. of Arunachal Pradesh, Itanagar-791111
7. The Director of Education, Govt. of A&N Islands, Port Blair- 744101.
8. The Director of Education, S.I.E., CBSE Cell, VIP Road, Junglee Ghat, P.O. 744103, A&N Islands.
9. The Secretary, Central Tibetan School Administration, ESS ESS Plaza, Community Centre, Sector 3, Rohini, Delhi- 110085
10. All the Regional Officers of CBSE with the request to send this circular to all the Heads of the affiliated schools of the Board in their respective regions.
11. The Joint Director, CBSE, Rouse Avenue, New Delhi.
12. The Education Officers/ AEOs of the Academic Branch, CBSE.
13. The Research Officer (T) with the request to put this circular on the CBSE Academic website.
14. The Library and Information Officer, CBSE.
15. E.O. to Chairman, CBSE
16. DO/ PA to Secretary, CBSE
17. PA to CE, CBSE
18. PA to Director (Acad.)
19. PA to HOD (AIEEE)
20. PRO, CBSE

Examples for Problem Solving Assessment – Class XI

I. Example: Quantitative Reasoning

Q 1. Geeta has 16 beans in her pocket. She has 8 red ones, 4 green ones, and 4 blue ones. What is the minimum number of beans she must take out of her pocket to ensure that she has one of each colour?
A. 4
B. 8
C. 12
D. 13
E. 16

Considering the following representation answer question numbers 2 ,3 and 4
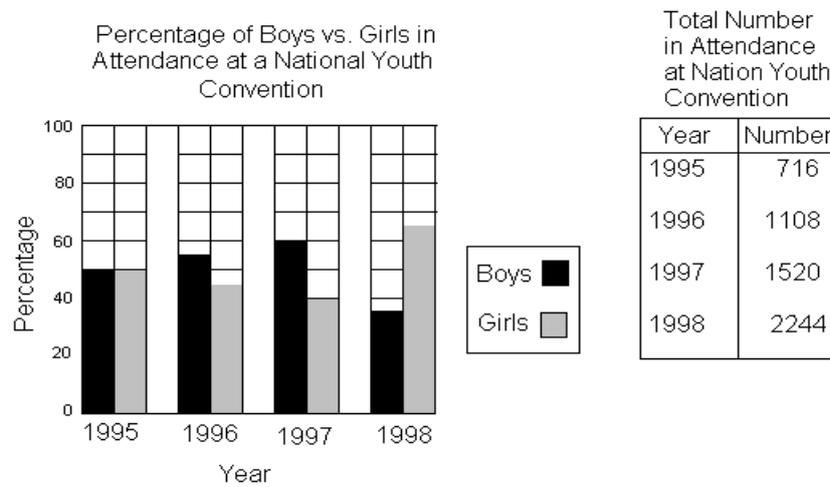
Q 2. How many boys attended the 1995 convention?

A. 358
B. 390
C. 407
D. 540
E. 716

Q 3. Which year did the same number of boys and girls attend the conference?

A. 1995
B. 1996
C. 1997
D. 1998
E. None

Q 4. Which two years did the least number of boys attend the convention?
A. 1995 and 1996
B. 1995 and 1998
C. 1996 and 1997
D. 1997 and 1994
E. 1997 and 1998

Q5. A person on Earth has a mass of 100 kg.
What would their mass be on the moon?

(A) 100 kg
(B) Less than 100 kg
(C) More than 100 kg
(D) This cannot be predicted.

Q6. An aeroplane's mass will decrease during a flight as it uses fuel in its engine.

Which statement describes the speed of the aeroplane during the flight if the force from the engine remains constant?

(A) The speed will increase.

(B) The speed will decrease.

(C) The speed will remain constant.

(D) The speed will decrease, then increase.

Questions 7 and 8 refer to the following information:
The plates in a car number plate scheme must have six characters which can be the letters A to Z or the numerals 0 to 9. The first four characters of a plate in this scheme must be letters. An example of an allowed plate is shown below.

AJAY01
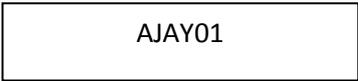
Q 7   Which one of the following number plates would be allowed by this scheme?

A | SHALINI | C | MANOJ77 |

B | VIJAY1 | D | AVI310 |

Q 8   If Mr. Roy wanted to buy all of the number plates in this scheme that commenced with MRROY, how many would he would he have to buy?

A	10		C	36
B	26		D	260

Q9   When a wooden beam is used to span a space, its own weight will cause a sag, or deflection, in the middle.
The graph below shows deflection for beams of two types of timber for different spans.
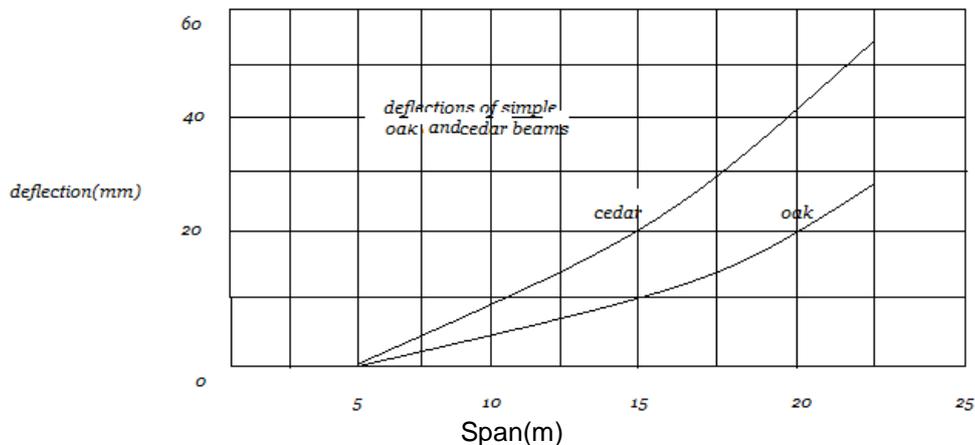
A cedar beam will deflect about 15 mm more than an oak beam for a span of

A	7.5 m		C	20 m
B	17.5 m		D	30 m

Questions 10 and 11 refer to the following information:
Chocolate truffles cost Rs.700 per kg for the first 5 kg and Rs.600 per kg for any excess of 5 kg. To compute the cost of any given amount of truffles, a program has been written as shown. Unfortunately, some of the steps are out of order. Only steps a and g are in their correct positions.

a. If the amount is over 5 kg, skip the next two statements
b. Multiply the weight in kg by (600)
c. Multiply the weight in kg by (700)
d. Add 3500
e. Reduce the weight by 5 kg
f. Skip the next 3 statements
g. Write the result, which is the price in Rupees.

Q10. In correct order, the steps of the program should be

A	a,c,f,b,e,d,g.	C	a,c,f,e,b,d,g
B	a,c,d,b,f,e,g	D	a,c,e,b,f,d,g

Q11. Suppose the truffles cost Rs.700 per kg for the first 8 kg, then Rs.600 per kg for any amount in excess of 8 kg.
Which one of the following lists every step in the program that needs to be altered?

A.	a	C	a,d and e
B	a and c	D	a,c and d.

Example: Reasoning in a Science Context

In 1949, a study of heart disease included 5,137 adults: 2,292 men and 2,845 women. All the individuals were 49 to 70 years of age, and none showed any signs of coronary artery disease. After 14-16 years of careful follow-up, it was found that:

I. 151 men and 37 women showed evidence of coronary artery disease that would account for a heart attack.
II. 102 men and 18 women died of coronary artery disease before they reached the age of 65.
III. 58 percent of the men and 39 percent of the women died within one hour of having a heart attack.
IV. For both men and women, sudden death was more likely if they were under age 55 at the time of the attack.
V. Not all heart attacks produce symptoms. A considerable number of men and women had a myocardial infarction (heart muscle damage) without knowing it. Of those who suffered such "silent coronaries"; 22 percent of the men and 35 percent of the women did not know muscle damage had occurred.

1. In the design of this study, the researchers made sure that

A. some individuals had coronary artery disease
B. some individuals were in their thirties
C. the number of men and women was equal
D. all participants were adults

2. As explained in the study, a person who has a "silent coronary

A. is unaware of any heart attack symptoms
B. does not scream in pain while having a heart attack
C. shows no evidence of heart muscle damage
D. always dies of a myocardial infarction

3. A woman who is 53 years old has a heart attack. Compared with a man, she is more likely to

A. die of coronary artery disease before age 65
B. have a "silent coronary"
C. die within an hour of the attack
D. die as the result of a heart attack after age 65

4. Which conclusion is consistent with the results of the study?

A. Chances of death within one hour of a heart attack are greater for women than men.
B. Chances of death from coronary artery disease are less for men than women.
C. Evidence of coronary artery disease is equal among men and women.
D. Sudden death is more likely for both men and women if they are under age 55 at the time of the attack.

5. Based on the results of this experiment, of the people who died of coronary artery disease before age 65

A. 18 percent were women
B. 20 percent were women
C. 85 percent were men
D. 102 percent were men

6. A group of 1000 men and 1200 women between the ages of 50 and 65 are to be studied for coronary artery disease. Based on the original study, which of the following results could be predicted most reliably?

A. Eight (8) women will die of coronary heart disease after they reach age 65.
B. Sixteen (16) women will show significant evidence of coronary artery disease.
C. Forty-four (44) men will die of coronary artery disease after they reach age 65.
D. Sixty-five (65) men will show no significant evidence of coronary artery disease.

LANGUAGE CONVENTIONS

Q1. 'delivery '(diliv'∂rē) *n.*
1. The act of saving or rescuing.
2. Something that is handed over.
3. The act or manner of throwing or striking.
4. A manner of performing, speaking or singing.
Which definition best fits the word *delivery* as it is used in the sentence below?
The delivery of the letter was delayed because the postman had misread the address.

    A. 1
    B. 2
    C. 3
    D. 4

Q2.   Ajeet is a better swimmer than Amar.

In which sentence does the word *better* mean the same thing as in the sentence above?
    A. Can you think of a better word?
    B. Next year I will better my results.
    C. Some things better left unsaid.
    D. The task took the better part of a day.

PSA – Class XI - Format

Test Context Domain/ Item Type	Target No. per Test Form		
	No. of Items	No. of Passages	Total No. of Items
Qualitative			
• Stand-alone MCQs	6		**6**
• Passage-based MCQs	6	2	**12**
SUB TOTAL			*18*
Quantitative			
• Stand-alone MCQs	10		**10**
• Passage-based MCQs	4	2	**8**
SUB TOTAL			*18*
Language Conventions			
• Grammar & Usage MCQs	8		**8**
• Vocabulary in Context MCQs	8		**8**
• Passage-completion MCQs	8		**8**
SUB TOTAL			*24*
TOTAL			**60**