

CBSE

Model Answer Sheet 2014

केन्द्रीय माध्यमिक शिक्षा बोर्ड
Central Board of Secondary Education

(परीक्षार्थी भरे To be filled in by the candidate)

परीक्षार्थी प्रश्न-पत्र के ऊपर लिखे कोड को दक्षिण दिशा में लिखें
Candidate should write code no. as written on the top of the question paper in this box → 31/1

अतिरिक्त उत्तर-पुस्तिका (ओं) की संख्या
No. of supplementary answer-book (s) used → Nil

परीक्षा का नाम Name of the examination AISSE 2014

कक्षा Class X

विषय Subject SCIENCE - THEORY 086

परीक्षा का दिन एवं तिथि
Day & Date of the Examination MONDAY MARCH 10

उत्तर देने का माध्यम Medium of answering the paper ENGLISH

किसी शारीरिक अक्षमता से प्रभावित हो तो सम्बन्धित वर्ग में ✓ का निशान लगाये

B = दृष्टिहीन, D = मूक एवं बधिर, H = शारीरिक रूप से विकलांग, S = स्फस्टिक, C = डिस्लेक्सिक
If Physically challenged, tick the category
B=Blind, D= Deaf & Dumb, H= Physically Handicapped, S= Spastic, C=Dyslexic

क्या लेखन-लिपिक उपलब्ध करवाया गया हाँ / नहीं
Whether writer provided Yes / No.

प्रमाणित किया जाता है कि मैंने/हमने इस उत्तर-पुस्तिका का मूल्यांकन प्रश्न पत्र के समुचित सेट के अनुसार किया है।
Certified that I / we have evaluated this answer-book according to the correct set of question paper.

प्रथम परीक्षक के हस्ताक्षर व संख्या
Signature & Number of First Examiner KANCHANA E0661315 Kanchana

द्वितीय परीक्षक के हस्ताक्षर व संख्या
Signature & Number of Second Examiner Sanita H E0750603
RANJINI K. E0653922 Rajni

जहाँ पर सामूहिक अंकन की व्यवस्था हो वहाँ सभी परीक्षकों के लिए हस्ताक्षर करना अनिवार्य है।
All the Examiners are required to sign where there is a provision of team marking

प्रथम समन्वयकर्ता के हस्ताक्षर व संख्या
Signature & Number of First Co-ordinator Me G E0751419

द्वितीय समन्वयकर्ता के हस्ताक्षर व संख्या
Signature & Number of Second Co-ordinator

मुख्य परीक्षक के हस्ताक्षर व संख्या, यदि जाँच की हो
Signature & Number of Head Examiner, if checked AE 08614

SECTION -A

1. उत्तर
2. उत्तर
- अथ
3. उत्तर
4. उत्तर
5. उत्तर
- न हो
6. उत्तर
- उत्तर
- तक
7. अपने
8. पूरे प्र
9. यदि
- उत्तर
- पर दि
- हेवल

1. Elements belonging to the first group are:
 - * Metals [Alkali]
 - * Have valency 1

2. A gene is the functional unit of DNA, with a specific biological function. One gene is responsible for the synthesis of one protein.

3. Old newspapers can be collected and sent to factories to be recycled. Plastic and glass bottles/jars can be reused to store pickles and other food materials.

4.

Sperms	Egg cells
* Male gamete	Female gamete
* Small and motile	Large and non motile
* Contains X or Y chromosomes	Contains food stores.
Main difference: Contains X or Y chromosomes	Contains only X chromosome.

5.

Sperms	Egg cells
* Male gamete	Female gamete
* Small and motile	Large and non motile
* Contains X or Y chromosomes	Contains food stores.
Main difference: Contains X or Y chromosomes	Contains only X chromosome.

Since female gamete always contains X chromosome, the sex of the child is independent of mother's genes. The chromosome in the male gamete/sperm determines the sex of the child.
[if its X, child will be female, if its Y child will be male]

5. when the object is placed between pole and focus of concave mirror, magnified, virtual, erect image will be formed behind the mirror. [Case I]

when the object is placed between ~~between~~ centre of curvature and ~~focus~~ focus of the concave mirror, enlarged, real, inverted image is formed on a screen. [Case II]

Real Image [Case II]	Virtual Image [Case I]
Can be obtained on screen	Cannot be obtained on screen
Inverted	Erect

6. Decomposers are micro organisms, especially bacteria & fungi, that break down waste and dead remains of organisms. They convert complex organic substances into simple inorganic molecules, which go into the soil and are once again taken up by plants.

- * Decomposers ensure the cyclic movement of matter in nature.
- * They prevent pollution and make sure that the earth is not covered with organic waste.

7. Sustainable management encourages all forms of growth that are needed to meet basic human needs, while conserving natural resources for the future generations. It is necessary because, our natural resources are exhaustible, limited and non renewable.

Our resources are being over exploited by the growing population and there is no equitable distribution of resources, as a handful of rich and powerful people are exploiting them to the hilt for short term benefits. So it is necessary.

I would suggest 'reuse', because in this practice no energy is wasted, and segregation of wastes is not necessary. By practising 'reuse' strategy we are

also 'reducing' our consumption of resources.

8. Homologous series are a series of carbon compounds with regularly varying chain lengths and the same functional group. Adjacent compounds differ by CH_2 unit and 14u molecular mass.
 $\text{CH}_3\text{-CHO}$, $\text{CH}_3\text{CH}_2\text{-CHO}$ are two consecutive members of homologous series of aldehydes.

- i The carbon chain ^{length} determines physical properties.
- ii Functional group determines chemical properties.

9. i) $\text{C}_2\text{H}_4\text{O}_2 = \text{CH}_3\text{-COOH}$ - ethanoic acid
ii) $\text{C}_2\text{H}_5\text{OH}$ - ethanol
iii) X is $\text{CH}_3\text{COOC}_2\text{H}_5$ - ethyl acetate [ethyl ethanoate - ester]

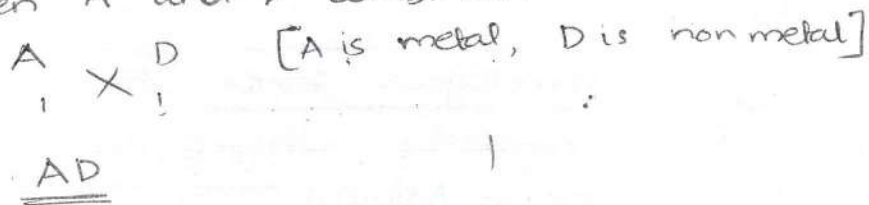
10. A, B, C and D belongs to Period 3.

Electronic configuration:

A
K L M
2 8 1
Atomic no. 11
valency : 1

D
K L M
2 8 7
Atomic no. 17
valency : 1

when A and D combines:



11.

i. E

ii. D

iii. B

iv. D is bigger in size than E, because the net nuclear charge in E is higher, so the shells are closely held together than in D.

v. C and F belongs to Inert Gases / Zero Group elements.

12. Planaria ~~has the~~ is a fully differentiated multi cellular organism which has the ability to grow into a new individual if it is cut up or broken into pieces. Each piece grows into a new individual. This is due to the regenerative cells which are present in its body. These cells grow, ~~and~~ proliferate and gives rise to a mass.

of cells. From this mass of cells different types of and tissues will develop. This process takes place in an organized sequence called development.

This process is different from reproduction as most organisms would not depend on being cut up in order to reproduce.

-
13. Placenta is a tissue made of blood that develops around the growing embryo in the uterus.
- * The placenta has blood spaces on the mother's side and finger like projections called villi on the embryo's side.
 - * The villi are richly supplied with blood vessels.
 - * The nutrients and food from the mother's blood reaches the embryo through the villi which has a large surface area.
 - * Wastes generated by the embryo are absorbed by the placenta and released into the mother's blood.
 - * Placenta is necessary for the normal and healthy development of the embryo.
-

14. Certain traits cannot be passed on to the next generation. Such traits develop through experiences during the lifetime of an individual. They do not make any changes in the DNA or germ plasma. They make changes in only the non reproductive cells of the body. They are non inheritable.

For eg: ~~Rohan knows grew up in Kerala, so he speaks Malayalam~~

For eg: Rohan knows to play the guitar because he went for guitar classes for a few years.

But his son doesn't know to play the guitar because he hasn't gone for training, even though his father can.

Eg: A group of beetles are healthy and well developed due to availability of food resources.

However its progeny lived during a famine, where very little food was available, so they were thin.

Even though parent population was healthy, the progeny was not, because of environmental factors.

* They are called acquired traits.

15. In the ~~sexual~~ sexual mode of reproduction, both the parent contribute an equal amount of genetic material to the child. The DNA of the child is influenced by the DNA of the parents. So each trait contains two versions in the child: maternal version and paternal version. However which trait is expressed, depends on the parentage.

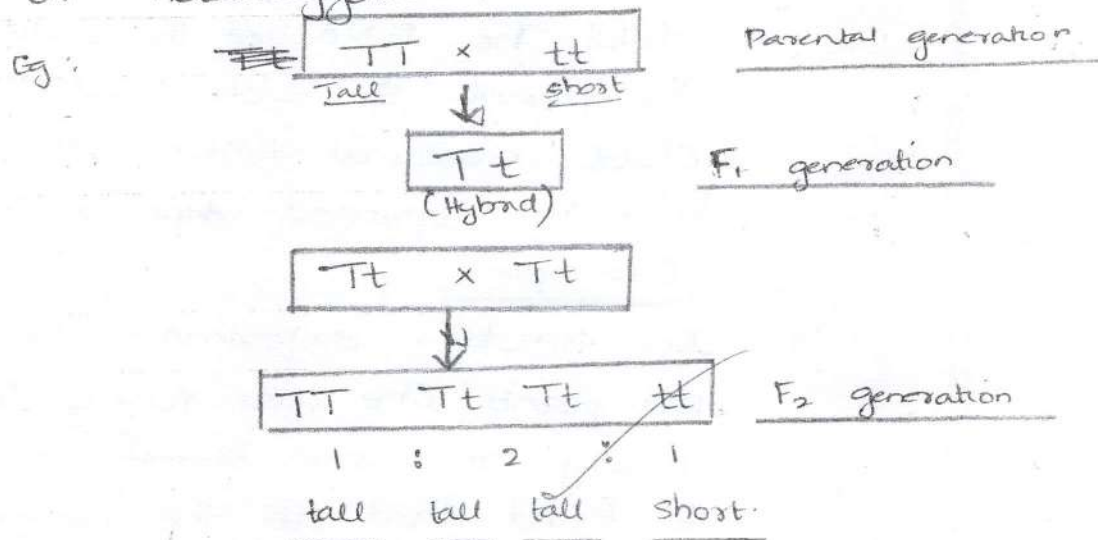
Example

(2) In Mendel's experiment, he cross bred two pure lying pea plants. One was purely dominant ~~to~~ tall and the other purely recessive ~~to~~ short.

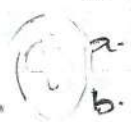
He found that all the progeny were tall. No one was ~~to~~ medium or short. So he supposed that may be only tallness trait was inherited.

But when he cross bred two plants of F_1 generation, it was found that 75% were tall and 25% short. Out of this 25% was pure dominant tall, 50% were hybrids and 25% pure recessive short. So he understood that both traits were inherited but only one was expressed in each plant. So which trait expresses itself

depends on whether the versions are dominant, recessive or heterozygous.



16.



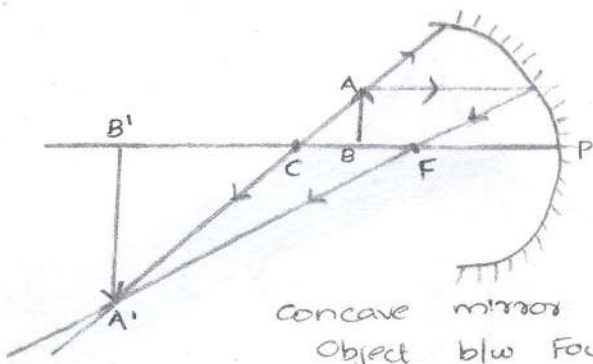
a. Concave mirror. ✓

b. $v = -60\text{cm}$ $u = -15\text{cm}$

$$m = \frac{-v}{u} = \frac{60}{-15} = -4 \quad \checkmark$$

c. Distance b/w object and image = $60 - 15 = 45\text{cm}$. ✓

d.



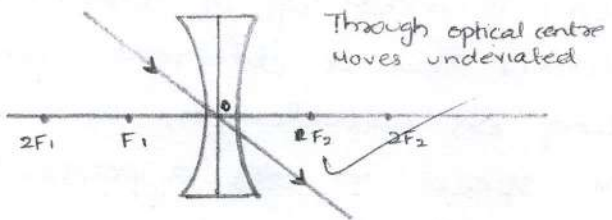
Concave mirror

Object b/w Focus & centre of curvature

Image beyond C

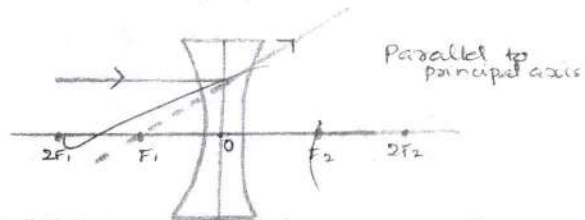
Inverted, real, enlarged.

17



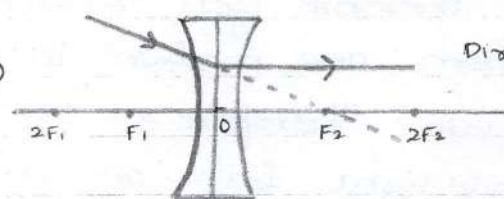
Through optical centre
moves undeviated

(ii)



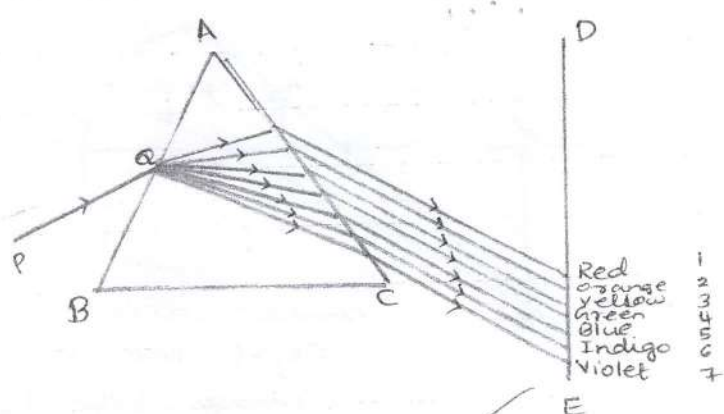
Parallel to
principal axis

(iii)



Directed towards focus.

18.



i Dispersion.

White light is made up of different colours.

Each colour has a different wavelength.

Depending on wavelength, each color travels with a different speed in ~~at~~ a particular media.

Each colour therefore gets refracted by different amounts on going from one medium to another and follows a different path. Therefore a band of several colours form when white light falls on a prism.

(ii) Rainbow.

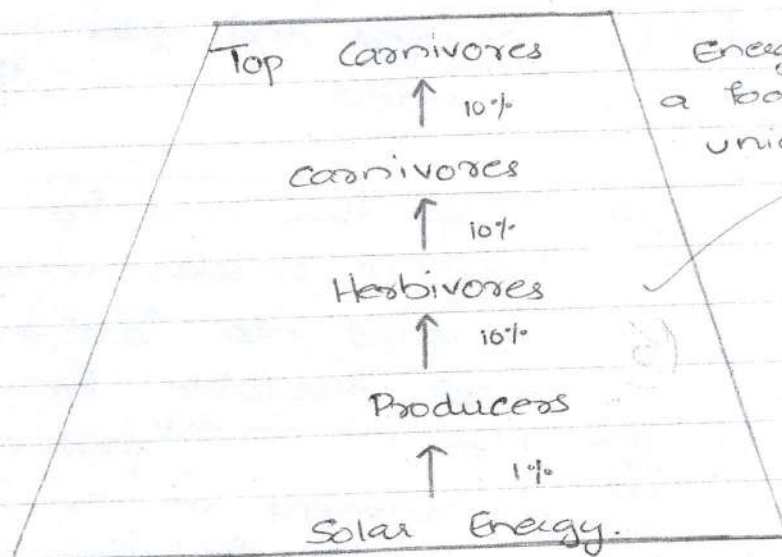
iii White light is made up of seven colours. Red, Orange, Yellow, Green, Blue, Indigo and violet. Red has longest wavelength and is least deviated and violet has shortest wavelength and is most deviated.

iv. Energy flow in a food chain is unidirectional.

Only 1% of solar energy falling on leaves of producers get converted into food energy through photosynthesis, and is made available for next level of consumers.

After consumers eat producers a lot of energy is lost to the environment in the form of heat. Energy is ^{also} used by the consumer for digestion, growth, reproduction and other activities. Only 10% of energy is turned into its own body and made available for the next level of consumers. [10% law] Once energy is taken up by producers from solar energy it cannot be reverted back into solar energy. Once energy enters a trophic level, it is then not available ~~to~~ ^{for} the previous trophic level. ~~So~~ So little energy is available after every trophic level, and the energy can only go to

a higher consumer and not previous consumer.



Energy flow in a food chain is unidirectional.

Sometimes pesticides and other chemicals enter a food chain unknowingly. This is called biological magnification. Since they are non biodegradable, they will remain in the body of the organism and pass on to the next trophic level. Since human beings occupy the top position in any food chain, highest concentration of chemicals

are in us.

Pesticides are widely used in crop fields. Due to rainfall or excessive irrigation, they get washed into water bodies. The aquatic organisms take up the pesticides. Then when we eat these aquatic organisms and the crops grown in such crop fields pesticides enter our body unknowingly.

20. Carbon cannot gain or lose electrons because: ^{Carbon's atomic no. is 6 and it has 4 electrons in valence shell.}

(3) * If carbon were to lose 4 electrons, it would become C^{4+} cation. Then 6 protons would be left holding on to just 2 electrons.

* If carbon were to gain 4 electrons and become C^{4-} anion, the 6 protons would have to hold on to 10 electrons i.e. 4 extra electrons. ~~large amounts of energy~~

Large amounts of energy is required to gain or lose 4 electrons. So C atom cannot gain/lose electrons to become stable.

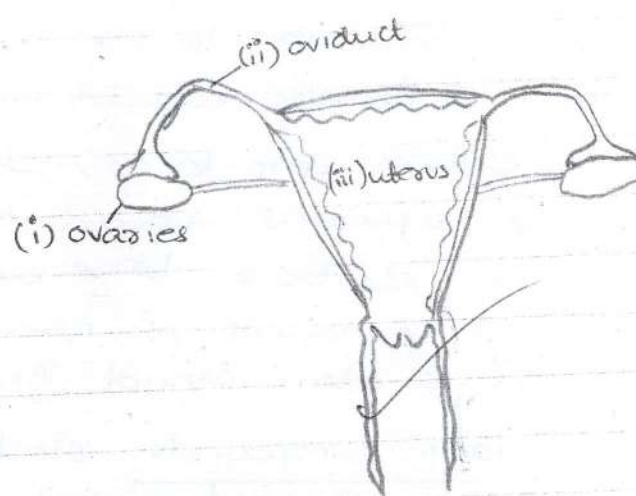
In ionic compounds: electrovalent bonds are formed which gives rise to charged particles. [by losing/gaining electrons between atoms]

In carbon compounds: covalent compounds are formed where electron pairs are shared by valence shells. They can be: single

bond, double bond or triple bond.

In carbon compounds electrons are not lost or gained. So charged particles/ions are not released. Therefore carbon compounds ~~cannot~~ are poor conductors of electricity.

21
a.



(i) Eggs develop in ovaries.

(ii) Fertilization takes place in oviduct.

(iii) Fertilized egg implants on the wall of the uterus.

Female reproductive system.

b.

- (i) In order to receive the fertilized egg, the wall of the ~~uterus~~ ^{uterus} thickens and becomes spongy. ~~They become filled.~~
The wall is richly supplied with blood vessels to provide nutrition to the zygote once it gets fertilized.
- (ii) If zygote is not formed, the egg lives in the uterus for one day. After that, the blood vessels and spongy materials on the wall of uterus sheds itself and comes out through the vagina as blood and mucus. This is called menstruation.

22. a.

- A - Pollen grain ✓
B - Pollen tube ✓
C - Ovary ✓
D - Egg cells inside ovules ✓

- b. Pollination refers to the transfer of pollen grains from the anther to the stigma of the carpel. ^{through agents like air, animals}
Pollination is necessary, ~~so~~ so that the male gamete reaches the egg cell and gets fertilized. ✓

c. In flowers fertilization takes place inside the ovary. when the pollen grain falls on the stigma through pollination, it develops a pollen tube and travels along the style and enters the ovary. The male gamete enters ovule through the pollen tube and fuses with the egg cells to form a zygote.

(i) ovule develops into seed. ✓ 1/2

(ii) ovary develops into fruit. ✓ 1/2

23
(i) Optical centre - The centre most part inside the lens. Light ray moves undeviated through this spot. ✓

(ii) Centres of curvature - The ~~sa~~ two refracting surfaces of the lens forms part of two hollow spheres. The centres of these spheres are the centres of curvature. ✓

(iii) Principal axis - Imaginary line joining the centres of curvature with the optical centre and extended on both sides. ✓

iv. The refracting surface of lens forms part of surface of at least one hollow sphere. The aperture is the circular outline of the lens.

v. Aperture - It is the diameter of the circular outline of the refracting surface.

vi. Principal focus - Point on the principal axis through which the refracted ray passes or appear to pass, when the incident ray is parallel to principal axis.

vii. Focal length - Distance between the optical centre and the principal focus.

b. ~~f = 12 cm~~

$$f = 12 \text{ cm}$$

$$v = 48 \text{ cm}$$

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u} = \frac{1}{12} = \frac{1}{48} - \frac{1}{u}$$

$$\frac{1}{u} = \frac{1}{48} - \frac{1}{12}$$

$$\frac{1-u}{48} = \frac{-3}{48}$$

$$u = \frac{-48}{3} = \underline{\underline{-16 \text{ cm}}}$$

24(a) The iris and pupil control the amount of light entering our eye.

The iris is a dark muscular diaphragm behind the cornea with a hole in its centre called the pupil.

The iris contracts or relax in order to enlarge or make small the pupil. Accordingly the pupil regulates the amount of light entering our eye.

When pupil is enlarged a large amount of light enters our eye. When it's small, a smaller amount of light enters our eye.

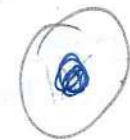
In bright areas, the pupil becomes small and in dim rooms the pupil enlarges.

b. Retina is the light sensitive screen on the back of the eye ball. It is the thin membrane on which the images are formed. ~~It~~ It contains light sensitive cells called rods and cones which get activated on illumination. These cells convert light energy into electrical impulses which are carried to brain via the optic nerves.

c. There are around 4.5 million corneally blind people, out of which 60% are below 12 years of age. All these people can be cured by a corneal transplantation. We should organize groups to motivate community members to donate their eyes after death, because of such a situation. A pair of eyes can give sight to two corneally blind people. The community must be made aware of the fact that any person, of any age or sex, who doesn't have any communicable disease, can donate their eyes. Such groups should motivate people to register in eye banks, who will

remove the eyes, once the person is dead.
 People should be educated about this ~~to~~ at a
 young age, so that they will be motivated to donate
 not just eyes, but other organs also like kidneys,
 liver, heart and lungs after ~~their~~ death. Such noble
 acts can better the lives of so many disabled.

SECTION B



- | | | |
|----|---|---|
| 25 | B | ✓ |
| 26 | D | ✓ |
| 27 | C | ✓ |
| 28 | D | ✓ |
| 29 | A | ✓ |
| 30 | A | ✓ |
| 31 | C | ✓ |
| 32 | A | ✓ |
| 33 | C | ✓ |

34 B ✓
35 D ✓
36 C ✓
37 D ✓
38 B ✓
39 C ✓
40 C ✓
41 D ✓
42 A ✓



Kanchana
KANCHANA

EO 661315

PRABHAKARAN

0903

परीक्षार्थियों के लिए निर्देश

1. उत्तर-पुस्तिका लेते ही इसके पृष्ठ गिनकर देख लें कि इसमें कवर सहित 32 पृष्ठ हैं एवं सही क्रम में हैं।
2. उत्तर-पुस्तिका, पूरक उत्तर-पुस्तिका, ग्राफ पेपर, नक्शे आदि के ऊपर किसी भी स्थान पर (अन्तर अथवा बाहर) कोई विशेष चिह्न आदि न लगायें।
3. अपना अनुक्रमांक, नाम, विद्यालय का नाम व परीक्षा का स्थान किसी उत्तर में न लिखें।
4. अतिरिक्त उत्तर-पुस्तिका को क्रम संख्या उपस्थिति शीट पर लिखें।
5. उत्तर-पुस्तिका के प्रत्येक पृष्ठ के दोनों ओर तथा लाइन पर लिखें। बीच-बीच में पृष्ठ खरब ही खाली न छोड़कर अथवा अधिक चौड़ा हाशिया छोड़कर पृष्ठ नष्ट न करें।
6. उत्तर-पुस्तिका के पृष्ठों को मोड़ें या फाड़ें नहीं और बीच-बीच में खरब ही खाली न छोड़ें। इस उत्तर-पुस्तिका के भर जाने पर ही अतिरिक्त उत्तर-पुस्तिका मांगें और जब तक वह नहीं भर जाये तब तक अन्य अतिरिक्त उत्तर-पुस्तिका न मांगें।
7. अपने उत्तरों के आरम्भ में प्रश्न पत्र में दी हुई संख्या के अनुसार संख्या लिखें।
8. पूरे प्रश्न (अथवा प्रश्न के एक भाग) के समाप्त होने पर उत्तर के नीचे रेखा खींच दें।
9. यदि आपने ग्राफ पेपर, नक्शा अथवा अतिरिक्त उत्तर-पुस्तिका काम में ली हो तो उसे मुख्य उत्तर-पुस्तिका के साथ अच्छी प्रकार से नथी कर दें। परन्तु अपना अनुक्रमांक केवल मुख्य उत्तर-पुस्तिका पर दिये हुए स्थान पर ही लिखें। ग्राफ, नक्शे, अतिरिक्त उत्तर-पुस्तिका आदि पर अनुक्रमांक न लिखें। केवल काली-नीली व नीली स्पष्टी का ही प्रयोग करें।

अथवा कच्चे काम आदि के लिए संदधित पृष्ठ के दांयी ओर उचित हाशिया खींच लें बाद में उस को एक रेखा द्वारा काट दें।

उत्तर-पुस्तिका अपने सहायक निरीक्षक को दिये बिना परीक्षा खतम न छोड़ें।

हिंदी परीक्षा के दौरान, कोई परीक्षार्थी निम्नलिखित में से किसी भी हरकत में शामिल पाया जाता है तो यह मान लिया जाएगा कि परीक्षार्थी ने परीक्षाओं में अनुचित साधनों को अपनाना है और उसका परीक्षा परिणाम घोषित नहीं किया जाएगा। किन्तु उस पर अन्केवर मीन्स (यू.एफ.एम.) अंकित कर दिया जाएगा :-

- (क) यदि उसके पास संबंधित विषय की परीक्षा से सम्बन्ध कागज, पुस्तकें, नोट्स अथवा कोई अन्य सामग्री पायी गयी हो ;
- (ख) यदि वह प्रत्यक्ष अथवा अप्रत्यक्ष रूप से किसी प्रकार की सहायता प्रदान कर रहा हो अथवा प्राप्त कर रहा हो या ऐसा करने का प्रयास कर रहा हो ;
- (ग) यदि वह लिखने के लिए केन्द्र अधिकारक द्वारा दी गई उत्तर-पुस्तिका के अतिरिक्त किसी अन्य प्रकार की सामग्री में प्रश्न अथवा उत्तर लिख रहा हो ;
- (घ) यदि वह उत्तर-पुस्तिका अथवा पूरक उत्तर-पुस्तिका इत्यादि के पृष्ठ फाड़ रहा हो ;
- (ङ) यदि वह परीक्षा केन्द्र में परीक्षा के दौरान परीक्षा स्टाफ के अतिरिक्त किसी अन्य व्यक्ति से सम्पर्क करने अथवा पत्र व्यवहार कर रहा हो या ऐसा करने का प्रयास कर रहा हो ;
- (च) परीक्षा कक्ष से उत्तर-पुस्तिका बाहर ले जाने पर ;
- (छ) परीक्षा संबंधी कोई अन्य अवैधानीय तरीकों अथवा साधनों का प्रयोग करने अथवा ऐसा करने का प्रयास करने पर ;
- (ज) प्रश्न-पत्र अथवा उसका कुछ भाग बाहर भेजने अथवा उत्तर-पुस्तिका/पूरक उत्तर-पुस्तिका शीट अथवा इसका कुछ भाग बाहर भेजने पर ; और
- (झ) परीक्षाओं के आयोजन से सम्बन्ध किसी कर्मचारी अथवा किसी परीक्षार्थी को धमकी देने पर।

Instructions to Candidates

1. Make sure that the answer-book contains 32 pages and are properly serialised in number (including title page) as soon as you receive it.
2. DO NOT make any special sign or mark in or outside the answer-book, supplementary answer-book, graph-paper, map etc.
3. DO NOT write your roll no., name of your school or place of examination in any of your answers.
4. You must write the supplementary answer-book serial no. in the attendance sheet.
5. Write on each ruled line on both sides and do not waste pages by leaving a wider margin.
6. DO NOT tear out or fold the pages of the answer-book and do not leave any page blank unnecessarily. No supplementary answer-book (s) should be asked for unless this answer-book / the previous supplementary answer-book is finished.
7. Number your answers according to their numbers in the question paper.
8. Draw a line when a question (or a part thereof) is finished.
9. Securely tag your answer-book with supplementary answer-book (s), graph-paper, map etc. if used by you, but DO NOT write your Roll No. on the supplementary answer-book, graph-paper, map etc.
10. Use only blue-black or royal-blue ink.
11. For rough calculation etc., appropriate margin on the right-hand side of the page may be drawn. The rough calculations etc. should be crossed out afterwards.
12. DO NOT leave the examination hall without handing over the answer-book to the Asstt. Supdt.
13. If during the course of examination, a candidate is found indulging in any of the following, he/she shall be deemed to have used unfair means at the examinations, and as such his/her result shall not be declared but shall be marked as UNFAIR MEANS (U.F.M.) :-
(a) having in possession papers, books, notes or any other material or information relevant to the examination in the paper concerned ;
(b) giving or receiving assistance directly or indirectly of any kind or attempting to do so ;
(c) writing questions or answers on any material other than the answer-book given by the Centre Superintendent for writing answers ;
(d) tearing of any page of the answer-book or supplementary answer-book etc ;
(e) contacting or communicating or trying to do so with any person, other than the Examination Staff, during the examination time in the examination centre ;
(f) taking away the answer-book out of the examination hall/room ;
(g) using or attempting to use any other undesirable method or means in connection with the examination ;
(h) smuggling out Question Paper or its part or smuggling out answer-book/supplementary answer-sheet or part thereof ; and
(i) threatening any of the officials connected with the conduct of the examinations or threatening of any of the candidates.