



**Central Board of Secondary Education**

(An autonomous Organisation under the Union Ministry of Human Resource Development,  
Govt. of India)

**'Shiksha Sadan', 17-Rouse Avenue, New Delhi – 110 002**

**CBSE/EO(SD)/ 2011/**

**Dated:23.12.11  
Circular No. 91**

**All the Heads of Institutions  
Affiliated to the Board**

**Dear Principal,**

With reference to Circular No. 68/2011 dated 16.09.2011, you are already aware that in order to facilitate visually impaired candidates to take Science subjects at Senior Secondary Level, CBSE has decided to provide separate question papers in lieu of Practicals to visually impaired students, containing Multiple Choice Questions, based on practical content, in the subjects of Physics, Chemistry and Biology. You are also aware that this new scheme will be implemented for students of Class XI from 2012 March Examination and for students of Class XII from 2013 Board Examination.

In this regard, the guidelines for the question paper in Practicals for visually impaired students in the subjects of Physics, Chemistry and Biology alongwith the list of practicals and a Sample Question Paper is enclosed herewith for ready reference of teachers and students for the present batch of Class XI.

It may be reiterated here that this provision of alternate question paper in lieu of practicals at Sr. Secondary level for visually impaired students is given only for CBSE Board Examination. Students should also carefully refer to the requirements of the admitting Organization/College/University for further upward mobility in their academic career related to these subjects.

You are requested to disseminate this information to all concerned.

**Yours faithfully,**

**(Dr. Srijata Das)  
Education Officer**

**Copy to:**

1. The Commissioner, Kendriya Vidyalaya Sangathan, 18-Institutional Area, Shaheed Jeet Singh Marg, New Delhi-110 016.
2. The Commissioner, Navodaya Vidyalaya Samiti, A-28, Kailash Colony, New Delhi.
3. The Director of Education, Directorate of Education, Govt. of NCT of Delhi, Old Secretariat, Delhi-110 054.
4. The Director of Public Instructions (Schools), Union Territory Secretariat, Sector 9, Chandigarh-160 017.
5. The Director of Education, Govt. of Sikkim, Gangtok, Sikkim – 737 101.
6. The Director of School Education, Govt. of Arunachal Pradesh, Itanagar-791 111
7. The Director of Education, Govt. of A&N Islands, Port Blair-744 101.
8. The Secretary, Central Tibetan School Administration, ESSESS Plaza, Community Centre, Sector 3, Rohini, Delhi-110 085.
9. 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.
10. The Education Officers/AEOs of the Academic Branch, CBSE.
11. The Joint Secretary (IT) with the request to put this circular on the CBSE website.
12. The Library and Information Officer, CBSE
13. EO to Chairman, CBSE
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16. PA to Director (Acad.)
17. PA to HOD (AIEEE)
18. PA to HOD (Edusat)
19. PRO, CBSE

**(Dr. SRIJATA DAS)**  
**EDUCATION OFFICER**

# CHEMISTRY PRACTICALS Class XI

## **Guidelines for preparing question paper**

In lieu of the practical examination for regular students, visually impaired students will give written exam consisting of 25 MCQ's each of one mark and five marks will be provided for viva voce.

- The time duration for the written exam will be 1 hr 30 minute.
- Candidates are not required to submit any practical record file at the time of practical examination.
- Questions will be based upon the knowledge acquired in the laboratory and understanding of the concepts.
- Only the basic details of chemicals , apparatus and theory involved would be included in the MCQ's
- Some of the questions should be based on day to day life experiences.
- Quantitative calculations would be assessed in such a way that the student is able to do orally.

## Blue Print

S.No	Topic	No. of questions
1.	Basic laboratory Techniques	No question
2.	Characterization and Purification of chemical substances	04
3.	Experiments based on pH	03
4.	Chemical Equilibrium	03
5.	Quantitative Estimation	07
6.	Qualitative Analysis	08
	Total	25

### List of Practicals

#### 1. Characterization and Purification of Chemical Substances

Crystallization of an impure sample of any one of the following: alum, copper sulphate, benzoic acid.

#### 2. Experiments based on pH

Any one of the following experiments:

- Determination of pH of some solutions obtained from fruit juices, varied concentrations of acids, bases and salts using pH paper or universal indicator.
- Comparing the pH of solutions of strong and weak acids of same concentration.

#### 3. Chemical Equilibrium

One of the following experiments:

- Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either ions.
- Study the shift in equilibrium between  $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$  and chloride ions by changing the concentration of either of the ions.

#### 4. Quantitative estimation

- Using a chemical balance.
- Preparation of standard solution of oxalic acid.
- Determination of strength of a given solution of sodium hydroxide by titrating it against standard solution of oxalic acid.
- Preparation of standard solution of sodium carbonate.
- Determination of strength of a given solution of hydrochloride acid by titrating it against standard sodium carbonate solution.

#### 5. Qualitative Analysis

Determination of one anion and one cation in a given salt

**Cations** -  $\text{Pb}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{As}_3^+$   $\text{Al}_3^+$   $\text{Fe}_3^+$   $\text{Mn}_2^+$ ,  $\text{Ni}_2^+$ ,  $\text{Zn}_2^+$ ,  $\text{Co}_2^+$  $\text{Ca}_2^+$ ,  $\text{Sr}_2^+$ ,  $\text{Ba}_2^+$ ,  $\text{Mg}_2^+$ ,  $\text{NH}_4^+$

**Anions** -  $\text{CO}_3^{2-}$ ,  $\text{S}^{2-}$ ,  $\text{SO}_3^{2-}$ ,  $\text{SO}_4^{2-}$ ,  $\text{NO}^-_2$ ,  $\text{NO}^-_3$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ ,  $\text{PO}_3^{3-}$ ,  $\text{C}_2\text{O}_4^{2-}$ ,  $\text{C}_2\text{O}_4^{2-}$ ,  $\text{CH}_3\text{COO}^-$

**Sample Question Paper- CHEMISTRY**  
**PRACTICALS**  
**CLASS XI**

Q1. The given impure sample is purified by dissolving it in water, then filtering and heating the solution in a China dish till saturation followed by cooling to get the pure substance. This technique is called as:

- a) Separation
- b) Crystallisation
- c) Fractional Crystallisation
- d) Evaporation

Q2. We use concentrated sulphuric acid to determine the melting point of the organic compound because

- a) sulphuric acid is easily available in the laboratory.
- b) sulphuric acid is easy to handle
- c) sulphuric acid has low boiling point.
- d) it has high boiling point and is stable when heated.

Q3. Some of the liquid substances have very high boiling points because they have

- a) high molecular mass and strong intermolecular forces.
- b) low molecular mass and weak intermolecular forces.
- c) high molecular mass and weak intermolecular forces.
- d) low molecular mass and strong intermolecular forces.

Q4. "Purity" of a substance is best determined by

- a) melting point
- b) boiling point
- c) crystallization point
- d) freezing point

Q5. On adding ammonium chloride to ammonium hydroxide solution, pH of ammonium hydroxide solution will :

- a) increase
- b) decrease
- c) remain same
- d) none of these

Q6. There are four different solutions in four test tubes A, B, C and D. The pH value of these solutions are 12, 5, 7 and 13 respectively. Acid is present in:

- a) test tube A and B both.
- b) test tube B only
- c) test tube C and D only both
- d) test tube A and D both.

Q7. An unknown solution A is taken in the test tube whose pH value has been found to be 12.0. Another solution B is added to the solution A drop by drop. If the pH of the solution A changes to 5 after sometime, then the solution B is:

- a) water
- b) base
- c) acid
- d) salt Solution.

Q8. A complex is formed when HCl is added to a solution containing  $\text{CoCl}_2$ . The complex is:

- a)  $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$
- b)  $[\text{CoCl}_4]^{2-}$
- c)  $[\text{CoCl}_4]^{2+}$
- d)  $[\text{Co}(\text{H}_2\text{O})_6\text{Cl}_2]$

Q9. An equilibrium is attained when we mix 10 ml of 0.1 M cobalt nitrate solution and 10 ml of 0.1 hydrochloric acid. The colour of the solution at equilibrium is pink. What shall be added to the solution to shift the equilibrium to the right direction with the change in colour from pink to blue?

- a) water
- b) brine Solution
- c) hydrochloric acid
- d) nitric acid

Q10. The solution of the complex formed by mixing  $\text{FeCl}_3$  with KCNs is taken into four test tubes 1, 2, 3 & 4. Then water, Ferric chloride, sodium chloride and sodium sulphate solutions are added to the test tubes respectively. The colour of the solution becomes dark in the test tube:

- a) 1 and 4
- b) 2
- c) 1 and 3
- d) 4

Q11. The solution which cannot be considered as a primary standard solution is:

- a) Mohr's salt solution
- b) oxalic acid solution
- c) sodium hydroxide solution
- d) Sodium carbonate solution

Q12. The strength of oxalic acid in g/L if 20 ml of  $\frac{M}{10}$  sodium hydroxide is

10

used to neutralize 10 ml of oxalic acid solution will be

- a) 0.126 g/L
- b) 1.26 g/L
- c) 0.63 g/L
- d) 6.3 g/L

Q13. Following are the given steps of Acid-Base titration:

- (i) filling of burette or conical flask with acid or base.
- (ii) rinsing of burette or pipette
- (iii) titration
- (iv) addition of indicator to the solution in the conical flask.

The correct sequence of steps should be

- a) (i), (ii), (iii), (iv)
- b) (ii), (i), (iv), (iii)
- c) (iv), (iii), (i), (ii)
- d) (ii), (iii), (iv), (i)

Q14. During the titration of oxalic acid and sodium carbonate the indicator which is most suitable to use is:

- a) methyl orange
- b) phenolphthalein
- c) methyl orange and phenolphthalein
- d) methyl Red

Q15. In the titration of oxalic acid with sodium hydroxide, the colour of the solution changes from pink to colourless at the end. The ion which have more concentration in the conical flask is

- a)  $\text{H}_3\text{O}^+$
- b)  $\text{OH}^-$
- c)  $\text{C}_2\text{O}_4^{2-}$
- d)  $\text{Na}^+$

Q16. The quantity of oxalic acid needed to prepare 100 ml of M oxalic acid solution is

10

[Molecular wt. of oxalic acid is 126 u]

- a) 1.26 gm
- b) 63 gm
- c) 12.6 gm
- d) 6.3 gm

Q17. 20 ml of water is added to 20ml of M sodium carbonate solution in the conical

20

flask. The molarity of the solution obtained will be

- a)  $\frac{M}{10}$
- b)  $\frac{M}{20}$
- c)  $\frac{M}{30}$
- d)  $\frac{M}{40}$

Q18. On addition of ammonium chloride to ammonium hydroxide solution, pH of ammonium hydroxide will :

- a) increase due to decrease in  $\text{OH}^-$  ion
- b) decrease due to increase in  $\text{NH}_4^+$  ion
- c) remain same as if forms buffer solution
- d) decrease due to decrease in  $\text{OH}^-$  ion

Q19. Lead is included in Ist as well as IInd group of cation analysis because:

- a) lead Ion is insoluble in dil. HCl.
- b) lead does not give Ist group test easily.
- c) lead Chloride is sparingly soluble in dil. HCl.
- d) none of the above

Q20. Original solution is not prepared in conc.  $\text{HNO}_3$  or  $\text{H}_2\text{SO}_4$  because:

- a) they are strong acids
- b) they do not dissolve any salt
- c) they oxidize  $\text{H}_2\text{S}$  and form insoluble salts
- d) none of the above

Q21. Sodium carbonate cannot be used in place of ammonium carbonate for the identification of group V radicals. This is because:

- a) sodium Ions interfere in the detection of group V radicals
- b) concentration of carbonate ions is very low
- c) sodium will react with the acid radicals
- d) magnesium will be precipitated

Q22. Only group IInd and IV cations get precipitated as sulphides on passing  $\text{H}_2\text{S}$  gas through the solution. But on passing  $\text{H}_2\text{S}$  gas in acidic medium cations of only group II get precipitated due to:

- a) high solubility product of group IV sulphides
- b) high solubility product of group II sulphides
- c) low solubility product of group IV sulphides
- d) low solubility product of sulphides of group II

Q23. When an unknown salt is treated with dilute  $\text{H}_2\text{SO}_4$  solution, the gas liberated has the smell of rotten eggs which when passed through lead acetate solution turns black. The ion in the unknown salt is

- a) acetate Ion
- b) nitrite ion
- c) carbonate ion
- d) sulphide ion

Q24. The product formed by mixing the solution of potassium ferrocyanide with ferric chloride solution is:

- a) ferro - ferricyanide
- b) ferric - Ferro cyanide
- c) ferri -ferricyanide
- d) none

Q25. During Lassaigne's test for identification of nitrogen, sulphur and halogens in the organic compound, the formation of red coloured compound on addition of ferric chloride to Lassaigne's solution indicates the presence of:

- a) nitrogen only
- b) nitrogen and sulphur
- c) sulphur only
- d) chlorine only

## Answer Key

<b>Q.No.</b>	<b>Answer</b>	<b>Q.No.</b>	<b>Answer</b>
1	(b)	19.	(c)
2.	(d)	20.	(c)
3.	(a)	21.	(d)
4.	(a)	22.	(a)
5.	(b)	23.	(d)
6.	(b)	24.	(a)
7.	(c)	25.	(b)
8.	(b)		
9.	(c)		
10.	(b)		
11.	(c)		
12.	(a)		
13.	(b)		
14.	(a)		
15.	(a)		
16.	(a)		
17.	(d)		
18.	(c)		

**PHYSICS**  
**PRACTICALS – CLASS XI**  
**FOR VISUALLY IMPAIRED STUDENTS**

**Guidelines for Practical Question Paper**

1. There will be a MCQ based examination in lieu of the conventional Practical examination, for the visually impaired students.
2. The MCQ's will be based on the basic practical aspects and the Simple theory of only the **ten** practicals listed in the '**Syllabus**' for these students.
3. The special examination will be of 30 marks distributed as follows:

**25 MCQ's of 1 mark each: 25 marks**

**'Viva' , on the ten practicals listed in the syllabus: 05 marks**

**Total: 30 marks**

4. The examination will be of 90 minutes duration which time will include the time for reading the question paper.
5. Candidates are not required to submit any record, or note book, at the time of this examination.
6. The MCQ's would be designed in broad accordance with the following considerations:
  - (i) The MCQ's will check the student's familiarity, and basic understanding, of the construction, working and simple theory of the instruments/devices relevant to the experiments listed in the syllabus.
  - (ii) The MCQ's would require the students to do only such quantitative calculations that can be done (almost) orally.
  - (iii) The MCQ's based on, or related to, graphs would have the relevant data/details in such a form that makes it easy/straight forward to interpret the nature of the graph or to do the relevant calculations.
  - (iv) The MCQ's can also be based on some familiar daily life situations/devices. These would be related with the basic construction/theory of the instruments/devices used in the listed experiments.
  - (v) All the MCQ's would have four choices only ONE of which would be the correct/best choice.
7. Teachers will explain the basic details of the listed experiments to the students and help them develop the feeling of observation and interpretation through the 'other basic senses'
8. All the MCQ's, and the 'Viva' by the teachers, would be student friendly and in accordance with the special needs of these students.

**Design & Blue Print**

TIME: 90 minutes

M.M.25

- A. The 'Weightage', to the ten experiments, listed in the syllabus, would be as follows:

Expt. No.1 and 2	3 or 4 questions	3/ 4marks
Expt No.3 and 4	4 or 3 questions	4/3 marks
Expt No. 5	3 questions	3 marks
Expt No. 6	3 questions	3 marks

(The total number of questions, from the first 4 experiments would be 7, carrying a total of 7 marks)

Expt No. 7	3 questions	3 marks
Expt No. 8	3 questions	3 marks
Expt No. 9	3 questions	3 marks
Expt No. 10	3 questions	3 marks
<b>Total:</b>	<b>25 questions</b>	<b>25 marks</b>

B. The 'broad distribution' of the nature of MCQ's would be approximately as follows:  
(This distribution is only suggestive in nature)

(i)	Construction/Apparatus Related:	4 questions	4 marks
(ii)	Working/Procedure Related :	5 questions	5 marks
(iii)	(Simple) theory related :	5 questions	5 marks
(iv)	(Simple) quantitative/calculation related:	5 questions	5 marks
(v)	Graph related/graph based:	3 questions	3 marks
(vi)	Daily- life related/concept based :	3 questions	3 marks

**Total:      25 questions                      25**

**marks**

- C. All the MCQ's would have four choices only ONE of which would be the correct/best choice.  
The students would be required to identify this correct/best choice.
- D. All MCQ's would be of 1 mark each.

**BLUE PRINT**

S.No.	Experiment No.	Nature of Question						Total
		Construction/Apparatus related	Working/Procedure related	(Simple) Theory related	Simple quantitative/Calculation related	Graph related/Based	Daily life related/Concept Based	
1	1,2	1	1		1		1	4
2	3,4	1	1				1	3
3	5	1		1	1			3
4	6	1	1		1			3
5	7					1+1	1	3
6	8		1	1	1			3
7	9		1	1+1				3
8	10			1	1	1		3
TOTAL		4	5	5	5	3	3	25

## **LIST OF PRACTICALS**

1. To measure diameter of a small spherical/cylindrical body using vernier calipers.
2. To measure the internal diameter and depth of a given beaker/calorimeter using vernier calipers and hence find its volume.
3. To measure diameter of given wire using screw gauge.
4. To measure thickness of a given sheet using screw gauge.
5. To determine the mass of a given object using a beam balance.
6. To find the weight of given body using the parallelogram law of vectors.
7. Using a simple pendulum plot L-T and L-T<sup>2</sup> graphs. Hence find the effective length of second's pendulum using appropriate length values.
8. To find the force constant of given helical spring by plotting a graph between load and extension.
9. (i) To study the relation between frequency and length of a given wire under constant tension using a sonometer.  
  
(ii) To study the relation between the length of a given wire and tension, for constant frequency, using a sonometer.
10. To find the speed of sound in air, at room temperature, using a resonance tube, by observing the two resonance positions.

# SAMPLE MCQ PAPER

## CLASS XI

Time: 1 ½ hours

MM: 25 marks

Q1. The least count, of a conventional laboratory vernier caliper, is 0.01 cm. If, in a given measurement, the main scale reading is 2.4 cm and the 5<sup>th</sup> division of the vernier scale coincides with a main scale division, the reading of the vernier caliper, is

- (a) 2.35cm (c) 2.45cm  
(b) 2.40 cm (d) 2.50cm

Q2. A Student uses a tuning fork of frequency  $n$  and observes the first resonance position, for a length  $l$  of the air column. The velocity of sound, in air, is then equal to

- (a)  $nl$  (c)  $3nl$   
(b)  $2nl$  (d)  $4nl$

Q3. The diameter of a very thin wire is to be measured by finding the thickness of a collection of, say 10, of these wires. The instrument, that should be preferred for this purpose, is

- (a) measuring tape (c) screw gauge  
(b) vernier callipers (d) meter scale

Q4. The ratio of the spring constant of two springs, of the same material and diameter, is 2:3. If 100 grams mass is suspended both the springs, the ratio of the extension in the two springs, would be

- (c) 2:3 (c) 4:9  
(d) 3:2 (d) 9:4

Q5. In the experiment, on finding the weight of a given body by the parallelogram law of vectors, the student needs to use

- (a) Two pulleys and three weights in all  
(b) Three pulleys and two weights in all  
(c) Two pulleys and two weights in all  
(d) Three pulleys and three weights in all

Q6. The sliding 'jaws' of a vernier calipers can be used for

- (a) Measuring the depth of a beaker  
(b) Measuring the length of a wire  
(c) Measuring the internal diameter of a hollow cylinder  
(d) Measuring the diameter of a sphere

Q7. In the experiment of a beam balance, a metallic bob is placed in one of the pans and it gets balanced by putting the weights 50g, 1g, 200mg and 1mg. The mass of the bob is

- (a) 51.201g (b) 51.210g (c) 49.199g (d) 49.190g

Q8. In the sonometer experiment, the tension is made four times without changing the length. The frequency of the length of the vibrating wire, would

- (a) remain same (c) reduce to half its (earlier) value  
(b) become two times its earlier value (d) become four times its (earlier) value

Q9. The first 'resonance position' in a resonance tube apparatus, is observed to be for a length of 720cm of its air column. The length of the air column for the second 'resonance position' in this set up, would be nearly

- (a) 30 cm
- (b) 40 cm
- (c) 50 cm
- (d) 60 cm

Q10. The vernier scale of a microscope has 50 divisions. These coincide with 49 divisions on its main scale, which is graduated up to  $\frac{1}{2}$  of a mm. The least count of the vernier scale would be

- (a)  $\frac{1}{50}$  mm
- (b)  $\frac{1}{100}$  mm
- (c)  $\frac{49}{50}$  mm
- (d)  $\frac{49}{100}$  mm

Q11. In the experiment on finding the unknown weight, using the parallelogram law of vectors, the student should

- (a) lubricate the pulleys and use a cotton thread
- (b) lubricate the pulleys and use a woolen thread
- (c) not lubricate the pulleys and use a cotton thread
- (d) not lubricate the pulleys and use a woolen thread

Q12. The wire of a sonometer is made to vibrate by

- (a) plucking it
- (b) striking it with a hammer
- (c) sliding a bow on it
- (d) touching it with a vibrating tuning fork

Q13. A student measures the time period values (T) of a simple pendulum for, different values of its length (L). The graph between the 'L' and 'T' values, would be

- (a) a straight line parallel to the 'length' axis
- (b) a straight line parallel to the 'time' axis
- (c) a straight line inclined to both the axis
- (d) not a straight line but a curved line

Q14. A student observes that a tuning fork of frequency 256 Hz, shows resonance with a sonometer wire when the weight attached to the sonometer wire is W Kg and the length of the wire between the wedges is L cm. For observing resonance, with the same set up, with a tuning fork of frequency 512 Hz, the length between the wedges would need to be adjusted to

- (a)  $L/4$
- (b)  $L/2$
- (c)  $2L$
- (d)  $4L$

Q15. Given vernier calipers has a zero error of + 0.04 cm. The diameter of a rod, as read by this vernier, is 1.24cm. The corrected diameter of the rod is

- (a) 1.20 cm
- (b) 1.20 mm
- (c) 1.28 mm
- (d) 1.28 cm

Q16. A carpenter, while driving a screw through a wooden block, of thickness 1 cm, observes that he has to rotate the screw 10 times for the purpose. The pitch of the screw is

- (a)  $\frac{1}{100}$ cm
- (b)  $\frac{1}{10}$  cm
- (c) 1 cm
- (d) 10cm

Q17. The two arms of a defective physical balance have lengths a and b. ( $a < b$ ). A metallic bob of mass  $m_1$  is placed in the pan on the shorter arm and its gets balanced by putting a mass  $m_2$  in the longer arm. We would then have

- (a)  $m_1a = m_2b$  (c)  $m_1 + m_2 = a + b$   
 (b)  $m_1b = m_2a$  (d)  $m_2 - m_1 = b - a$

Q18. In the resonance tube apparatus set up, the first two resonance positions are observed for length  $l_1$  and  $l_2$  of the air column. A graph between  $l_1$  and  $l_2$  values, for different tuning forks, would be

- (a) a straight line that, when produced, would (almost) pass through the origin.  
 (b) A straight line that, when produced, would not pass through the origin  
 (c) almost a parabolic curve  
 (d) an arbitrary curved line

Q19.7 The length of a given helical spring is observed to increase by 1 cm when a mass of 100 g is attached to its lower end. If  $g = 10 \text{ m/s}^2$ , the force constant of the spring equals

- (a) 1000 N/m (c)  $10 \text{ Nm}^{-1}$   
 (b)  $100 \text{ Nm}^{-1}$  (d) 1 N/m

Q20. A student measures the time period (T) of a simple pendulum for different values of its Length (L) The student would get a straight line by plotting a graph between

- (a) 'L' and 'T' values (c) L and  $\sqrt{T}$  values  
 (b) ' $\sqrt{L}$ ' and 'T' values (d)  $\sqrt{L}$  and  $\sqrt{T}$  values

Q21. Backlash error is usually associated with a

- (a) meter scale (c) Screw Gauge  
 (b) Vernier caliper (d) Helical Spring

Q22. The minimum weights, available in the main 'weight box' and the 'fractional weight box', commonly used in the laboratory are, respectively

- (a) 1g and 1mg (c) 10g and 1 mg  
 (b) 1mg and 1g (d) 10mg and 1g

Q23. In the experiment on finding the weight of a given body by the parallelogram law of vectors, a student observes that he can find the unknown weight by using two equal weights of 100 g each. The unknown weight is likely to have a value of (nearly)

- (a) 500 g wt (c)  $100\sqrt{2}$  g wt  
 (b) 200 g wt (d) 100 g wt

Q24. The pendulum, in a wall clock, is a 'seconds pendulum', i.e., has a time period of 2s. The 'effective length' of a simple pendulum, that has the same time period, is nearly

- (a) 50 cm (c) 150 cm  
 (b) 100 cm (d) 200 cm

Q25. The force constant, of a helical spring, is to be increased. For this, spring should be made

- (a) strong and thick (c) soft and thick  
 (b) strong and thin (d) soft and thin



## KEY

1. (c)
2. (d)
3. (c)
4. (b)
5. (a)
6. (d)
7. (a)
8. (b)
9. (d)
10. (b)
11. (a)
12. (a)
13. (d)
14. (b)
15. (a)
16. (b)
17. (a)
18. (a)
19. (b)
20. (b)
21. (c)
22. (a)
23. (c)
24. (b)
25. (a)

## GUIDELINES FOR BIOLOGY PRACTICAL EXAMINATION FOR THE VISUALLY CHALLENGED STUDENTS.

1. The question paper will be based on MCQs.
2. There will be 25 questions in all.
3. The paper will carry 25 marks.
4. The duration of the paper will be 90 marks.
5. The paper will assess.
  - The ability through touch, smell, learning, residual vision.
  - Familiarity with the apparatus required for various experimental set up.
6. Syllabus for the question will be the same as the list unit of practicals given in the course. **There will be atleast one question for each practical.**
7. Assessment of the of the practical skill will carry 30 marks and distributed as
  - (i) 25 MCQ - 25 marks
  - (ii) Practical file - 03 marks
  - (iii) Viva - 02 marks

List of practicals for class XI will remain the same as given in the syllabus. However, keeping different abilities of the visually challenged candidates, the list may be divided under the following categories.

Few practicals suggested in the list need to be excluded.

Kindly refer the note attached to the practicals to help in framing the questions

The list of practicals of class XI identified in the syllabus can be divided under the following heads.

### Specimens & Models

- A-1 Study and describe three locally available common flowering plants from each of the following families (Solanaceae, Fabaceae and Liliaceae) Types of root (tap or adventitious), stem (herbaceous/woody) leaf arrangement / venation / simple or compound).
- B- 1. Study parts of a compound microscope.
- B-2. Study of the specimens and identification with reasons-Bacteria, Oscillatoria, Spirogyra, Rhizopus, Mushroom, Yeast, Liverwort, Moss, Fern, Pines, one monocotyledon and one dicotyledon and one lichen.
- B-3 Study of specimens and identification with reasons-Amoeba, Hydra, Liverfluke, Ascaris, Leech, Earthworm, Prawn, Silkworm, Honeybee, Cockroach, Snail, Starfish, Shark, Rohu, Frog, Lizard, Pigeon and Rabbit.
- B-5 Study of mitosis in onion root tip cells from permanent slides.
- B-6 Study of different modifications in root, stem and leaves.
- B-7 Study and identify different types of inflorescences.
- B-10 To study human skeleton and different types of joints.

**Note : The above can be done with the help of actual specimens / models / embossed diagrams.**

### Physiology experiments

- A-3. Study of osmosis by potato osmometer.

- A-7. Test for the presence of sugar, starch, proteins and fats in suitable plant and animal materials (e.g. wheat, potato, groundnut, milk or other such suitable materials)
- A-9. To study the rate of respiration in flower buds and germinating seeds.
- B-8. Study of imbibitions in seeds/raisins.
- B-9. Observation and comments on the experimental set up on:
  - (a) Anaerobic respiration
  - (b) Phototropism
  - (c) Apical bud removal

**Note : When dealing with physiology experiments they can be done with the help of a peer with low / normal vision. These students can work in teams with peer groups who will follow the procedure and give them the observations and inference.**

**List of Excluded items:**

A-2, 4, 5, 6, 8, 10, 11

B-4, 9(d)

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**BIOLOGY**  
**Practicals class XI**  
**A SAMPLE QUESTION PAPER**  
**For Visually Impaired Students**

Time 3 hrs

M. Marks = 30

*General instructions:*

- i) The question paper comprises of 25 questions , each question carries 1 mark.*
- ii) All are multiple choice questions with only one correct answer.*
- iii) Read the questions carefully and tick mark the correct/most appropriate answer.*
- iv) All questions are compulsory.*

1. Monocotyledonous plants show which of the following feature:

- a. leaves show reticulate venation.
- b. Tap root system.
- c. always perennial growth.
- d. flowers are trimerous.

2. *Pinus* belongs to the group of plants which:

- a. grow in tropical regions.
- b. reproduce with the help of cones.
- c. do not have any mycorrhizae.
- d. annually growing plants.

3. Name of the characteristic which is true for *Spirogyra*

- a. found in marine conditions.
- b. parasitic in nature.
- c. Colourless.
- d. filamentous and spiral shaped chloroplast.

4. Compound microscope
  - a. has two lenses.
  - b. requires ultraviolet source of light.
  - c. used to view only dead organisms.
  - d. requires large room space.
  
5. Which characteristic is applicable for yeast
  - a. Multicellular.
  - b. has chlorophyll.
  - c. grows in sewage waters.
  - d. used in bakery industry.
  
6. Osmosis is the phenomenon where
  - a. water moves from its region of higher concentration to lower concentration.
  - b. water moves through a semi-permeable membrane.
  - c. occurs only in salt solution.
  - d. both 'a' and 'b' conditions apply.
  
7. To demonstrate osmosis which of the following options are important
  - a. Peeled raw potato.
  - b. Unpeeled raw potato.
  - c. Boiled peeled potato.
  - d. Boiled unpeeled potato .
  
8. Which one of the following options is essential to demonstrate aerobic respiration?
  - a. Dry seeds, KOH in air tight flask.
  - b. Germinating seeds, KOH in air tight flask.
  - c. Dry seeds, KOH in open flask.
  - d. Germinating seeds, KOH in open flask.
  
9. Which one of the following represent the characteristics of a shark
  - a. Ventral mouth, symmetrical tail.
  - b. Asymmetrical tail, operculum.
  - c. Operculum present and symmetrical tail.
  - d. Dorsal mouth, operculum absent.

10. The stage of mitosis in which spindle formation takes place and chromosomes lie on equatorial plate is

- a. Telephase.
- b. Anaphase.
- c. Metaphase.
- d. Interphase .

11. The stage of mitosis in which daughter chromosomes become V, J, L or I shaped, depending upon the position of centromere is

- a. Prophase.
- b. Telophase.
- c. Anaphase.
- d. Interphase.

12. The adventitious roots that arise from few nodes near the base of the aerial stem are known as

- a. Prop roots.
- b. Stilt roots.
- c. Fasciculated roots.
- d. Tuberous roots.

13. Rhizome is a modified stem because

- a. it grows vertically upwards in the soil and it has fleshy leaves.
- b. it has nodes and it has eyes which bears germinating buds.
- c. it's stem is highly condensed and disc like.
- d. it has nodes, internodes and has brown scaly leaves.

14. Which one of the following options is characteristic of racemose inflorescence?

- a. main axis elongated and basipetal succession of flowers.
- b. main axis terminates in a flower which are in acropetal succession.
- c. main axis does not terminate into a flower and flowers show basipetal succession.
- d. main axis is elongated, does not terminate into a flower and flowers are arranged in acropetal succession.

15. Which one of the following food items would you be confirming when you obtain a reddish orange colour by adding 2ml of millon's reagent to 2 ml of food solution?

- a. Starch.
- b. Sucrose.
- c. Fat.
- d. Protein.

16. Ramesh took 2 ml of juice 'A' in a test tube and added 2 ml of Benedict's solution to it. He obtained orange red precipitate on heating. The test confirmed presence of which of the following in juice A?

- a. glucose.
- b. starch.
- c. protein.
- d. fat.

17. The identifying features of carrot roots are :

- a. Conical with small roots.
- b. Conical without small roots.
- c. Round with small roots.
- d. Irregular with no roots.

18. To demonstrate imbibitions in gram the changes observed are :

- a. The weight of gram seeds increase and surface become smooth.
- b. The weight of gram seeds increase and their surface remain unchanged.
- c. The weight of the seed and its surface remain unchanged.
- d. The weight of the gram seeds remain unchanged and surface becomes wrinkled.

19. Given below is a list of Identifying features

- i) body surface show distinctly marked segments or rings.
- ii) body is divided into head, thorax and abdomen.
- iii) show closed circulatory system.
- iv) body show bilateral symmetry.

The characteristic that are shown by an earthworm are

- a. i, ii, iii, iv
- b. i, ii, iv
- c. Only i, ii
- d. i, iii, iv

20. Select the feature that is not present in a *Asterias* ( star fish)
- water vascular system.
  - endoskeleton of calcareous ossicles.
  - mouth on the ventral side.
  - a well developed excretory system.
21. Which of the following features is present in frog.
- two pairs of limbs with 5 toes in each.
  - two pairs of limbs with 4 toes in each.
  - two pairs of limbs with 4 toes in hind limb and 5 toes in fore limb.
  - two pairs of limbs with 4 toes in fore limbs and 5 toes in hind limbs.
22. You are provided a model showing valvate aestivation. Which of the following steps would be required to change it into an imbricate aestivation
- rearrange the edges of one petal completely in and all others remain unchanged .
  - rearrange the edges of one petal completely in and one petal completely out and others remain unchanged.
  - rearrange the edges of one petal completely in, edges of the third petal completely out and of the 4<sup>th</sup> petal in twisted arrangement.
  - rearrange one petal in twisted form and others remain unchanged.
23. The type of joint present between the humerus and pectoral girdle is
- Hinge Joint.
  - Pivot joint.
  - Fibrous joint.
  - Ball and socket joint.
24. Which type of joint is present between two adjacent vertebrae?
- Synovial joint.
  - Cartilaginous joint.
  - Fibrous joint.
  - Pivot joint.
25. Each Mitotic division ends with formation of
- Two daughter cells.
  - Four daughter cells.
  - Eight daughter cells.
  - Sixteen daughter cells.

Answer

Skills tested

- 1. d K
- 2. b U
- 3. d K
- 4. a K/U
- 5. d K
- 6. d U
- 7. a U
- 8. a U
- 9. b K
- 10. c K
- 11. c K
- 12. b K
- 13. d U
- 14. d U
- 15. d K
- 16. a A
- 17. a K
- 18. a A
- 19. d U
- 20. d U
- 21. d U
- 22. c A
- 23. d U
- 24. b U
- 25. a K

